The Socio-Political and Cultural Determinants of Diarrheal Disease in the Mekong Delta

From Discourse to Incidence

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[1] Water-Related Information System for the Sustainable Development of the Mekong Delta, Vietnam (www.wisdom.eoc.dlr.de).

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List of Abbreviations

ADB	Asian Development Bank
AIDS	Acquired immune Deficiency Syndrome
ASA	American Sociological Association
CARE	Cooperative for Assistance and Relief Everywhere
CDD	Control of Diarrheal Disease
CERWASS	Centre for Rural Water Supply and Sanitation
CHEC	Centre for Health Education and Communication
CHECC	Can Tho Health Education and Communication Centre
CIDS	Can Tho City Institute for Socio-Economic Development
CPV	Communist Party of Vietnam
CTWSC	Can Tho City Water Supply Company
DANIDA	Danish International Development Agency
DARD	Department of Agriculture and Rural Development
DOH	Department of Health
DOLISA	Department of Labour, Invalids and Social Affairs
DONRE	Department of Natural Resources and the Environment
DoPM	Department of Preventive Medicine
DoPI	Department of Planning and Investment
DoPM	Department of Preventive Medicine (of the MoH)
dPHC	district-level Preventive Health Centre
DSO	District Statistics Office
FU	Farmers Union
GDP	Gross Domestic Product
GoV	Government of Vietnam
GPS	Global Positioning System
GSO	General Statistics Office
HELVETAS	Swiss Association for International Cooperation
HEMA	Health Environment Management Agency
HH	Household
HIV	Human Immunodeficiency Virus
HSPI	Health Strategy and Policy Institute
IEC	Information Education and Communication
IHPH	Institute of Hygiene and Public Health
JMP	Joint Monitoring Program (WHO and UNICEF)
MARD	Ministry of Agriculture and Rural Development
MDG	Millennium Development Goal
MoC	Ministry of Construction
MoH	Ministry of Health
MoNRE	Ministry of Natural Resources and the Environment
NGO	Non-Governmental Organisation

NCERWASS	National Centre for Rural Water Supply and Sanitation
NTP	National Target Programme
OARD	Office of Agriculture and Rural Development
OLISA	Office of Labour, War Invalids and Social Affairs
OoH	Office of Health
ORS	Oral Rehydration Solution
PATH	Program for Appropriate Technology in Health
PC	People's Committee
PCFP	Provincial Child Friendly Programme
PHC	Preventive Health Centre
RWSS	Rural Water Supply and Sanitation strategy
SEA	South East Asia
SNV	Netherlands Development Organization (Stichting Nederlandse Vrijwilligers)
SODIS	Solar Water Disinfection
TM	Traditional Medicine
UN	United Nations
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
USD	United States Dollar (currency)
VBSP	Vietnam Bank for Social Policies
VCP	Vietnamese Communist Party
VND	Vietnamese Dong (currency)
WASH	Water Sanitation and Hygiene
WB	World Bank
WHO	World Health Organization
WISDOM	Water-related Information System for the Sustainable Development of the Mekong Delta
WSS	Water Supply and Sanitation
WU	Women's Union
YU	Youth's Union

Deutsche Zusammenfassung

Gesellschaftspolitische und kulturelle Determinanten von Diarrhö im Mekong-Delta, Vietnam

Von Diskurs zu Inzidenz

1. Formulierung des Problems der Durchfallerkrankungen

Weltweit sterben jährlich 1-3 Millionen Kinder unter 5 Jahren an Diarrhö[2]. Neben Lungenentzündung ist Diarrhö eine der häufigsten Todesursachen bei Kindern und die Länder Afrikas und Südostasiens tragen weltweit die größte Last[3]. Diarrhö ist in hohem Maße schichtabhängig und die am stärksten exponierten und verwundbaren sind Menschen auf der Erde, die in Armut leben. Es ist bekannt, dass Armut ein Einflussfaktor ist, der verstärkt zu Krankheiten führt, welche gleichzeitig den Ausweg aus der Armut erschweren[4]. Dieser Teufelskreis ist im Kontext von Entwicklungsländern weit verbreitet. Vietnam ist eines jener Länder, in denen auch in den letzten Jahren trotz offizieller Überwindung der Armut jährlich im Durchschnitt mehr als 1,5 Millionen Fälle von Diarrhö verzeichnet werden[5]. Hinsichtlich des signifikanten Wirtschaftswachstums, welches das Land in den letzten Dekaden erfahren hat[6] und der erfolgreichen Entwicklung von Gesundheitsvorsorge[7], bildet die Beständigkeit dieser vermeidbaren Krankheit einen besonderen Sachverhalt. Wissenschaftler, die sich mit ähnlichen anhaltenden Problemen von Krankheiten befassen, argumentieren, dass die Notwendigkeit besteht diverse synergetische Faktoren zu berücksichtigen, um zu verstehen, was komplexe Gesundheitsaspekte formt. Durch die Betrachtungdieser Faktoren, können rein epidemologische und biomedizinsche Erklärungen kontextualisiert und ergänzt werden[8]. Solche Faktoren wirken meist nicht direkt auf die Verbreitung von Krankheiten, sondern bilden eigene Charaktereigenschaften gesellschaftspolitischer Systeme, in welchen Krankheit wirkt[9].

Phänomene wie beispielsweise die begrenzte Nutzung von Behandlungsmöglichkeiten wie der oralen Rehydrationslösung (die wirksamste kurative Maßnahme gegen Diarrhö) und beständige Hindernisse im Zugang zu sauberem Wasser und Sanitäranlagen (die meistgelobte Präventionsmaßnahme), wurden oft als Gründe dafür angeführt, dass Diarrhö bisher weder im Land selbst, noch generell unter Kontrolle gebracht wurde. Wie diese Doktorarbeit darstellt, sind dies lediglich die Ergebnisse von tiefer liegenden institutionellen und strukturellen Ursachen, welche der Krankheit erlauben, zu gedeihen. Mit einer Sammlung empirischen Materials aus Can Tho City im Zentrum des Vietnamesischen Mekong-Deltas untersucht diese Forschung die Gestaltung des Durchfallerkrankungsrisikos im Hinblick auf den Einfluss von vier

[2] Santosham et al. 2010
[3] UNICEF 2012
[4] Bloom, D. and Canning 2003; Harriss und Salway 2009
[5] MoH 2012a
[6] GSO, 2011
[7] Marr, 1992
[8] Briggs 2003; Curtis und Riva 2010
[9] Bloom et al. 2007; Morris 2010

kontextbezogenen Bereichen: der personenbezogenen, der sozialen, der umweltbezogenen und der politischen. Berücksichtigt man weiterhin Prozesse der Modernisierung, Urbanisierung und Industrialisierung, welche nicht nur durch die Wirtschaft, sondern auch durch die Umwelt und die Lebensgrundlage der Menschen in der Region transformiert werden, können die folgenden übergeordneten Ziele der Studie formuliert werden:

- Die Darstellung der institutionellen Strukturen, die hinter der Prävention und Kontrolle von Durchfallerkrankungen stehen und die Hinterfragung ihres Beitrags zur Begrenzung der Prävalenz im Land
- Die Beschreibung der umwelt- und sozioökonomischen Aspekte, die fördernde Bedingungen für die Verschlimmerung der Krankheit im Mekong-Delta schaffen
- Die Rekonstruktion bestehender Vorstellungen und Auffassungen rund um Diarrhö und die Gewohnheiten, die zur Ausbreitung beitragen, sowohl im städtischen, als auch im ländlichen Umfeld von Can Tho City
- Die Identifikation und Diskussion gesellschaftspolitischer Faktoren, die den Diskurs leiten und der Implementierung von Policies rund um Durchfallerkrankungen auf nationaler und lokaler Ebene zugrundeliegen

2. Eine kritische Auseinandersetzung mit Krankheit aus der Perspektive der Politischen Ökologie

Als umweltbezogenes Gesundheitsproblem, welches eng mit Aspekten sauberen Wassers und eines hygienischen Umfelds zusammenhängt, muss Diarrhö in Verbindung mit den hydro-sozialen Systemen, die sie tragen und aufrechterhalten, betrachtet werden. Gleichzeitig ist Diarrhö eine Krankheit von Menschen, deren Gefühle, Haltung und Wissen ihre Handlungs- und Verhaltensweisen im Bezug darauf in ihren gesellschaftlichen und kulturellen Systemen beeinflussen. Zudem werden epidemische Krankheiten wir Diarrhö durch eine Reihe verschiedener Mikroorganismen verursacht, welche ihre eigene Ökologie beinhalten und sich gemeinsam mit den gesellschaftlichen und Umweltsystemen, in denen sie wachsen, entfalten. Aus diesem Grund entsteht Krankheit als Resultat gesellschaftsökologischer Interaktion; Ebensosehr wie eine Krankheit lebendig und real ist, stellt sie sich auch als kulturell und gesellschaftlich subjektiver Sachverhalt dar, der als solcher analysiert werden muss. Um diese „duale" Natur von Krankheit zu thematisieren, zieht diese Studie in großem Maße die theoretische Strömung der Politischen Ökologie heran. Der Hauptvorteil dieses Fachgebietes hinsichtlich eines holistischen sozial-ökologischen Ansatzes sind die Fragen, die er in Bezug auf die Verteilung und Verhandlung von Macht stellt, sowie die Art und Weise, wie sozio-ökologische Interaktionen beeinflusst werden. Die Politische Ökologie verfolgt die Ursprünge einer ungleichen Verteilung von Risiken und Nutzen, die durch das Management natürlicher Ressourcen entsteht. Dadurch versucht die Politische Ökologie die Frage zu beantworten, wie und warum das Wissen rund um Risiken konstruiert wird und sucht auf diese Weise nach Gründen negativer Konsequenzen, die Risiken implizieren.

Krankheitserreger und damit das Krankheitsrisiko werden durch unbehandeltes Schmutzwasser und schlechte Wasserversorgungsnetzwerke weitergeleitet und verstärkt; und betreffen auf diesem Weg Haushalte, Gemeinden und die natürliche Umwelt. Die Möglichkeit, Zugang zu sauberem Wasser und sanitären Anlagen zu haben und der dadurch entstehende

Gesundheitsnutzen sind allerdings nicht gleich verteilt. Ebenso sind viele Aspekte der Gesundheitsversorgung und der Verbreitung von Gesundheitsinformationen durch institutionelle Strukturen geregelt, wodurch Einigen der Zugang erschwert und Anderen erleichtert wird. Durch die Ansichten der Politischen Ökologie wird Macht als Triebkraft betrachtet, die bestimmt, wie Politik in die Praxis umgesetzt wird und wem dieser Prozess nutzt. Die Fähigkeit, „das Politische" einer Krankheit zu lokalisieren erweist sich als sehr relevant, da diese Studie sich in der Beantwortung der Frage versucht, was die Verbreitung von Krankheit physisch lenkt, was ihre Kontrolle institutionell behindert und was Menschen entmachtet, sich adäquat davor zu schützen, sowohl gesellschaftlich, als auch persönlich.

Trotz unzähliger Definitionen von Risiko, wird es stets als etwas konzipiert, das die menschlichen *Gesellschaften* negativ beeinflusst, ebendiese Gesellschaften beschreiben ihrerseitsdiese Einflüsse als negativ.[10]. Parallel hat die Gesundheitssoziologie und die Medizins- angereichert durch Kulturtheorie und sozialen Konstruktivismus- erkannt, dass medizinisches Wissen "eine Reihe relativer Konstruktionen darstellt, welche in Abhängigkeit der gesellschaftshistorischen Settings stehen, in welchen sie vorkommen und welche kontinuierlich neu ausgehandelt werden"[11]. Aus diesem Grund müssen die Prozesse der Defintion von Risiko im lokalen Kontext berücksichtigt werden, wenn man Krankheit als Risiko betrachtet. Mary Douglas hat angeregt, den physischen und sozialen Körper nicht nur in Co-Abhängigkeit zu sehen, sondern zu sehen, dass diese Körpersich ständig gegenseitig neu definieren und konstituieren[12]. Ebenfalls und trotz der "Echtheit" von unter dem Mikroskop betrachteten Pathogenen, bilden ihre Vervielfachung und Verbreitung kein Gesundheitsrisiko, es sei denn, die Mitglieder der betreffenden Gesellschaft erkennen diese Verbreitung als Risiko an. In anderen Worten: Der Prozess der Risikodefinition wird innerhalb der Gesellschaft geformt und durch bestehende Diskurse, welche wiederum kultureller, wissenschaftlicher und politischer Natur sein können, beeinflusst.

In Anbetracht dessen, erfordert der Versuch, zu verstehen, wie das Risiko von Krankheiten konstruiert, kommuniziert und aufgefasst wird, eine genauere Betrachtung der Akteure, die jenes Wissen produzieren, empfangen und verbreiten. Um das Potential von Programmen der öffentlichen Gesundheit zu begreifen ist folglich eine Analyse der Überzeugungen, der Bräuche und der öffentlichen Wahrnehmungen notwendig, um das Risikoverständnis im alltäglichen Leben der Akteure zu erläutern. Themen im Bereich Handeln und Verhalten sind traditionell Bestandteile der ethnographischen Analyse. Der Ansatz der Kritischen Medizinischen Anthropologie wird sehr wertvoll , weil er Gesundheit durch die Offenlegung von Problemen im Zugang zu Wohlstand und Macht erforscht und sie mit Krankheitsmustern und deren zugeordneten kulturellen Bedeutungen in Verbindung setzt[13]. Indem sie die Schnittstellen zwischen den Disziplinen der Politischen Ökologie und der Kritischen Medizinischen Anthropologie ausfindig gemacht hat, hat diese Arbeit versucht zu erfassen, *in welcher Form, wie* und *warum* die Bereiche Wasser, Gesundheit und Durchfallerkrankungen hinsichtlich Richtlinien, Politik und Praxis verbunden sind.

[10] Brooks 2003 (mein Schwerpunkt)
[11] Lupton 2012: 8ff
[12] Douglas 2002
[13] Joralemon 2010

3. Der vietnamesische Gesundheitssektor im Wandel

Mit Gesundheit im Epizentrum der institutionellen Analyse porträtiert diese Arbeit porträtiert den rechtlichen und operationalen Rahmen des Gesundheitssektors in Vietnam. Der Fokus liegt auf den Charakteristika, die besonderen Einfluss auf das Management von Durchfallerkrankungen haben. Unter Berücksichtigung der Veränderungen nationaler Politik der letzten Jahrzehnte, welche die Dezentralisierung und Privatisierung in der Gesundheitsversorgung beförderten, wurden Literatur- und empirische Ergebnisse zusammengestellt. Auf diese Weise sollten die Auswirkungen dieser Veränderungen auf das Gesundheitsempfinden der Menschen gezeigt werden. Die Ergebnisse belegen, dass die Disparitäten im Zugang zu Gesundheitsversorgung horizontaler sowie vertikaler Natur sind. Horizontal variiert der Zugang zu Gesundheitsversorgung zwischen ländlicher und städtischer und/oder zwischen ärmeren und reicheren Provinzen. Vertikal ist vorallem die Graswurzelebene mit enormen Schwierigkeiten in der Erfüllung ihrer vom Zentralstaat auferlegten Verantwortung hinsichtlich der gesundheitlichen Vorsorge und Versorgung der Gesellschaft, konfrontiert. Die mangelnde finanzielle Unterstützung für primäre Gesundheitsversorgung hindert die Einheiten auf lokaler Ebene daran, die Qualität ihrer angebotenen Leistungen zu erhöhen. Dies spürt besonders die Bevölkerung, welche das Vertrauen in Gesundheitsversorgung auf gesellschaftlicher Ebene verloren zu haben scheint und welche diese immer weniger nutzt. Viel wichtiger ist, dass dies die in Armut lebende Bevölkerung betrifft, deren strukturelle Restriktionen ihr keinen Zugang zu besserer öffentlicher und privater Gesundheitsversorgung gewährt und deren einzige andere bezahlbare Alternative in der Selbstmedikation besteht.

Durch die Transformation öffentlicher Gesundheit von einer staatlichen Pflicht hin zu einer kommerzialisierten Ware und einer individuellen Verantwortung hat die vietnamesische Regierung viele Bürger des Landes dem Risiko eines schlechten Gesundheitszustandes und untragbarer Ausgaben ausgesetzt. Denn sie versuchen unaufhörlich abzuwägen, was sie für ihre Gesundheit für am besten halten und welche finanzielle Belastung dies mit sich bringen würde. Durch die Einstellung der Menschen, medizinischen Rat zu umgehen und öffentliche Gesundheitsversorgung abzulehnen, solange Krankheit nicht als „ernst“ gilt, werden viele Fälle niemals gemeldet. Folglich wird die dynamische Verbreitung von Epidemien oft unterschätzt. Im Fall von Diarrhö wird der gängige „alltägliche“ Inzidenz oft nicht berichtet und nicht behandelt, bis das Stadium starker Dehydrierung erreicht ist und somit erst, wenn eine Lebensbedrohung für den Patienten besteht. Darüber hinaus bilden anhaltende und wiederholte Fälle von Diarrhö im Kontext ungenügender Abwasserentsorgung und niedrigem Hygienebewusstsein eine Infektionsquelle für die Familie und die Gemeinde. Durch die Entpriorisierung und die Zuständigkeit ausschließlich auf lokaler Ebene ist die Implementierung von Kampagnen präventiver Gesundheit, welche Aspkete der Hygiene und Abwasserentsorgung fördert, geschwächt. Am Beispiel Diarrhö wird deutlich, warum das Versäumnis, die Grundlagen des Gesundheitssystems auf lokaler Ebene zu schützen, die gesamte Konstruktion, auf der die öffentliche Gesundheit aufbaut, unsicher erscheinen lässt.

4. Infragestellung der präventiven Heilmittel von Wasserversorgung und -entsorgung

Den globalen gesundheitsbezogenen Zielen und Richtlinien folgend, legt die vietnamesische Regierung das Hauptaugenmerk auf die Entwicklung des Sektors der Wasserversorgung und -entsorgung (Water Supply and Sanitation - WSS) als zentrale Antwort auf Probleme

wasserbezogener Krankheiten und speziell auf das Problem der Durchfallerkrankungen. Die staatliche Umsetzungsstrategie, verfolgt einen Top-Down Ansatz, basierend auf der Vorgabe von strikten Richtlinien für die lokale Ebene. Ziel dabei ist, statistische Indikatoren der WSS Entwicklung auf Haushaltsebene zu erhöhen, diese Erwartung setzt die lokalen Autoritäten zusätzlich unter Druck. In der Annahme – dass die Flächendeckung dessen was als 'verbesserte WSS' beschrieben wird, als ein starker Indikator für ökologische Umweltentsorgung und öffentliche Gesundheit dient – liegt die zweite Annahme, dass diese Flächendeckung durch das Berichtswesen der Lokalverwaltung gut dargestellt wird. Wie die Arbeit zeigt, stehen beide Annahmen auf wackeligen Füßen und erweisen sich außerdem oft als falsch im Kontext des Mekong-Delta.

Die Forschung in Can Tho City offenbarte signifikante Widersprüche sowohl in der Erstellung und als auch in den Ergebnissen von Statistiken über WSS, was auf ein willkürliches Berichtswesen hindeutet. Persönliche Interviews mit Mitarbeitern und Experten des Sektors ermöglichten ein Verständnis dafür, dass die Ursachen des Problems nicht lediglich durch einen Mangel an Kapazitäten zu verantworten sind. Die durch die Zentralregierung für die lokale Ebene vorgegebenen Ziele sind sehr fordernd und konzentrieren sich auf technische Indikatoren, welche wiederum viele Merkmale der Konstruktion, der Instandhaltung und der Nutzung zusammenfassen[14]. Während die Ministerien diese Ziele setzen, liegt die Verantwortung des Erreichens dieser Ziele bei dem lokalen Netzwerk von Gesundheitspersonal. Die Lokalregierungen in den Kommunen und Distrikten scheinen in ihren Bemühungen „verbesserte"Anlagen zu dokumentieren, die detaillierten Merkmale von WSS Indikatoren zu übersehen. Die Unverlässlichkeit des Berichtswesens steht in enger Verbindung mit der Verteilung von Geldern durch die Mikrokreditprogramme und Fördermittel, welche abhängig vom Erfolg im vorangegangenen Jahr unter den Provinzen verteilt werden. In anderen Worten ausgedrückt, werden die berichteten Statistiken genutzt, um zu zeigen, wie gut lokale Kader die Menschen überzeugen können, dass WSS eine wertvolle Investition ist und wie effektiv die Gelder in der Provinz genutzt werden; je höher die Statistiken dabei ausfallen, desto höher ist die Wahrscheinlichkeit, auch in Zukunft wieder Gelder zu erhalten. Die Beweggründe für willkürliches Berichtswesen liegen demnach nicht nur im Druck der Regelbefolgung, sondern auch im Wettstreit um anhaltendenKapitalfluss für WSS zwischen den Provinzen.

Bei der Untersuchung, wodurch die Verteilung dieser Gelder innerhalb einer Provinz gesteuert wird, zeigen die Ergebnisse zwei große Rückschläge. Zum Ersten bleibt der in Armut lebende Bevölkerungsteilwegen Kreditunwürdigkeit größtenteils von Mikrokreditprogramen und Fördermitteln für WSS ausgeschlossen, obwohl sich diese besonders auf Armutsreduktion und auf die Verbesserung der Lebensbedingungen der Menschen, die Hilfe am meisten benötigen, konzentrieren. Zum Zweiten legten die Behörden ihr gesamtes Augenmerk auf sanitäre Anlagen und stuften Probleme besserer Praktiken der Wasserbehandlung weitgehend herab, obwohl feststeht, dass die Handhabung und Aufbereitung von Wasser auf Haushaltsebene die Hygienerisiken der Menschen massiv beeinflussen. In den Untersuchungsgebieten wurden alle Darlehen von Mikrokrediten für die Errichtung sanitärer Anlagen vergeben, präventive Gesundheitsbildung dagegen wurde kaum implementiert und wiesen einige Schwachstellen im Inhalt auf. Die Ursache dieser Prioritätensetzung von "Hardware-" versus "Software"-Maßnahmen scheint teils durch das Festhalten an „Hardware"-Indikatoren, teils durch die noch immer vergleichsweise niedrige Quote von sanitären Anlagen begründet. Generell steht sie mit

[14] Government of Vietnam et al. 2006

der Tatsache in Verbindung, dass die notwendige finanzielle Aufwendung für Konstruktionenleichter als für „Software"-Maßnahmen des Sektors dargestellt werden können und dadurch Gelder leichter einzuwerben sind. Die Forschung weist darüberhinaus auf eine mögliche Mißwirtschaft dieser Gelder in Can Tho hin, die sich in einer enormen Diskrepanz zwischen den Mikrokreditgeldern für WSS und den tatsächlichen Kosten für die Konstruktionen zeigt. Die offiziellen Berichte der jährlichen Konstruktionen erklären nur die Hälfte der Ausgaben der Provinz Can Tho im Jahr 2011. Die Gesamtbetrachtung zeigt eine von Institutionen auf lokaler und nationler Ebene des WSS Sektors produzierte kollektive Idee, die jegliches Problem auf den Mangel an Geldern zurückführt und gleichzeitig betont, dass Wasserversorgung und –entsorgung sich stetig zum Vorteil für menschliche Gesundheit verbessert. Trotz der bisher erreichten Erfolge des Sektos stellt die Arbeit den Wahrheitsgehalt der o.b. Idee in Frage.

5. Fragmentierte Politik zur Vermeidung von Diarrhö und die mangelnde Stärkung der Gesundheitsbildung

Die erfolgreiche Prävention von Diarrhö erfordert viele sich ergänzende Maßnahmen und Praktiken, die sowohl von der öffentlichen Gesundheit, als auch vom individuellen Verhalten der Menschen abhängen. Erfolgreiche Prävention baut auf der Verknüpfung von Regelwerken und Verhalten auf, da sich beide ergänzen und ineinandergreifen. Die vietnamesische Regierung begrüßte kürzlich internationale Vorschläge zum integrierten Management der Krankheit und glich Teile der nationalen Gesetzgebung an Richtlinien für die Prävention von Diarrhö auf Weltniveau an[15]. Bei der Untersuchung, wie gut dieser rechtliche Wandel praktisch umgesetzt wird und wie er den Diskurs der Gesundheitsförderung auf lokaler Ebene beeinflusst, offenbaren die Forschungsergebnisse einige der Haupthindernisse erfolgreicher Prävention. Der Durchführungsmechanismus behandelt Durchfallerkrankungen auf fragmentierte Weise und führt die Risiken auf voneinander unabhängige, nicht interagierende Bereiche zurück (Wasser, Nahrung, Armut, Kleinkindalter und Ruralität). So versagte er folglich, die kombinierte Last des Problems zu erkennen und es holistisch anzugehen. Der offizielle staatliche Diskurs rund um die Kontrolle von Diarrhö scheint der Konstruktion einer weiteren Erfolgsgeschichte der öffentlichen Gesundheit zu dienen, parallel zu der im WSS Sektor, welche sich allerdings in der Realität als bedeutungslos erweist.

Eine der größten Schwachstellen des verfolgten Ansatzes liegt im Inhalt und den genutzten Methoden in Kampagnen präventiver Gesundheitsbildung. Diejenigen, die hauptsächlich Kommunikation im Bereich öffentlicher Gesundheit ausführen sind lokale Gesundheitsangestellte und Freiwillige in den Kommunen, die allerdings in der Regel nur über geringe Ressourcen und einen begrenzten medizinischen Hintergrund verfügen und aus diesem Grund auf die Ausbildung und die Lehrunterlagen von Behörden auf höheren Ebenen angewiesen sind. Gesundheitskader von Behörden höherer Ebenen dagegen behaupten, dass die größten Hindernisse für bessere und weiter verbreitete Kampagnen von Gesundheitsbildung die knappen Gelder sind. Laut den Ergebnissen dieser Studie existieren zentrale Fonds, diese werden aber ausschließlich an präventive Gesundheitszentren (Preventive Health Centres -PHCs) auf Provinzebene vergeben. Die Ergebnisse zeigen, dass tatsächlich Hunderte Millionen vietnamesische Dong jährlich für WSS, Malaria und Nahrungssicherheit in Can Tho bestimmt

[15] MoH 2009

sind. Basierend auf Behauptungen der PHC Repräsentanten werdendiese Gelder vollständig, durch die jährliche Organisation von 40 Trainingsveranstaltungen rund um die Provinz mit jeweils maximal 50 eingeladenen Teilnehmern aufgebraucht.

Neben der Tatsache, dass nur ein kleiner Teil der Bevölkerung durch die o.b. Kommunikationsaktivitäten erreicht wird und der Frage nach demtatsächlichen Management der vergleichsweise hohen Gelder, besteht das Kernproblem schlechter Qualität im Bereich Gesundheitskommunikation. Die Forschung zeigt, dass die Fähigkeit, wissenschaftliche Kenntisse über Diarrhö auf die wichtigen aber verständlichen Inhaltezu reduzieren, nicht ausreichend ausgeprägt. Die für ein holistisches und inklusives Vorgehen notwendige Expertise scheint innerhalb des gegenwärtigen Systems der Ausbildung lokaler Ausbilder zu schwinden. Indem die Staatsmaschinerie ihren Top-Down-Ansatz beibehält, reproduziert sie ihre stichpunktartigen Anweisungen und verwandelt die *Kommunikation* über Gesundheit eher in einen Prozess der Überzeugung, als in einen Prozess, der partizipatives Verständnis fördert. Die Untersuchung des Inhaltes und des Kontextes präventiver Gesundheitskommunikation zeigte zusätzlich, wie die ausgewählten Botschaften die Gesellschaft oft ausklammern und entmachten.

Die national vorgeschriebenen Richtlinien zur Kontrolle von Durchfallerkrankungen berücksichtigen die Prinzipien traditioneller vietnamesischer Medizin nur wenig und ignorieren teilweise die kulturellen Besonderheiten der Vietnamesen. In der Erstellung eines Entwurfs westlicher biomedizinischer Wissenschaft grenzt die „moderne“ öffentliche Gesundheitspolitik der Regierung traditionelle Vorstellungen, die viele Vietnamesen für wertvoll und wichtig halten, aus. Diese Distanzierung neuer Ansätze von alten Systemen des Verstehens könnte dazu beigetragen haben, dass Präventionsbotschaften nicht mit dem Eifer angegangen werden, den Gesundheitspädagogen sich wünschen würden. Darüberhinaus hatdie Begutachtung der Botschaften gegen Diarrhö und deren Kommunikation gezeigt, wie diese die Gesellschaft eher belasten, als stärken. Durch die weitverbreiteten gesundheitsbezogenen Gesetzesdokumente und die Manifestation durch lokale Kader sind Hygieneverhalten und –entscheidungen mit einem starken Gefühl moralischer Obligation belegt. Durch die Betonung der Notwendigkeit von Richtlinien und vom Nutzen der Verwendung einer politisch aufgeladenen Sprache, sind Aspekte der präventiven Gesundheit mit Werten des Sozialismus und einem zwingenden Gefühl von Verantwortung der Regierung, der Partei und dem Land gegenüber. Gleichzeitig wird dieser Gedanke gesellschaftlicher Moral innerhalb einer pyramidenartigen Struktur bereitgestellt, wo Gesundheitsinformationen von der obersten Ebene der Staatsverwaltung ausgehend, als Bündel von Vorschriften auf dem Weg zur lokalen Implementierung keinen Raum für Fragen oder Änderungen zulässt. Dieser moralische und patriarchische Weg, Gesundheitsbildung bereitzustellen, verstärkt diese hierarchischen Strukturen, in welchen „Lösungen“ ohne Input und Feedback von der Basis geschaffen werden. Dadurch gehen viele der implementierten Richtlinien weder auf die erlebten Realitäten der Menschen ein, noch behandeln sie sie in Bereichen wie Kinderernährung, Verhalten in der Suche nach Heilung oder Nahrungssicherheit. Als Resultat aus den oben genannten Tatsachen scheinen weder die Informationen, noch die für die Verbreitung der Informationen vorgesehenen Gelder die Förderung der öffentlichen Gesundheit voranzutreiben.

6. Praktiken, Wahrnehmungen und Verhalten rund um Durchfallerkrankungen in städtischen und ländlichen Haushalten

Bei der Betrachtung der Praktiken der Menschen rund um Wasser, Abwasserentsorgung, sanitäre Anlagen, Hygiene und Durchfallerkrankungen, zeigen die Ergebnisse die Zusammenhänge zwischen diesen Praktiken und der Einschätzung der Menschen von sicherer Hygiene, ihren kulturellen und gesellschaftlichen Normen und ihren sozioökonomischen Fähigkeiten. Die Menschen sind bestrebt, sauberes Wasser zu haben und sorgen sich sehr um ihre Gesundheit und ihr Wohlbefinden. Allerdings könnten, wie die Ergebnisse belegen, die Art der Information und die Ressourcen über die sie verfügen, begrenzt oder fehlerhaft sein und ihnen aus diesem Grund adäquate Präventivmaßnahmen zum Schutz vor Krankheiten verwehren.

Die Auffassung von Wassersicherheit in der Bevölkerung beispielsweise folgt einer komplizierten Kategorisierung, welche nicht immer mit mikrobiologischen Messungen oder dem durch die Konzentration von Pathogenen definierten Konzept der Wasserqualität übereinstimmt. Oft begründen Menschen ihre Beurteilung von Wassersicherheit abhängig von Informationen über die Herkunft, die Behandlung und die vorgesehene Nutzung des Wassers, untersuchen dabei aber hauptsächlich den Geruch des Wassers, den Geschmack und die Trübheit. Berücksichtigt man den derzeitigen Grad der Wasserverschmutzung, erscheinen der starke Urbanisierungsprozess und der Mangel an Wasserrecyclingsystemen in der Region, ebenso wie Methoden zur Einschätzung von Wasserqualität heute eher ungenau. Da ein großer Teil der Bevölkerung auf Wasser, dessen Sicherheit von der Behandlung, der es auf Haushaltsebene unterzogen wird, abhängt und da ein verschwommenes Verständnis von Wassersicherheit vorherrscht, scheint das Risiko von Durchfallerkrankungen in der untersuchten Region zugenommen zu haben. Verwirrung besteht auch hinsichtlich des Zusamenhangs vonHaushaltspraktiken und persönlichem Gesundheitsrisiko bezüglich des Umgangs mit sanitären Anlagen. Viele Befragte scheinen die zyklischen Prozesse der Wasserverschmutzung und die Art und Weise, wie Abwasser und Abfall ein erhöhtes Risiko für die öffentliche Gesundheit beinhaltet nicht zu realisieren. Dazu zählt auch ein Mangel an Bewusstsein für die Tatsache, dass eine verbesserte sanitäre Anlage die eigene Gesundheit und die der Gemeinde schützen würde. Nichtsdestotrotz äußerten viele Menschen den Wunsch nach einer kanalisierten Wasserversorgung und erkannten im Vergleich zu Flusswasser eine bessere Wasserqualität und den Nutzen der ganzjährigen Wasserverfügbarkeit. Ebenso wurde die „hygienische“ Latrine mit Wasserspülung als luxuriöse und erstrebenswerte Anlagen angesehen, welche sich allerding viele nicht leisten konnten. Im Großen und Ganzen hinderten finanzielle Einschränkungen den Zugang der Menschen und besonders der Menschen die in Armut leben zu verbesserter WSS, obwohl gleichzeitig die Motivation, bessere Anlagen zu erhalten, nicht immer durch ein klares Verständnis der Aspekte von hygienische Abwasserentsorgung oder Wassersicherheit angetrieben wurde.

Solche verschwommenen Ansichten hinsichtlich der Verbindungen zwischen Hygiene, Wasserbehandlung und Gesundheit gehen einher mit einem schwachen Grad der Wahrnehmung, den Menschen von den Übertragungswegen von Infektionskrankheiten wie Diarrhö haben. Die *Prävention* von Diarrhö galt als lose verstandenes Konzept, welches die Menschen kaum an anderen Strategien genau festmachen konnten, als daran „Wasser abzukochen und Nahrungsmittel gut zu kochen“. Tiefennterviews bestätigen, dass das Potential von Mechanismen der Gesundheitskommunikation zur Bewusstseinsschaffung für integrierte Maßnahmen gegen die Krankheit ebenso wie die Verbreitung von Botschaften, welche Menschen zu sachkundigen Entscheidungen befähigen, gering sind. Anstatt das Gefühl der Kontrolle über die Krankheit zu

haben, scheint sich die Bevölkerung eher vor Diarrhö zu fürchten und behandelt sie als miasmatisches Thema. Viele Menschen zögerten, darüber zu diskutieren und bevorzugten es, sich ausweichend zu distanzieren, indem sie die Krankheit Armut, Verdorbenheit und Rückständigkeit zuordneten. Dies zeigt, in welcher Weise Aspekte von Hygiene und Krankheit fortwährend in sozioökonomische Kategorien verstrickt werden. Obwohl die Verbindungen zwischen Wasser oder Nahrung und Durchfallerkrankungen überwiegend anerkannt werden, werden sie meistens auf die Welt außerhalb der Grenzen des eigenen Haushaltes bezogen. Dieser Protektionismus des Haushaltsansehens wird auch durch die generelle Tendenz der Befragten widergespiegelt, fälschlicherweise zu behaupten, hygienischen Verhaltensmaßnahmen zu folgen und dies vor allem im Beisein lokaler Kader. Offensichtlich zeigen Durchfallerkrankungen nicht nur eine niedrige Position in der Gesellschaft an, sondern stehen auch in Verbindung mit der Moral der Staatszugehörigkeit und der Einhaltung von staatlichen Verordnungen. Diese Beobachtungen reflektieren weitgehend die dazugehörigen Vorstellungen von Moral, welche bereits in den Materialien der Gesundheitsbildung gefunden wurden. Ebenso nutzen viele der Staatsvertreter wiederholt die abschweifende Zuordnung der Krankheit zu den ´ignoranten und desinteressierten Armen`, zur Rechtfertigung des breiten Versagens des präventiven Ansatzes.

Trotz des generellen Zögerns und Meidens, die Erfahrungen mit Diarrhö einzuräumen, gaben die meisten Leute zu, dass sie damit mehr als dreimal pro Jahr zu kämpfen haben. Beurteilt man außerdem die weitverbreitete Kenntnis der Symptome, scheint Diarrhö eine ziemlich übliche Krankheit zu sein. Sieht man, wie die meisten der auf dem Papier existierenden verfügbaren Präventionsstrategien scheinbar niemals von der Öffentlichkeit wahrgenommen werden, sind solche Gesundheitsergebnisse keine Überraschung. Unter Berücksichtigung städtischer und ländlicher Unterschiede zeigt die Haushaltsumfrage, dass Hygieneverhalten und Präventionsstrategien bei Durchfallerkrankungen durch ländliche und städtische Einwohner gleichermaßen mangelhaft praktiziert oder missverstanden werden. Darüber hinaus wurde festgestellt, dass obwohl wohlhabendere Haushalte in städtischen sowie in ländlichen Gebieten eher dazu neigen, Zugang zu sauberem Wasser und besserer Gesundheitsbehandlung zu erhalten . Entsprechend wurde nicht nur in ländlichen Gebieten beobachtet, dass die Haushalte die in großer Armut leben weniger in der Lage waren, sanitäre WSS Anlagen aufrechtzuerhalten.

Dies betont zwei Fehlvorstellungen, welche in Ansätzen hinsichtlich Wasser und Entsorgung vorherrschen, sowohl in Vietnam, als auch in anderen Kontexten. Das ist zum Einen, die Fehlannahme, dass die höheren Quoten "verbesserter" WSS Anlagen auch mit einem verbesserten Gesundheitsverständnis und einer verbesserten Hygienewahrnehmung gleichzusetzen sind. Um sachkundige Entscheidungen in Richtung Wassersicherheit und Entsorgungsverhalten bereitzustellen, müssen mehr inklusive und partizipative Bildungsmethoden Teil eines breiter gefassten Ansatzes zur Verbesserung der Gesundheitsbildung der Menschen bilden. Die zweite Fehlannahme besteht darin, dass Krankheitsprobleme zusammen mit administrativen Definitionen „in eine Schublade gesteckt" werden können, wie beispielsweise 'städtisch' oder 'ländlich'. Diese Arbeit zeigt, dass dieVerwundbarkeit der Menschen gegenüber Krankheiten beeinflusst wird durch den ungleichen Zugang zu Ressourcen und Dienstleistungen und dass diese Ungleichheiten sich über administrative Grenzen hinwegsetzen. Im Zusammenhang mit einer starkenBevölkerungsbewegung zwischen sich rasch verändernden ländlichen und städtischen Gebieten, sowie Stadtzentren und dem Stadtrand würde es sich als nützlicher erweisen, diese

administrativen Kategorien aufzudecken und den Problemen in ihrer gesellschaftspolitischen Komplexität gegenüberzustehen.

7. Ergebnis der Studie

Diarrhö bleibt mit tausenden Patienten jährlich, viele davon sehr jung, ein ungelöstes Problem in Vietnam. Die Bevölkerung hat mit denselben Morbiditätsraten Darmkrankheiten wie vor 30 Jahren zu kämpfen. Während Cholera und Typhus weniger häufig und mit einer niedrigeren Prävalenz auftreten, weist Diarrhö seit Jahren eine nachhaltig hohes Vorkommen auf[16]. Ausgehend von seiner vermeidbaren Natur haben Fragen rund um die Krankheit lange nach Aufmerksamkeit und auf kontextspezifische Antworten bezüglich realer Hindernisse einer erfolgreichen weltweiten Kontrolle gebeten. Die internationale Gesundheitsgemeinschaft verfügt über eine Menge angesammelten Wissens, welches vietnamesischen Entscheidungsträgern in Form von Prinzipien und Richtlinien zur Verfügung steht[17]. Das Fehlen einer flächendeckenden und kostenfreien Impfung gegen Rotavirus und die mangelnde Förderung verlängerter Stillzeiten oder regelmäßigen Händewaschens mit Seife, sind Beispiele dafür, dass sich Präventivpolitik im Sektor momentan in einem relativ trägen Status befindet. Hinweise aus dem Mekong-Delta zeigen, wie die erklärten politischen Ziele lediglich schwach oder gar nicht implementiert werden und wie dieses Ungleichgewicht zwischen Politik und Praxis dazu führt, dass die Bevölkerung unfähig ist, die empfohlenen Präventionsstrategien in ihr alltägliches Leben zu integrieren. Die Ergebnisse zeigen, dass die öffentliche Meinung und ein großer Teil des Gesundheitssektors auf lokaler Ebene weiterhin schlecht über das Thema informiert ist. Die Menschen und Staatskader beweisen dementsprechend wiederholt ihre Unfähigkeit, ihre persönlichen und beruflichen Beiträge im Kampf gegen Durchfallerkrankungen zu leisten.

Ihrem Ziel folgend zeigt diese Studie, dass neben entscheidenden Faktoren von Durchfallerkrankungen, wie z.B. der Pathogen-Wirt Interaktion die zu den *individuellen* Entscheidungen im alltäglichen Leben zählen, außerdem Determinanten existieren, welche in *gesellschaftspolitische* Bereiche eingebettet sind. Zu den Prozessen dieser Bereiche gehört die Generierung eines Diskurs, die öffentliche Partizipation an Entscheidungen, der Zugang zu Ressourcen und der Zugang zu Informationen. Solche indirekten aber starken Krankheitsdeterminanten können beispielsweise am möglichen Zugang zu Gesundheitsversorgung der Menschen gemessen werden, an der Verfügbarkeit von sauberem Wasser, dem Zugang zu Krediten und der Integration in der öffentlichen Gesundheitspolitik. Um zu verstehen, wie diese gesellschaftspolitischen Determinanten in individuelle Entscheidungen übersetzt werden, die möglicherweise die Verbreitung von Risiken wie Diarrhö mit beeinflussen, muss auch der *kulturelle* Kontext von Menschen berücksichtigt werden. Die alltäglichen Entscheidungen von Individuen wurzeln in deren moralischen Werten und gesellschaftlichen Erwartungen. Das macht aus diesen Entscheidungen und der Verbreitung von Diarrhö etwas anderes als ein allein individuelles, gesellschaftlich unabhängiges und wissenschaftlich eindimensionales Problem.

[16] Kelly-Hope et al. 2008; MoH 2012
[17] MoH 2009

CHAPTER 1

FRAMING THE PROBLEM OF DIARRHEAL DISEASE IN VIETNAM: AN INTRODUCTION

The annual diarrhoea deaths of children under 5 years old in the world are at the striking level of 1 - 3 million (Santosham et al., 2010). Together with pneumonia, diarrhoea is one of the primary killers of children and especially the poor, with countries in Africa and South East Asia (SEA) bearing most of its global burden (UNICEF, 2012b). The SEA region has been generally acknowledged as a "hotspot for risk, with new, emergent, and resurgent infectious diseases exploiting ecological niches that result in large part from man's influence on his environment" (Coker et al., 2011). Vietnam is a country which, despite its official exit from poverty during the 1990s, has been facing an average of over 1.5 million annual documented cases of diarrhoea for the period between 2005 to 2011 (MoH, 2012b). This high incidence[18] of the disease persists despite the existence of known preventions, and thus remains an ongoing development concern. By examining the case of diarrheal disease in the region of Vietnam's Mekong Delta, the study strives to understand the factors that govern this essentially preventable health risk.

1.1 Holistic views on a globally persistent disease

Diarrheal diseases are some of the oldest and most persistent health impediments in the history of human civilisation (Lim and Wallace, 2004, Hénock Blaise and Dovie, 2007). After centuries of experience, the epidemiological and biomedical knowledge on diarrhoea has grown remarkably, providing us with what has proven to be effective measures for its prevention and control. Nevertheless, diarrhoea is still a widespread disease, in particular affecting those living in environmental conditions that are favourable to its spread, namely: those living in poverty and those who, for a multitude of reasons, are not being reached by public health supporting programs. Despite a few remaining questions about what governs the spread of diarrheal diseases, the global health community already possesses enough medical, epidemiological and microbiological information to effectively guide prevention. Seeing how these measures have been successfully used for the control of diarrhoea in the western world, it becomes clear that the real problem is not the existence of pathogens that cause diarrhoea, but the lack of knowledge on how to use the available knowledge and information for its effective management and control. This chapter discusses the core elements that surround this problem while also introduces the study region in Vietnam's Mekong Delta.

1.1.1 Discourse and context: Why diarrheal disease is not only a medical problem

When one considers a visit to Vietnam, much of the information available on web pages and printed travel guides underline the risk of what is termed "travellers' diarrhoea". The extent to which diarrhoea is a problem only for travellers as opposed to people living in endemic regions is not widely documented in literature, being only indicated in a few studies (Grimwood and Lambert, 2009, Levine et al., 1981, Black et al., 1981). Because the types of microorganisms able to cause diarrheal disease are numerous and ever-mutating, the suggestion that local people have developed immunity to some of the pathogens is doubtful.

[18] Incidence (of disease) = the number of new cases within a period of time (Joralemon, 2010).

In a general sense, the high numbers of diarrhoea morbidity and mortality[19], especially from the regions of the world considered as hot-spots for "travellers' diarrhoea", point to the fact that diarrheal disease does indeed not only affect travellers; in fact, it primarily impacts locals. However, when I narrated my own personal experience with the disease to a local cadre that I interviewed, he was eager to convince me that I, as a foreigner, am different than local people, who "have high resistance to diarrhoea, they are used to the water they drink" (local cadre, rural district, Mekong Delta Vietnam). The opinion of a local farmer from the same rural commune revealed a somewhat different reality:

> "No one can avoid diarrhoea; we can get it from anything. You leave the food unprotected and a fly goes on it, or you touch something around and bacteria get in your system." (Farmer, rural district, Mekong Delta, Vietnam)

Diseases such as diarrhoea are often discussed as owing simply to the lack of modern water infrastructure and are often primarily associated with poor people in underdeveloped countries. While this might be a partial explanation, the reality is unsurprisingly more complex. Vietnam has not only officially escaped poverty but has been experiencing a remarkable economic performance over the last few decades. Modernisation and progress is a vision that the Vietnamese government has embraced and is following through eagerly (Ehlert, 2011: 2ff). The WHO has documented that in Vietnam diarrhoea is responsible for 10% of the deaths in children under 5 years old (WHO, 2012a), suggesting the continued presence of the disease in the country. The words of the local farmer above, among others, corroborate this. Considering diarrhoea's popular association with poverty and also considering Vietnam's efforts to dust off the stigma of poverty through modernisation and to cultivate a new development image, the statement of the local cadre above can be perhaps be interpreted as part of the effort to protect the image of a state which is successfully acting on behalf of people's health, making sure that "backward" diseases such as diarrhoea do not affect the population.

How do popular views on "traveller's diarrhoea" reflect how the West sees a disease that kills millions of children? Is the local cadre right when he presents diarrhoea as a problem only for those not used to it? Is the usual 3-day diarrheal episode not a global concern when it is silently suffered by those who, in the words of the farmer above, simply cannot avoid it? Does it only turn into a serious health problem when it interrupts our travels or only when it is turned into mortality statistics for the poor? Good health has been declared as a human right (United Nations, 2007) but how can one define it? As this thesis will demonstrate, despite the tangible reality of disease, it remains an issue highly subjective to people's feelings and personal judgments, as well as a platform for debate and negotiation. Health has often been operationalised through fractional analysis of physiological bodily functions but, according to an Indian proverb, someone's health is also proportionate to "how happy he or she is". The continuum from healthy to ill is being contested and redefined daily and differently in medical circles, private discussions and public platforms. Claims about human health naturally mean a lot for those with the responsibility to implement health-related policy and those in a position to safeguard it, both at the local and global scale. More importantly, claims about health affect those whose health is at stake. Metaphorically speaking, as nothing in this world is naturally sterile, problems of disease are also "infected" by the world's social, institutional and political complexity.

Health is often viewed as paralleled to well-being, which in turn has been –at least in principle- the central purpose of worldwide development. Following Peet and Hartwick (1999), development can be seen as a "belief" and a "project" guided by western thought and the neoliberal paradigms of industrialisation, economic growth and modernity. This type of vision of development has often meant imposing the views and practices of the west on the rest of the world and has thus narrowly and intrusively defined the desired paths of progress *for* people (as supposed to *by* them), yet all the while still acting in the name of *their* well-being. Many critiques of such approaches have argued for a step away from rational knowledge

[19] Morbidity (rate) = the rate of a disease's occurrence in a certain population (prevalence/pop). Mortality (rate) = the rate of deaths caused by a disease in a certain population (deaths /pop).

claims (postmodernism), away from looking for structures that govern society and all human existence (poststructuralism) and away from single-sided visions of one, finite development (post-developmentalism), which tend "to subordinate, contain and assimilate the Third World as *other*" (Slatter 1993 cited in Peet and Hartwick, 1999, my emphasis). Instead of seeking to replicate and force western, scientific and discursive "mastery" onto societies which are seen as problematic, one of the core poststructuralist thinkers, Michel Foucault, begged for respect of diversity and to allow "people the freedom to define and solve their own problems" (Best & Kellner 1991 and Peet 1998 cited in Peet and Hartwick, 1999:132). Similar to the encompassing term of development, well-being can be debated as something that societies should be defining from within rather than being subjected to interventions from outside.

Definitions of health are sensitive to cultural and social context and, in this sense, the concepts of *external* and *internal* can be understood in relation not only to countries and national boarders or institutions, but also to personal bodily boundaries. The work of Mary Douglas is illustrative of how the human body is reflected in and at the same time reflects society. People deal differently and give different meanings to bodily categorisations, paying particular attention to the inner and outer boundaries of the body but they always do so with regard to their cultural and social context (Douglas, 2002: 115ff). This is visible in the execution of cultural rituals as they "enact the form of social relations and in giving these relations visible expression they enable people to know their own society. The rituals work upon the body politic through the symbolic medium of the physical body" (Ibid., 2002:129). This is also visible in how different cultures use distinct categories to provoke disgust or fear in the face of natural excretions that the body produces, in order to maintain some kind of order in their societies, even though ultimately "pollution rules do not correspond closely to moral rules" (Ibid., 2002:130). What Douglas tells us is that physical and social processes are materialised and experienced in parallel. In this light, it becomes important to examine disease within personal, social and political spheres, paying attention to the meanings that social and cultural actors give to disease and, in turn, how the definitions given to disease reflect social structures and morals.

Considering what has been described above, taking either the view of healthiness as a fixed and determined bodily state or as a set of logical activities towards the prevention of illness in which individuals or societies engage, would blind observers to the reality that disease and health are also culturally and socially constructed. Of course it can be claimed that certain physical states and bodily reactions cannot be denied and are tangibly causing discomfort, pain, or malfunction, and can prove harmful for the body to the extent of death. Diarrheal disease undoubtedly has these characteristics. Nevertheless, the example of how different the views about a problem of disease such as diarrhoea can be, depending on the originators of that discourse (popular western media, a state representative or a local farmer), already suggests that interpretations of the same phenomenon can vary to a large extent. So on the one hand, if health is thought of in purely biophysical terms, it risks being stripped of social and cultural content. On the other hand, seeing health or disease solely as discursive products would ignore their biological nature and physical consequences. Given this duality, the fact that western medical science has so far dominated over definitions and explanations about bodily functions and experiences, calls for the enrichment of human health studies with accounts from the humanities.

1.1.2 Global efforts and omissions: why re-prioritising diarrhoea needs local relevance

During the UN Summit in 2010, some of the world's leaders together with international representatives of civil society and research, committed to maintain and fortify their efforts in achieving the eight Millennium Development Goals (United Nations, 2010). These goals include bringing down the rate of child mortality (MDG 4) and decreasing the share of people without sustainable access to safe drinking water and sanitation (Target 10). Due to the focus on children and on water facilities, diarrhoea has often been brought to the centre of global health discourse. Targeted efforts for its worldwide control had been

climaxing in the 1980s (WHO, 1987) and indeed bearing fruit judging by the decrease in the number of children dying from diarrhoea (Chiabi et al., 2010). However, despite all the experience and knowledge of its prevention that has accumulated over the years, the fight against the disease's incidence has yet to be won. The prevalence of well-publicized and heavily supported measures that see neither committed local implementation nor a positive impact on health has continued to be a challenge for public health policy.

At this point it needs to be acknowledged that the mere description and evaluation of the problem is usually confined to indicators that show how many annual deaths are attributed to the disease (mortality rates). However low the mortality rates might be, however, diarrhoea continues to impact millions of people, constituting a serious impediment to the well-being of children and adults and undermining their quality of life, even when the disease is often self-limiting and non-fatal. Furthermore, the frequent experience of diarrheal infections carries serious health risks in the long-run (Stephenson et al., 2000, Thapar and Sanderson, 2004)[20] which in the absence of high mortality rates, also tend to be ignored. Guerrant et al. (2002) show that compared to previous decades, morbidity levels of diarrhoea have seen a worldwide increase between the years 1992 and 2005, particularly among the world's poor. It therefore seems that the problem of diarrheal disease is easily mal-assessed to begin with. This may be one cause of its deprioritisation by both national governments and global health initiatives.

Considering that efforts to control diarrhoea have not produced the expected results, one needs to further ask why this has happened. Even though most cases of diarrhoea can be prevented or effectively treated at home, evidence attests to the difficulties adopting proposed curative and preventive measures. The use of oral rehydration solutions (ORS) for example, remains surprisingly low, even though it is the globally most advocated and effective way to treat symptoms of diarrhoea (UNICEF and WHO, 2009, Santosham et al., 2010, Chiabi et al., 2010). The expansion of improved water supply and sanitation facilities has also not been achieved to a satisfactory level, even though it has been heavily pushed by global organisations and local governments as the ultimate preventive medicine (Saravanan and Gondhalekar, 2013). The overall access to both water supply and sanitation (WSS) facilities and anti-diarrhoea medication remains highly problematic, especially for those who are mostly vulnerable to disease in both urban and rural areas of the world (Graham and Selendy, 2011b, Graham and Selendy, 2011a, Bartlett, 2003, UNICEF, 2012b:33). One of the enigmas in health prevention that development agencies and various research projects have tried to solve is why people do not follow the expert advice that is provided to them, especially when they find themselves to be particularly vulnerable to disease.

Partly answering the above question, one of the things that we do know about diarrhoea is that it maintains a highly stratified nature, with the world's poorer children being the most exposed and most vulnerable to it (UNICEF, 2012b). Poverty leads more easily to disease and disease hampers people's ability to exit poverty (Harriss and Salway, 2009, Bloom and Canning, 2003). Such "vicious circles" persist widely in the context of developing nations and thus disease cannot be seen separately from the socio-economic realities that people experience. The role of state mechanisms in fostering equitable and effective public health measures cannot be overemphasized. As seen in the example of the water sector, questioning institutions and governance has revealed that comprehensive access to safe water is often hampered by the lack of political will and by poor transparency when formulating and implementing policy (Bakker et al., 2008, WHO, 2012b:10). The WHO points to the role and responsibility of particular health institutions in preventing diseases like diarrhoea "through evidence-based advocacy, health promotion and education to improve hygiene practices, and the promotion of affordable interim measures at the household and community level" (WHO, 2001a:2). The reasons behind public "non-compliance" to

[20] Thapar and Sanderson (2004) discuss the example of the recurring diarrhoea, which often goes untreated and can permanently upset the nutrient absorption functions of the digestive path, especially in children. Stephenson et al. (2000) refer to the long-lasting diarrhoea which is caused by protozoa for which improper medication is often prescribed in addition to insufficient food intake by the patients. As a result, the disease can lead to malnutrition and inhibit children's growth, or even cause an abrupt life-threatening relapse (Ibid., 2000).

recommended measures appear connected to the involvement of institutions in facilitating the equitable access to the resources that can foster the adoption of preventative measures and behaviours.

Moreover, although the problem of disease expresses itself at the individual level, it is defined by more than what the individual alone can control, such as household-level infrastructure, medicine provision or the access to healthcare services. Looking particularly at the water and health nexus, where diarrheal disease predominantly exists, Saravanan et al. (2011) underline that "water and health are closely interlinked and complex. In this complexity, one-direction interventions based on the 'cause-effect-remedy' paradigms such as providing drinking water, using toilets and washing hands becomes irrelevant to address diarrhoea when people continuously bath, inhale, work and live in and around polluted water". In other words, in the case of a problem that comes as a result of socio-environmental interaction, the analysis would have to look not only at the equitability of policy implementation, but also at the level of integration of various sectors that need to be involved.

It still holds true, however, that individual behaviours shape the health outcomes that preventive measures are expected to deliver. Everyday hygiene and water practices, for example, are crucial in determining the risk of diarrheal disease prevention, even when an improved water source is available (Curtis et al., 2000, Heller et al., 2003, Jensen et al., 2002, Mintz et al., 2001, Herbst et al., 2009, Curtis and Cairncross, 2003). How far should one go with water treatment or how often should people wash their hands? What is the best way to keep food safe and which defecation habits are jeopardizing public health? Whereas there might exist guidelines that are adopted and provide answers to such questions, their implementation remains, at least to some extent, in the hands of individuals. This is why part of the success or the failure of preventive measures cannot be explained simply by looking at what is advocated in formal policy or how well institutions perform; this success or failure needs to be contrasted with factors that are rooted in local culture and society (Nichter and Nichter, 1996b, Aunger et al., 2010, Joshi et al., 2011, Curtis et al., 2009).

In light of this debate, some socio-cultural aspects have been acknowledged as important and have entered global assessments of sectors such as water supply and sanitation (JMP, 2012b, The World Bank (WB) and International Development Association (IDA), 2006). Nevertheless, these acknowledgments have not yet translated into concrete targets in the general sector of public health. Organisations like the WHO, have been promoting health policy that is socially embedded and acknowledge that addressing the needs of the most vulnerable and enhancing participatory health education is a strong measure against diarrhoea (UNICEF and WHO, 2009:3). However, such aspects are routinely ignored when reporting on the success of health policies. The typical indicators are blind to social inequalities, assume the same health needs and capacities for each context and, most importantly, largely restrict the concept of health to the absence of death or hospitalisation, monopolising attention with mortality rates and incidence recorded within hospital units (WHO, 2005, WHO, 2012e). For diseases such as diarrhoea, which are controlled by action in multiple sectors, and which present social and cultural particularities (usually institutionally fragmented and socially superficial approaches) fail to capture the reality of the problem and thereby often fail to address it.

This study takes Vietnam as a case in point, bringing together information from social, institutional, cultural and political spheres in order to discover the reasons behind the conundrum of stubborn incidence of diarrhoea and possible solutions. The following sections will describe aspects that characterize diarrheal disease in more detail, provide some necessary background information for the study region and finally pin down this study's research question and objectives.

1.2 Troubling diarrhoea: aetiologies and prevention

Diarrhoea is a waterborne disease.The spread of the disease is thus closely connected to the quality of water that people use, consume and live close to, and as such diarrheal disease is intimately connected to questions of water quality, water habits and water environments. When waters are polluted, mismanaged or appropriated in ways that negatively affect some people's clean water availability, it impacts their everyday lives and their health. As this section will explain however, while the potential of clean water in minimising the risk of disease is promising, and particularly emphasized in the context of the Mekong Delta (Köster, 2008, Soussan et al., 2005), the spread of diarrhoea is governed by a nexus of factors that are not confined to the quality of water resources and, for this reason, deserves a more detailed explanation.

1.2.1 Infection pathways: a web of human and nature interactions

Diarrhoea can be the one of many, or the main, symptom in a number of pathogenic infections. The WHO defines diarrhoea as "the passage of three or more loose or liquid stools per day (or more frequent passage than is normal for the individual)". In this work, by "diarrhoea" or "diarrheal disease" I am referring to the ill status of individuals who have this as the main and most severe symptom. Some common types of diarrheal diseases include cholera, typhoid fever and dysentery. Diarrhoea generally follows a faecal-oral transmission route in which water acts as a medium for the pathogen's survival and multiplication. The disease however can also be transmitted through contaminated food, flies, or dirty hands. Infectious diarrhoea can be caused by bacteria, viruses, protozoa or helminths. Their numerous types and mutations each differ in their epidemiology, resistance and geographical distribution (Dawson, 2005, Karanis, 2006, Nguyen et al., 2007), causing distinct types of diarrhoea that differ in their symptoms, duration and severity.

Diarrhoea can occur as a secondary symptom of other diseases, such as measles or hepatitis. It can furthermore be the cause and the consequence of malnutrition, a very common condition for children growing up in poverty (Fitzwater et al., 2011). It is thus particularly hard to distinguish whether diarrhoea is an indicator of other latent health issues or whether it is a purely gastrointestinal pathogenic attack. Moreover, the life cycles and the transmission routes of many known and emerging diarrheal microbes remain widely unclear (Karanis, 2006). Due to this heterogeneity that characterizes the disease, it is often hard to identify the exact cause of an episode, especially when attempted in conditions of restricted medical capacity and limited laboratory infrastructure. Unfortunately, this lack of capacities is usually encountered in places that are also hotspots for diarrheal disease, hampering its accurate diagnosis and documentation. In many cases, practitioners will follow a clinical syndromic diagnosis as a guide to decide on its medical treatment (Table 1.1). Syndromic diagnoses widely categorize the disease along the following guidelines: acute watery diarrhoea, persistent diarrhoea or bloody diarrhoea (Thapar and Sanderson, 2004, Farthing, 2000, Fitzwater et al., 2011).

Table 1.1: Categorisation of common diarrheal diseases by aetiology, transmission and diagnostic characteristics

Aetiology	**Characteristics of transmission**	**Diagnostic characteristics**
Shigella	Person to person, inanimate objects, water, food	One type of **dysentery** (bacillary): watery diarrhoea maybe bloody, including abdominal cramps, vomiting, fever
Vibrio cholerae	Through food or water	Acute watery diarrhoea

Salmonella group *Salmonella typhi* (severe form)	Water, food, and animal-human transmission	Gastroenteritis or **food poisoning**: nausea, vomiting, and diarrhoea which may be bloody **Typhoid** fever (diarrhoea as one of the symptoms): green stools, characteristic smell
Escherichia coli group	Water, uncooked food, cross-contamination	Can vary from watery, neonatal to **bloody** diarrhoea, including with fever. Might evolve into **persistent** diarrhoea
Protozoa or Helminths[21]	Contaminated food & water	Watery and maybe bloody diarrhoea, **dysentery**, persistent diarrhoea, nausea, anorexia and many other variations
Rotavirus	Faecal-oral, dirty hands and objects, food and water	**Acute** watery diarrhoea, fever and vomiting

* The words in bold indicate the commonly used names (other than "diarrhoea") for the different diagnoses.

Based on: Grimwood and Lambert (2009), Karanis (2006), Keusch et al. (2006) and WHO (2009, 2011).

Apart from the generally understood causality between the ingestion of pathogens and the expression of diarrheal disease, it is not easy to pinpoint the pathways that pathogens use in order to infect individuals in each specific context. This uncertainty increases in places with dense population and an abundance of hydro-social interaction, such as the Mekong Delta (Soussan et al., 2005, Herbst et al., 2009), making the control of diarrheal disease particularly challenging. As a result, it is also difficult to conclude whether changes in human behaviour, health policy or environmental sanitation have actually produced changes in the disease's incidence (Blum and Feachem, 1983). Nevertheless, research has provided some useful insights, which suggest positive potential in prevention measures.

1.2.2 Challenges in the prevention of diarrhoea: the factor of human behaviour

Establishing systems that deliver water of good quality and provide for the safer disposal of sewage has undoubtedly helped considerably in the control of disease (Cairncross et al., 2010b, Thompson et al., 2003, Young and Briscoe, 1988) and are, in any case, considered "essential for human life, dignity and human development" (WHO, 2012b). The results have been very encouraging when the health impacts from both water and sanitation improvements were studied together (Fewtrell et al., 2005, WHO, 2012d) as well as when sanitation was studied in isolation (Daniels et al., 1990, Cairncross et al., 2010a). However, evaluating the implementation of projects during the years from 1997 – 2007, the World Bank admits that, overall, "evidence of improved water quality is rare, as are indications of the improved health of project beneficiaries" (World Bank (WB), 2010:xiii). It is thus worth looking at when and how such improvements can really be a powerful preventive measure against disease.

Poor environmental sanitation has long been identified as a risk factor for human health (Manderson, 1987:261) and thus there is no doubt that improving the sanitary conditions of people's living environment can surely deter the transmission of disease. However, it is important to stress that the success of protecting human health through environmental sanitation, is not adequately represented only by the presence of improved toilet constructions at the household level (Saravanan et al., 2011). Disease-exacerbating factors that are related to environmental sanitation also include aspects such as the "presence of wastewater in the street; refuse storage, collection and disposal; domestic water reservoir conditions; feces disposal from swaddles; presence of vectors in the house and flooding in the lot" (Heller et al.,

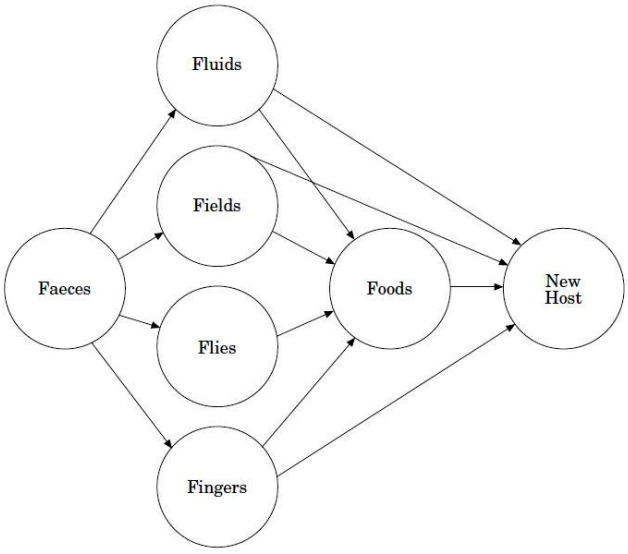
[21] Some diarrhoea-causing protozoa include the species *Entamoeba histolytica, Cryptosporidium spp., Giardia intestinalis, Balantidium coli.* Some diarrhoea-causing helminths are the species *Trichinella spiralis,Trichuris trichiura, Stwongyloides stercoralis,* and *Capillaria philippinensis.*

2003). These aspects of *community* or *public* sanitation, in particular, were found to contribute to the spread of diarrhoea (Ibid. 2003).

With regard to clean water, Clasen and Cairncross (2004) emphasize that positive health impacts of improved water quality remain ambiguous when looking simply at the water source, drawing attention to the fact that pathogens can re-appear by the time water is actually being used or consumed (Ibid. 2004). This is corroborated by Sobsey (2002) and Wright (2004), who demonstrate that intra-household behaviour often determines the quality of consumed water, for better or worse. The review study of Fewtrel et al. (2005) also supports the contention that the proper treatment and storage of water in the households can significantly contribute to the prevention of disease. As the diagram of Wagner and Lanoix from 1985 depicts (Fig. 1.1), most of the pathogens causing diarrhoea are waterborne, but not all cases are due to dirty water consumption (Jensen et al., 2004) and, in fact, apart from fluids, the main transmission routes of diarrhoea involve faeces, fields, flies, fingers and foods. Cairncross (2003) also finds that a large portion of endemic diarrhoea is actually transmitted from person to person, through dirty hands or feet and through practices of non-hygienic behaviour.

Curtis et al. (2000) underline the need for better community hygiene, which apart from the construction of toilets, also stresses the importance of extending or maintaining the practices of hand-washing with soap after defecation or after handling infants' stools. The assumption that the key ingredient in the fight against disease is merely the construction of WSS facilities ignores aspects of maintenance and sustainable use, which depend both on people's perceptions of safety and hygiene, as well as on the institutional support that they receive to maintain and use such facilities (Cairncross, 2003, Carter et al., 1999). Recently updated data from the WHO (2012d) show that even if improvements in water supply and sanitation might reduce the levels of diarrhoea morbidity up to 30%, it is the combination of those improvements with hygiene education that can lead to a worldwide reduction of diarrhoea cases up to 45% (WHO, 2012d). What literature tells us, in a nutshell, is that water and sanitation need to be looked at both in the community and in the household level, both in institutional and in behavioural terms, and most importantly need to be looked at in relation to each other, via integrated systems of delivery and treatment.

Figure 1.1: The F-diagram, depicting the main transmission routes of diarrheal diseases



Wagner and Lanoix (1959) adopted from Curtis et al. (2000)

A central message that has emerged after years of dealing with and studying diarrheal diseases is that tackling the problem necessitates action on many fronts and not just with respect to improved water supply and sanitation. Practices of good nutrition and preventive Rotavirus vaccination can both help in building resistance and immunity in the population. Better hygienic practices and the correct use of oral

re-hydration treatments can assist in recovery and in the avoidance of the disease's spread. As Feachem et al. (1983) have rightly pointed already in the 1980s, it is necessary to have a "multifaceted approach in which oral rehydration is one of several anti-diarrhoea measures that are implemented simultaneously with mutually reinforcing and complementary impacts". UNICEF and the WHO (2009) conclude that the concurrent adoption of the following six measures, can not only reduce the number of diarrheal deaths but also significantly control the disease's incidence in the medium to long term:

- Vaccinations against Rotavirus and measles
- Promotion of early and exclusive breastfeeding and vitamin A supplementation
- Promotion of hand-washing with soap
- Improved water supply quantity and quality, including the treatment and safe storage of water used in the household
- Community-wide sanitation promotion
- Fluid replacement therapy (Oral Re-hydration Therapy, ORT)

The use of ORT has been strongly advocated by the WHO since the 1980s as it reduces the loss of liquids and prevents the disease's severe stages, which can effectively saving children's lives. Chiabi et al. (2010) review the latest improvements of oral rehydration solutions and conclude that using "reduced osmolarity ORS and zinc supplementation have proven to be the cornerstone for the management of diarrhoea in children", bringing down the levels of diarrhoea mortality and morbidity. Together with Rotavirus vaccination (one of diarrhoea's main causes), ORT is one of the strongest biomedical tools to treat the disease and prevent its spread. Despite its huge potential, however, its use has not been as widespread and consistent as hoped for (Chiabi et al., 2010). Apart from not being promoted enough, its use has also been hampered by public uncertainty and confusion regarding its distinct and unique effect when compared to other type of home-prepared fluids. Moreover, people have been often resistant to adopt advice concerning the continued breastfeeding or solid food intake of patients during a diarrheal episode, both of which practices are known to reinforce the positive effects of ORT (Santosham et al., 2010, Thapar and Sanderson, 2004).

It is clear how many of the key preventive measures depend on behaviour and choices at the household level. Practicing hand-washing with soap, breastfeeding children, seeking timely medical advice, using ORS correctly, treating water carefully, keeping sanitation facilities hygienic and so on, all depend on individual judgments and choices. However, access to vaccines and medication, or to information about their availability and use, is not easily attained and can become particularly hard for people living in poverty. The same types of constraints might prevent people from improving their WSS situation, with direct consequences for their health. It therefore becomes clear that people's behaviour is not independent from the social and political spheres within which it takes place. The Mekong Delta presents a dynamic constellation of social and environmental characteristics which makes interaction between such spheres particularly interesting to study.

1.3 The Mekong Delta: diarrheal risks in an environment of intense hydro-social interaction and change

The process of transforming Vietnam from a planned to a market economy began in the 1980s and led to what today could be described as a system of socialist capitalism. The legal policy reforms that were initiated in 1986 marked the official beginning of the "*đổi mới*" reformation era. Since then, the country's markets have become open to private activity, foreign investment and external capital. One consequence of this shift appears to be the increase in the national GDP levels, as well as the improved picture of the country when observing indicators of well-being, such as the Human Development Index (Trading Economics, 2012, Nguyen Thang et al., 2006). Nevertheless, economic growth and a free market have not

come without consequences. A closer look at the wealth distribution in the country shows that poverty elimination is still far from being achieved (Varis, 2008, World Bank (WB), 2013). Moreover, the increased agricultural and industrial production in Vietnam has come at the cost of severe environmental degradation. Human-induced pollution is currently endangering the sustainability of the country's rich water resources (Molle and Hoanh, 2008, Nguyen Thi Phuong Loan, 2010b) and has become particularly evident in the Mekong Delta (O'Rourke, 2004). The Delta is a hub of agro-activity and a region where industrial growth has also been strongly promoted. At the same time, water pollution control and wastewater treatment are two deficient and controversial sectors, in which inaction poses serious health risks to the local population. One of these is diarrhoea (Herbst et al., 2009, Reis and Mollinga, 2012).

1.3.1 Economic growth, polluted water environments and growing health disparities

A first glance at Vietnam's economic growth during the last 20 years shows a continuous rise of the country's GDP since the *đổi mới* era (from 6.3 to 103 billion USD), accompanied by a fluctuating but consistently positive annual economic growth (Trading Economics, 2012, IMF 2010 cited in Priwitzer, 2012:78). Poverty levels have improved in the country, with the percentage of poor people dropping from 37.4% in 1998 (GSO, 2012a) to 11.1% in 2012 (GSO, 2013). The poverty indicators used in Vietnam however, are as low as 400,000 VND[22] monthly for the upper threshold to be considered impoverished, a sum that can barely cover the basic needs of food and clothes (MARD, 2010). In a recent report, the World Bank indicates that the use of newly-calculated and more appropriate poverty indicators would lead to a 27% poverty rate, more than doubling the officially-reported values (World Bank (WB), 2013). In comparing the rise in GDP and the performance in reducing poverty, there appears to be growing disparity. Leaving aside the argument of how much (extreme) poverty has been avoided due to economic growth, the question that is perhaps more worthwhile to examine is *for whom* this growth has been beneficial and who has been left behind.

Indeed, modern Vietnam is characterized by large disparities and an unequal distribution wealth. The average monthly income per capita for the richest household quintile in 2008 was 8.9 times higher than that in the poorest (GSO, 2008). The national Gini coefficient has risen to 0.43 during that same year (Ibid. 2008). Persisting inequalities in poverty and deprivation are mostly felt in the country's rural parts and particularly in areas where ethnic minorities are concentrated (Taylor, 2004, UNDP, 2011: 47). This stratification of access to wealth is bound to reflect on people's general well-being and health. It is indicative, for example, that the highest under-five mortality rates and the lowest high-school education levels are being noticed in regions that contain high ethnic diversity, such as the Northern midlands/mountainous areas and the central Highlands (GSO, 2011b:90, GSO, 2010b:78). Minh Nguyen Thang and Popkin (2003) observe the changes that took place after the renovation period (1993 – 1998) and underline how aspects of health appear to be closely linked with poverty:

> "The health status of the Vietnamese people has improved substantially in recent years but not for the poor (citing Pham et al. 2000) [...] The poor suffer a greater disease burden, have greater health needs, are less likely to seek health care services, and are less able to afford user fees." (Minh Nguyen Thang and Popkin, 2003)

The authors find links between poverty and health indicators that are closely related to diarrhoea, like infant mortality and children's malnutrition. Moreover, they point to the problem of people's access to healthcare that remains unaddressed in the country (Ibid. 2003). Fritzen (2007) describes how even after positive improvements in the health sector's organisational status, healthcare continues to be experienced differently by the poor, who mostly utilise low quality local health services. Despite significant

[22] This amount is equivalent to about 20 USD and was reported by local cadres of district offices in Can Tho City. Informants distinguished a threshold of 400,000 VND for rural areas and 500,000 VND for urban areas (see also Box 4.2 in chapter 4.2.2). In the databases produced by the GSO of Vietnam, it is stated that, for the year 2011, the limits were adjusted by inflation and moved to 480,000 VND for rural areas and 600,000 VND for urban areas (GSO, 2012a).

improvements in legislation and efforts to increase the rate of health insurance among the population, the Vietnamese government has, according to Fforde (2013:103), "failed to deal with major political questions [...] such as reforms to public health".

The rural areas and the poor are facing growing disparities regarding their access to resources and health, and at the same time are disproportionately experiencing the effects of water pollution, as rivers and canals nearby near to their work and life contain increasing levels of agrochemicals, pesticides, residual waste and faecal material. The Mekong Delta is a region where the local culture is closely connected to the waterscape and the services that water offers to people. Wet-rice cultivation, annual cycles of flooding, and river-based transportation and trade are almost synonymous with the Delta. Surface water from the rivers and canals has been traditionally used for daily activities like bathing, washing vegetables and drinking, but such habits are gradually being abandoned due to fears of water pollution and water-transmitted disease. Frequent flooding is known to contribute to the spread of waterborne disease, especially in a context of rapid urbanisation and water pollution, such as in the Delta (Saravanan et al., 2011, WHO, 2012d, Confalonieri et al., 2007 :400). The Hau River, which crosses the central Delta and flows through Can Tho City, "is heavily polluted by organic, chemical and microbiological substances, despite its high ability to self-clean (citing Nuber et al. 2008), and the related drainage canals suffer from untreated wastewater discharges" (Waibel et al., 2012:181). People try to understand the risks and adapt to the changes that take place in their hydro-environments, but the consequences of those changes are complex and hard to cope with, especially for those with limited options at hand.

The problem of water pollution is not confined to the Delta; untreated wastewater is being discharged to the network of streams and canals throughout the country (DONRE, 2009). A booming economy and a growing population not only pollutes but also consumes water, depleting the underground reservoirs and causing the salinisation of aquifers in the coastal zones (Vietnam Environment Protection Agency, 2004, World Bank (WB), 2008). Environmental sanitation and health issues have made the news (Le Kien, 2011, Ha Van, 2010a), but, in legislative terms, they remain only partly addressed (Nguyen Thi Phuong Loan, 2010b, Nguyen Thi Phuong Loan, 2010a). Only 16% of the urban population in Vietnam is served by combined sewerage and drainage systems, with most of the untreated wastewater being directly discharged into water courses (ADB, 2007). By delaying action and not prioritising the adoption of integrated water management systems, the country's decision-makers are jeopardising the availability of water that is safe for human use (World Bank (WB), 2006). The government also appears weak in using the existing legal instruments to sanction and control the pollution stemming from industry, healthcare facilities and individual households (International Center for Environmental Management (ICEM), 2007:197).

Tackling such pressing socio-environmental problems does not seem to be reflected in the overall priorities of the one-party government, which maintains the leading development vision of "urbanisation and modernisation to 2020" (Central Committee CPV and Communist Party of Vietnam, 2001). This vision has been materialising, with the growing share of urban population climbing to 21% nationally and increasing current at a rate of 5.18% (GSO, 2011b). The urban centres in the country have been marked by the expansion activity in the secondary and tertiary economic sectors, a rising number of employees working in industry and services[23] and a two-fold increase in the gross industrial output between the years 2005 and 2011 (GSO, 2011b). The Mekong Delta has largely followed this trend of urban agglomeration (Renaud and Kuenzer, 2012:120), with the central province of Can Tho being upgraded to an urban City (level-I) in 2009 (Statistical Office of Can Tho City, 2009). However, the sort of development that is solely driven by economic growth and urbanisation tends to be blind to persisting inequalities and environmental consequences and, in many ways, runs contradictory to the core values projected by the Vietnamese Communist Party (VCP), namely those of progress and well-being for all.

[23] Rising from 32.2% of the population in 2005 to 51.3% in 2011 according to GSO (2011)

Many authors contend that these contradictions owe to the fact that in Vietnam, political and bureaucratic elites have been appropriating the benefits of the open market and have been using the instruments and structures that operate under a one-party rule in order to safeguard their own powerful positions (Gainsborough, 2010b, Gillespie, 2001). This is seen to be taking place also through the technical and political exploitation of the country's water resources, particularly in the region of the Delta (Benedikter, 2014, Reis, 2012). As Beresdorf (2008) describes, the inflow of private funds since the renovation period came under the dominion of those who managed to associate and bond with the sources of those funds during the transition, thereby creating a new set of power dynamics in the country. Cheschier (2010) also speaks of how opening up to capitalism brought about unequally distributed financial gains and a so-called New Class[24], which was formed by those in close proximity to the state apparatus. These observations are in line with Gainsborough (2001) and King's (2008) discussions of an emerging socio-economic middle class that has been benefiting from much of what the new public-private mix in the economy has provided. In this constellation of events, Beresdorf (2008) sees that many have been excluded and that this exclusion owes to reasons connected to the absence of redistributive mechanisms in the country.

1.3.2 A blurry causality: water supply and sanitation and the control of diarrheal diseases

The sector of water supply and sanitation has gained significant attention during the last 20 years in Vietnam (GoV et al., 2006, MARD and MoC, 2000, The Prime Minister of Vietnam, 1994), accompanied by a noticeable decrease in the levels of cholera and typhoid (Kelly-Hope et al., 2008, MoH, 2012b). The rate of mortality for under-5 year-olds has also dropped during these last two decades (WHO, 2008, WHO, 2012c). Nevertheless, the results with regard to diarrheal disease appear on the whole neither clear nor sustainable. Firstly, cholera re-appeared with a big epidemic in 2007 and has not yet been eradicated in the country, with over 600 documented cases in 2010 (see also Fig 4.6). At the same time, there has been a significant increase in the incidence of dysentery throughout the 1990s, which is also still not tackled (Kelly-Hope et al., 2008, MoH, 2012a). Rotavirus appears to be the main cause for children being hospitalized (Van Man et al., 2005) while, in general, diarrhoea is still one of the leading causes of morbidity for people of all ages in the country (WHO, 2012c). Between 2001 and 2010, one in every hundred Vietnamese has been diagnosed with diarrhoea each year (MoH, 2012b). There is thus an emerging disparity between the increasing number of improved water facilities countrywide, on the one side, and the persistence of diarrheal diseases on the other.

Comparing national data separated by region, Soussan et al (2005) found that the Mekong Delta is a hotspot for diarrheal diseases. Regarding water and sanitation, the Delta was ranked fifth out of the six socio-economic regions for improved water supply (77.9%) and hygienic sanitation facilities (42.4%) (GSO, 2010a). The region thus combines comparatively poor WSS infrastructure and a high level of disease incidence. However, empirical findings provided by UNICEF (2012a) from the An Giang province of the Mekong Delta demonstrate why, despite this apparent correlation of facts, conclusions on the causal relationship between the two are hard to draw. Looking at the effects of seasonality on the incidence of diarrheal disease, the study showed that even during the dry period, when surface water quality (*E.coli* indicator) worsened and access to rainwater decreased, the incidence of the disease was not significantly different (UNICEF, 2012a). This means that the risk of disease did not seem to increase even when people were using water that was expected to be of lower quality than the improved sources. The authors suggest that this is probably because the changes in water quality were "masked by a complex mix of inter-household variations in water source and treatment methods, hygiene behaviour patterns and other risk factors that influence diarrhoeal disease risk" (Ibid., 2012:70). In other words, as earlier stressed (section 1.2.2), the complexity of behaviour and choices that characterizes the use, treatment and consumption of water within each household is what defines the water's quality at its point-of-use; this can (re-)shape the risk and the outcome of disease.

[24] By the term "New Class", Cheschier (2010) is here referring to Djilas (1957).

The effects of household behaviour on the spread of disease have been acknowledged in national policy and particularly in the National Rural Water Supply and Sanitation Strategy (MARD and MoC, 2000), which proclaims the target of health education as central. While the declared approach to WSS is to be "demand-responsive" and thus to cultivate demands through "Information Education and Communication activities and community participation" (MARD 2003: 12), the content and the orientation of those activities are not specified. Reis (2012) has discussed how WSS policy in the rural areas of the Delta is now pushing towards the construction of household-based sanitation and away from providing more centralised solutions or information for water that is safe for human consumption. As Cairncross et al (2010a) have warned, overshadowing the health education content with the promotion of construction (either of water supply or sanitation) might undermine the effectiveness of the health messages:

> "Hygiene promotion and sanitation promotion both suffer from the budgetary dominance of water supply, and from a loss of effectiveness when implemented too fast. Freeing sanitation promotion from its link with construction (of toilets or of water supplies) avoids these problems and makes it more suitable for implementation by the health sector" (Cairncross et al., 2010a)

The Vietnamese Ministry of Agriculture and Rural Development (MARD) has listed some of the problems that the demand-driven communicative approach faced during the first years of its implementation, acknowledging that "there were no regular in-depth surveys on people's knowledge, attitudes and practices, or any impact evaluations, which made it very hard to monitor change" (MARD, 2003). Ten years after these acknowledgments by the MARD, the question that arises now is whether it is informed demand that has raised the amount of WSS expansion and how well this reflects the public's awareness of hygiene and potential for improved health outcomes.

1.4 Study objectives and research approach

The aim of this study is to answer how cultural, social and political environments define and shape the spread of diarrheal disease in Can Tho City in Vietnam's Mekong Delta. In order to answer this question, data collection and analysis were based on the following four objectives:

- To delineate the institutional structures behind the prevention and control of diarrheal disease and to question their contribution in limiting the disease's prevalence[25] in the country
- To describe which environmental and socio-economic aspects create favourable conditions for the exacerbation of the disease in the Mekong Delta
- To trace the existing perceptions and understandings around diarrhoea and around the practices that can drive its spread in both urban and rural settings in Can Tho City
- To discover and discuss the socio-political factors guiding the discourse and underlying the implementation of public policy around diarrheal disease at both the national and local levels.

In order to address these objectives, this study draws greatly from the theoretical current of Political Ecology. The field provides a holistic approach as it demands the inseparability of ecological and social phenomena. Political ecology also poses questions of power. Here, power is understood as being distributed and negotiated in ways that inevitably affect the nature and the outcome of socio-ecological interactions. Tracing the roots of inequalities that have come together with the use of natural resources, apparent in the uneven distribution of risks and benefits, political ecologists have also sought to answer how knowledge around these risks is constructed. Through this questioning of socio-environmental problems, power emerges as the locomotive force which determines how policy turns into practice and

[25] Prevalence (of disease) = the proportion of the population that is infected at one time (Joralemon, 2010:32).

whom this process benefits. Being able to locate 'the political' in disease, as in this study, is a similar sort of task, aiming to answer questions such as what guides the spread of disease physically, what hinders its control institutionally and what disempowers people from being able to be adequately protected from it.

Engaging with questions of how the risk of disease is constructed, communicated and understood, this study also calls for a better understanding of the agents who produce, receive and circulate that knowledge. Seeing how the issue of "behaviour" takes a central role in the control of diarrheal disease, it is important for the analysis to be able to capture and understand prevailing beliefs, habits and public perceptions. This turn to culture and agency has been commonly addressed in the methods and the concepts used in anthropology. Thus, in order to demonstrate the way the risk of disease is understood and experienced in the everyday life of the actors, this study also draws from the field of Critical Medical Anthropology. This field proved extremely useful in exploring human health, as it lays bare issues of access to wealth and power, relating socio-political aspects to patterns of disease and the cultural meanings that are ascribed to disease.

In order to collect data that would support a critical and holistic analysis for the problem of disease from a social science perspective, the study followed an abductive research strategy, where "data and theoretical ideas are played off against one another in a developmental and creative process" (Blaikie, 2009:156). In need of an approach that could accommodate interpretative and critical explanations on disease, a topic that is commonly understood through biomedical concepts of a technical and deterministic nature, the abductive approach was useful in its use of "both technical and lay concepts to link structure and agency" (Ibid., 2010:118). Without having a formulated hypothesis, the aim of the research was to understand problems with conceptual guidance from the fields of political ecology and critical medical anthropology. In order to better address the objectives of the research, the collection and analysis of data followed a mixed-method paradigm. Qualitative and quantitative data offered different kinds of information which, at different times, complemented and contradicted each other. The same series of data were seen under the light of statistical significance and interpretative meaning. Overall, qualitative analysis was emphasized, while quantitative analysis was seen as valuable to provide "an objective or observer's perspective that can then be supplemented (and reflexively contextualized) by an interpretive perspective integrating the views of the subjects themselves" (Harrits, 2011:161). Using mainly semi-structured and in-depth interviewing (87 in total), qualitative results came mostly in the form of transcripts. However, these were complemented with observations of participants and the research context, documented daily in the form of field notes. A household survey was conducted in 131 households of urban and rural communities. The findings of the survey were meant to contrast with and complement unstructured discussions and observations. Material that is used for health communication purposes was examined both quantitatively and interpretively, placing it in the realm of discourse about disease that is formulated in an ongoing manner by state representatives and the interviewed household members. Secondary statistics were collected on the disease's prevalence, water supply and sanitation expansion, and water quality, but were mostly used as starting point for reflection and criticism rather than as a comprehensive and valid source of information. Scientific literature and media reports also contributed to framing the discussion of the findings, while photographic material helped in documenting snippets of information in visual form.

Structure of thesis

The findings of this work are discussed in the chapters that follow. **Chapter 2** reviews how literature has approached the issues of environmental health and particularly of disease, tracing the parallels with approaches in development and pinpointing the gaps in critical scientific knowledge about health. To this end, the chapter draws connections between agency and structure. The chapter situates the study in the fields of political ecology of health and critical medical anthropology, delineating the analytical categories encompassing elements from both these fields. It also presents a framework of analysis that outlines the events involved in the course of the disease's prevention-infection-cure-control pathway, paying attention

to the context of personal, social, environmental and political spheres, as well as to the issues that emerge from their interactions. **Chapter 3** elaborates more on the methodological approach, offering a detailed description of the steps followed during the data collection and analysis. The chapter also justifies the selection of the case-study areas and provides some background on their significant characteristics for this study. Furthermore, chapter 3 reflects upon the limitations posed by the "character" of the research field and discusses how those challenges were addressed.

The empirical analysis begins in **chapter 4,** which focuses on the health sector in the country and looks at how the changes following the renovation and decentralisation policies are reflected in the function of its services today, particularly in regard to public access to healthcare and its utilisation. The chapter offers a description of the sector's organisational structure, focusing on those aspects that are crucial in the management of diarrheal disease (primary healthcare, preventive health education and reporting of epidemics). Additionally, the status of some of the main infectious diseases is presented and critically discussed, focusing on how the incidence of diarrheal disease appears in statistics generated at national, regional and local levels. **Chapter 5** examines the expansion of water supply and sanitation in the region of the Delta and uses empirical and secondary data to question the actual contribution of WSS infrastructure in reducing the risks of diarrheal disease. Looking at the results of policy implementation, particularly in the region of Can Tho, the chapter questions the values that govern this sector, looking foremost at issues of equity, transparency and efficacy. Although advancements in WSS have been claimed to be a major component of health prevention, the findings presented in chapter 5 bring into question the capacity of those advancements to provide clean water and sanitary living environments in a sustainable manner. **Chapter 6** tries to look at the prevention of diarrheal disease holistically, moving beyond the technical measures of water supply and sanitation expansion. It traces the fragments of policy that exist in national legislation and examines their implementation within Can Tho City. The chapter particularly emphasizes the health education mechanisms that are employed to raise awareness about the issue of diarrheal disease. It analyses the means and methods used in the circulation of information, with a focus on the content of messages that are communicated to the public.

Chapter 7 focuses on the two selected case-study areas, the urban Cai Rang and the rural Phong Dien districts. Presenting and discussing the results of the household survey, the chapter portrays how the factors related to the spread of diarrheal disease are viewed and experienced by local actors. Complemented by qualitative information and analysis, the chapter presents a more informed understanding of household behaviour, placing people's documented practices in water supply, water treatment, hygiene and sanitation side by side with their perceptions on water safety and disease. People's preventive and curative attitudes are examined in relation to such perceptions to the structural constraints that they commonly face. Here, the statements of local residents often contradict much of the officially circulated discourse, and these help pinpoint gaps between policy and practice in public health. **Chapter 8** brings together the findings of the study and draws overall conclusions about the interplay of factors shaping the risk of diarrheal disease. It combines the insights drawn from institutional, anthropological and statistical analysis and traces two emerging phenomena: the "normalisation" of diarrheal disease and the construction of sick identities in poverty and rurality. These insights are then also discussed in relation to the two analytical categories that were chosen for the study, namely the epidemiology of health messages and the politics of risk communication. Chapter 8 also draws conclusions about how the principles of political ecology and critical medical anthropology proved to be a useful theoretical ground for this analysis. Ultimately, the chapter presents how the findings of this study can contribute to these theoretical fields and generally to the literature of interdisciplinary studies of health and disease.

CHAPTER 2

A POLITICAL ECOLOGY OF DISEASE INFORMED BY CRITICAL MEDICAL ANTHROPOLOGY

This chapter situates the research in the field of Political Ecology, justifying why such a theoretical approach is considered useful in the study of health and disease. First, some parallels are drawn between the modernist approaches to human development and the strictly biomedical approaches to human health. The limitations of such views in understanding problems holistically are punctuated (2.1). After discussing the potential of producing socially and culturally relevant studies in health and disease through merging the currents of Political Ecology and Critical Medical Anthropology, the chapter traces the value of such merging in drawing together analysis between human agency and institutional structure (2.2). Borrowing from the questions and the angles that have been traditionally examined in the two disciplines, the analytical fields that this study chooses to focus on are discussed in more detail (2.3). Finally, the chapter offers a combined depiction of the study's analytical framework and conceptualization of the problem, arranging factors that can determine the outcome of disease around the single incidence, but also conceptually situating these factors at the interpenetrating spheres of personal, social, environmental and political context.

2.1 Problematizing health

Health problems have been usually viewed in development studies as an aftermath of socio-economic evils; a companion of insufficient growth, of delayed progress or low institutional capacities. It is true that weaknesses of economic and institutional nature can often accompany major public health problems. However, the presumed trickle down effects of economic and technological advancements have not been fully realized in relation to health and well-being, neither in the global North or South. This is because such presumptions are often inconsiderate of the socio-ecological dynamics and the cultural landscapes that define the way economic and technological advancements are distributed and experienced in the wider population of the places in question (Gardner et al. 1996 cited in Chay Navuth, 2006: 24, Power 2008 cited in Potter et al., 2012: 66). Considering health as an aftermath, as a part, or as a goal of human development, leads to the question of what kind of development is being pursued. Envisaging progress in health through a modernist lens would mean to pursue an unmitigated technological and economic advancement of the sector, led by western paradigms of advanced biomedical knowledge. This however would remain blind to the inequalities and injustices that govern local institutions of health and most importantly, it would exclude alternative visions and beliefs on health (and disease) itself. It is for this reason that such visions need to be criticized, not as utopian or impossible to achieve, but as consciously apolitical.

2.1.1 Humanities in health and the link with development

There are many parallels between the modernist views in human health and those in development. The conceptualization of development as a solidly defined desired "outcome" which human societies should pursue, has been heavily criticised and reframed by post-modern and deconstruction theorists (Parfitt, 2002:78ff). Scholars from these currents, have argued that the modernist development approach is one of disempowering, subordinating and controlling nations, groups and individuals (Sachs 1992 cited in

Schuurman, 2000). In contrast to the monolithic views of modernism, scholars have discussed different ways of discovering what are the desired outcomes in human societies, investigating the concepts of "development from below", "people-centred development" or "another development" (Potter et al., 2012 :75ff).

Alongside the different debates on development, the approaches regarding human health and the risk of disease have also been debated from different viewpoints. From the side of the social sciences, Deborah Lupton opines that a western-centred focus on health has used biomedical solutions as "the ultimate weapons against illness, disease and premature death" (Lupton, 2012a :vii), without including or considering the cultural aspect of health issues. Western narratives, of how to produce or maintain good health and of what constitutes disease, have influenced the curative and healing means across the globe. Such narratives have "all generated ideas and practices which tend to deny the fragility and mortality of the human body" (Ibid. 2012b). By discursively taking away the (cultural) meanings assigned to health, its social significance is also being stripped off. Bambra et al (2005) further argue that this medicalization of health explains also, in part, why our views of it have been largely depoliticized. The process of rendering medicalized and depoliticized approaches as the dominant paradigm, have been taking place globally. According to Nichter and Nichter (1996a) such processes are "constituting an agency of socialization where relations of power, dominance, and dependency take concrete form" and, in some respect, are reifying the acceptance of capitalist ideology, as the later is "being swallowed along with the pills that embody it" (Ibid 1996: 269).

Even in parts of the world where biomedicine has a long history and many successful narratives, human health is still facing major challenges. Many diseases have been eradicated as a result of advancements in science that have come hand in hand with socio-economic growth and the mortality of many others has seen a significant decline. But despite what the "modern world" has achieved, the affluent West is now being "plagued" by health problems such as obesity (Ohtsuka and Ulijaszek, 2007: 11ff) and has to face the increasing mortality of chronic diseases. Seeing how even in exemplary contexts of technological development and economic prosperity, people have not been freed from disease, indicates that good health is not simply a technical matter and it is not only guided by economic growth. For this reason, as social scientists argue, assessments of health cannot simply rely on statistical indicators which use narrowly defined categories (i.e. the rate of diseases mortality or the average rate of hospital beds availability). Instead, to better illustrate the sources of disease and the reasons of public health failures, such assessments need to take greater account of the social structures and the cultural meanings in each context. It is often the case, for example, that a decrease in disease mortality is not accompanied by a decrease in disease morbidity, suggesting that "there is an awareness of the availability of curative intervention, but the preventive intervention components have not been emphasized or have been unsuccessful" (Pollack 1983 cited in Nichter, 1996a :400).

Problems of financial or know-how constraints might be part of the reason why advancements in medicine have not been able to reach everyone in need (Schlipköter and Flahault, 2010). But what the humanities emphasize with regards to health, as part and parcel of development, is that it needs to be more ethnographically informed. In the words of Leonard Syme:

> "We epidemiologists have suffered a whole series of very embarrassing failures. [...] Our model is to identify the risk factors and share that information with a waiting public so that they will then rush home and, in the interests of good health, change their behaviours to lower their risk. It is a reasonable model, but it hasn't worked. […] We in public health have important messages to give to people, but people have lives to lead. There often is a major gap between these two priorities. This is an issue that anthropologists think about, and it would be good to incorporate that thinking into the design of better interventions." (Leonard Syme in Trostle, 2005: xi)

2.1.2 Re-conceptualizing health and disease

In the fields of anthropology, sociology and ethnography, the meanings that people assign to their experiences and actions are often interrogated, and the objectivity of "facts" is questioned. Nichter and Nichter (1996b) demonstrates the importance of metaphor and analogy in the communication of health messages, while Myrick (1996) argues of how AIDS-related campaigns entail the construction of certain realities that place blame on the gay community.

But the efforts to look at health holistically have expanded in more disciplines. A growing knowledge on the intrinsic connections and interactions between human societies and their surrounding ecologies, have looked at human health in relation to natural environments and phenomena. Health Ecology for example, is looking at health as a result of a constant dialogue between individuals and the environmental changes from local to global scales (Collins, 2001, Hunarī et al., 1999). The discipline of Medical Geography (Jones and Moon, 1987, Jones and Moon, 1991) and the more socially influenced, Geography of Health (Kearns, 1993, Kearns and Moon, 2002, Gatrell, 2005) on the other hand, are using space as an explanatory basis and a conceptual bridge that connects medical, natural and social explanations of health. These and other pertinent approaches, have provided the basis for looking together at systems previously seen mostly as separate and for understanding how the processes within and among these systems are shaping human health. The study of epidemics can offer a fertile ground for opening the scientific discussion in this regard, as epidemics "offer a particularly vivid demonstration of the interconnections between biological, social and cultural components in the human experience of disease" (Joralemon, 2010: 29).

Many of the interdisciplinary attempts around human health however fail to theorize enough outside their methodological traditions. Epidemiologists, for example, often relate statistical patterns of disease to other series of data that is labelled as economic, social or cultural. Their claimed purpose is to illustrate the interplay between health and society through showing the statistical relationship between, for instance, the prevalence of certain pathologies and poverty (Weiss and Lonnquist, 2003:57). However, such analysis rarely goes into examining and discussing *why* such relationships exist (Leatherman, 2005: 50) and moreover, rarely reflects critically on the sources and the limitations of quantitative data as such. Notwithstanding the interesting insights that can emerge from systematic large-scale statistical approaches, they alone are limited in interdisciplinary depth and necessitate complementary explanations. Trying to approach the "cultural" side of biological expressions (reflected in health), some have instead focused on the genetic and evolutionary characteristics of human societies, coming up with biocultural explanations of disease. However, they also failed to consider the behavioural and social aspects, which in synergy with biology, define people's vulnerabilities and adaptive capacities towards disease (Singer et al., 1992, Lock, 2001). As asserted in the work of Joralemon (2010), only under a critical interpretive lens is the evolutionary/ecological approach able to answer the question of "who benefits and who suffers from the economic structures that provide [disease] the opportunity to take hold and spread" (Joralemon, 2010: 42).

In response to the limitations that the above approaches have presented, the works of critical and cultural disease ecologists and epidemiologists (Brown, 2006, DiGiacomo, 1999, Trostle, 2005, Amsterdamska, 2005) advance towards a more substantial interrogation of how social aspects affect health and broaden the boundaries of health studies. In the example of Kenya, Akala (2006) detects the social and political ramifications of HIV, showing how the disease acts as "a sophisticated social condition responsible for unprecedented social injustices particularly against young uninfected and voiceless victims", thus pushing our conceptualization of AIDS beyond "just a health condition requiring anti-retroviral treatment, a balanced diet and research focused on evolving a cure and/or vaccines" (Akala, 2006).

Emerging from such problematizations, the field of Medical Sociology "places health and disease in a social, cultural and behavioural context" (ASA 2002 cited in Weiss and Lonnquist, 2003). Rudolf Virschow is referred to as the father of this discipline, as he was the first medical practitioner who traced

the roots of an epidemic[26] in the prevailing socio-economic conditions of the time, arguing that "medicine is a social science, and politics nothing but medicine on a grand scale" (Virschow cited in Taylor and Rieger, 1984). Others have argued that a sociological approach of health is not really new, but a return to what was before holistically examined as people's well-being:

> "From a nineteenth-century perspective, when medicine was yet to throw its future in with the merging experimental laboratory sciences (and when sociological perspectives had not yet been purged of their psychological, organicist or physiological roots), health and disease were not clearly defined as biological and physiological processes but more commonly discussed in broader terms, better encapsulated within the concept of well-being." (Collyer, 2012:5)

This blending of disciplines in the attempt to approach health socially, however, has often maintained strong ontological dividers between society and health. Falola and Healton (2006) for example, state that they seek to illustrate "the combination of *real* medical risks, with the social environment that often *exacerbates* them" (Ibid. 2006, my emphasis). While offering some powerful descriptive demonstrations of socially produced inequalities of health, the authors imply that there is an explanation of health which is objectively real (biological, medical, scientific) and thus not under question. Upon this "real" risk of disease, society is perceived as acting externally and not as defining the risk intrinsically. Contrariwise, cultural theories of risk see the important role of actors in constructing the meaning of a risk, recognizing that "the fabric and texture of these constructions reflect both the interests/values of each group or institution in the various risk arenas and the shared meaning of terms, cultural artefacts, and natural phenomena among groups" (Aven and Renn, 2010: 39).

There is something that the myriad conceptualizations of risk have in common, and this is the recognition of an outcome as negative for human societies, *by* those societies (Brooks, 2003). Despite the "realness" of a pathogen studied under a microscope, for example, its spread will not be treated as a health risk unless it is recognized as such within the affected society. Defining risks is heavily shaped by the available discourses, which in turn can be culturally, scientifically and politically driven. Though she is not using risk terminology, McIntosh (1996) looks at food and nutrition as social problems and sees exactly that "the sociological aspects of social problems concern the identification of groups that successfully define a situation as a social problem worthy of attention and the rhetorical tools these groups use to persuade others of the problem's existence and importance" (Ibid. 1996: 215). Through the above it becomes clearer why, despite the real, biological and tangible essence of nature and of human bodies, social workings need to be considered as a vital part in the shaping of risk understandings and thus, in the shaping of action taken around those risks. Twaddle (1994 cited in Hofmann, 2011) for example, explains that while *disease* is seen as a tangible health problem "that consists of a physiological malfunction", *illness* is defined as an individual assessment of "an undesirable state of health" and *sickness* is understood as a socially established identity attributed in relation to the inability of an ill person to carry out her social roles and duties (Ibid. 2011:21).

Enriched by theories of cultural theory and social constructivism, sociologists of health and medicine have recognized that medical knowledge is "a series of relative constructions which are dependent upon the socio-historical settings in which they occur and are constantly renegotiated" (Lupton, 2012b: 8) and thus, that there is a need not only for more critical but also for more interpretive studies of health (Lupton, 2012b:19). In her work, Mary Douglas has advanced the questioning of disease as socially and culturally produced, proposing that physical and social bodies are not only co-dependent but also redefining and reconstituting each other (Douglas, 2002). Based upon Douglas' work, Gammeltoft (1999) explains this as a mutual struggle between these social and physical "bodies" of the experiential and cognitive self, to understand and define each other:

[26] The author is referring to the typhus epidemic in Upper Silesia, during the year 1847.

> "The social body constraints the way the physical body is perceived. The physical experience of the body, always modified by the social categories in which it is known, sustains a particular view of society." (Gammeltoft, 1999 :132)

Along similar lines, Di Giacomo (1999) supports that disciplines like cultural epidemiology, should move away from naturalist approaches towards the body and from unproblematized views of society and should instead embrace interpretative analytical pathways. Without taking the anthropological perspective into consideration, Gadamer has argued, the concept of health can turn into a hardly definable 'enigma' (Gadamer 1993 cited in Hofmann, 2011). At the same time, some medical anthropologists like Margaret Lock, emphasize how much of a dangerous misstep it would be to treat the human body simplistically and assume that biological factors play no role at all in the experience of disease (Lock, 2001, Lock, 1993):

> "There is no doubt that biological and genetic determinisms must be rejected outright. But it is also necessary to reject those equally deterministic arguments for the social and cultural construction of the body and related medical practices in which the material body is black-boxed. Truth claims about the body demand contextualization and critical appraisal, but to ignore the reality of biology entirely and its interdependence with history and culture is short-sighted in the extreme." (Lock 2001)

Resonating with the work of Douglas, a 'three bodies approach' is discussed by Scheper-Hughes and Lock (1987) who try to conceptually delineate the individual, the social and the political, through an anthropology of the body. The individual body is depicting what people experience, both physically and mentally. The social body is understood as the ways through which bodily elements are turned into social categories and vice versa, the processes of social structures reflecting onto health experiences. Finally, the body politic refers to the use of health as an object to regulate and be regulated, to be controlled and to control through various means. Michel Foucault (2003) elaborates on how the political is inseparable to the individual and social body of health. According to him, both medical and sociological knowledge "began to operate, hand in hand to make the individual and social body and its diseases legible" and thus to allow for the creation of the means to control it (Ibid. 2003), grounding how power is closely tied to the assignment of health meanings.

Trumper and Phillips (1995) show how the construction of discourse regarding cholera was used to perpetuate social power structures in Ecuador and Chile. Nations and Monte (1996) describe how entire favela communities in Brazil were stigmatized of carrying and spreading cholera, leading to an old favela resident to claim: "we are the disease"; underlying how state-generated discourse saw the problem in the people and not in the disease. The authors discuss how the members of these marginalized communities then refused any help from state-led prevention campaigns (Ibid. 1996) and essentially exacerbated their individual risk through their common reaction to a politically constructed socialization of disease against them. In light of the so far theoretical review, the 'three bodies approach' seems to serve as a useful entry towards a holistic view of health issues (Joralemon, 2010) This is not only because it can capture the many dimensions of disease through individual, social and political spheres, but also because it emphasizes on the permeability of these spheres; an aspect rarely showcased in literature.

2.2 Theoretical grounds

This study is drawing greatly from the theoretical current of Political Ecology. A recent definition by Baer and Singer (2009) sees political ecology not only as a field that is examining the power exercised over natural resources, but as "an approach to understanding the factors that impact and result from environmental-society interaction that recognizes the fundamental importance of political economy, including capitalist production, market-driven distribution of resources, urbanization, and population growth" (Baer and Singer, 2009). Before elaborating on the particular angles that will be examined in this

study, one needs to explain why a framework of political ecology is useful particularly in the study of diarrheal disease. The answer primarily lies on the disease's main transmitter: water.

Water is a resource often scarce in good quality. It is no surprise that it has been frequently the focus of political ecology analysis, showing how natural resources do not get exhausted, polluted or distributed "naturally" but that the experienced scarcities are socially and politically constructed (Aguilera-Klink et al., 2000, Kallis and Coccossis, 2003, Bakker, 2000). As a carrier of intestinal pathogens and also a major determinant of hygiene, water undeniably takes a central part in the study of disease. Water pollution is an environmental issue with direct repercussions to human health, including diarrhoea. The mechanisms in place to control water pollution therefore, determine the spread of disease, indirectly but to a great extent. Pathogens and with them the risk of disease, are being transferred and concentrated along with untreated sewage and bad water supply networks in households, communities and public spaces, at the same time when the benefits of safe water and sanitation are not equally distributed.

The social and institutional rules that govern access to water are bound to reflect also on other crucial determinants of disease, like healthcare availability, quality, and accessibility, when those are looked at in the same context. A critical study of diarrheal disease must, thus, examine not only the sectors of water supply and sanitation, but also at the one of health and healthcare. Political ecology offers a useful framework to trace the roots of inequalities and to explain them, but also to answer how and why knowledge around environmental health risks is being constructed and spread. Power is a central concept, as, of course, it underlines *the political* in political ecology. Power is seen as an implicit locomotive force which fills the gap between policy and practice, defining which discourse will be turned into what action. Thus, the political is highly relevant when seeking to answer why diseases are spread (physically), why they are not addressed and controlled (by preventive environmental and health policy) and why people cannot adequately protect from it (behaviourally and socially).

2.2.1 Building on political ecologies of health

Political ecologists have often interrogated how the marginality and vulnerability of populations is created and by what it is maintained, relating these aspects to an unequal access to resources, to power and to knowledge claims, which in turn define the fate of environments, natural resources and again reflect on societies (Bryant, 1998b). Swyngendouw (2009) focuses on water and elaborates exactly on the political economy and ecology of the "hydro-social cycle", stressing that "particular attention needs to be paid to social power relations (whether material, economic, political, or cultural) through which hydro-social transformations take place" (Ibid. 2009). This kind of questions are, also for Bryant, immensely important for studies of development (1991 cited in Mann, 2009). But even though water has gained increasing attention from political ecologists over the past two decades (Budds, 2013, Kaika, 2003, Loftus, 2005, Otero et al., 2010, Swyngedouw, 1997), such research has rarely been overtly coupled with issues of health.

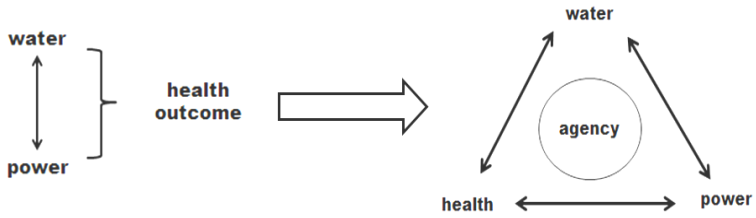
However scarce, the political ecology of health and disease is not an entirely new field. Mayer (1996b) traces the political ecology of disease back to Turshen (1977) and stresses how important it is to "understand the social, cultural and political factors which influence disease; the environmental characteristics which influence and frequently determine the nature of host-agent interaction; and the behavioural dimensions of individual or group susceptibility to disease" (Mayer 1996: 442). Mayer sees the value of integrating human agency within specific spatial, cultural, political and social contexts, which would according to him reveal aspects that were never before directly linked to the spread of diseases or epidemics (Ibid. 1996). However, the criticism of his work points to a lack of enough theoretical and empirical links that can support his claims and to a mistaken interpretation of political ecology as "the integration of cultural ecology and political economy" (King, 2010).

King (2010) offers an evaluation of the sporadic studies on a political ecology of health and argues that the discipline "offers a needed framework for understanding how social and environmental systems intersect to shape health across spatial and temporal scales" and thus "it would assist in illustrating how these relationships shape the transmission of disease and the ability of institutions to provide effective treatment". Using the example of the governmental reactions towards HIV in S. Africa , King recognizes that politics are surrounding discourse and policy around the disease (Ibid. 1996). However, he does not go into examining exactly why and how this happens, thus his case is dragging in empirical depth. A better example comes from Richmond et al. (2005), who drew from Mayer (1996b) and applied his concept on the case of Aboriginal Canadian Peoples (First Nations). Authors describe how processes of globalization affected aquaculture and caused local communities to lose their access to resources of land and water, leading eventually to their economic and social suffering (Richmond et al., 2005). The impacts that environmental changes had on the population's health and well-being are accentuated, and they way the people understood and reacted to such changes is brought forward; merging global and local analytical scales and including human agency in the analysis (Ibid. 2005). An interesting study by Guénel, that could be characterized as a political ecology of disease, even though it does not claim to be one, looks historically at the co-evolution of the French colonisation process and the spread of malaria in Vietnam (Guénel, 2004). The author discusses how the surrounding ecology and the movements of migrating populations affected the epidemiology of malaria, at the same time underlining the effect of economic and political changes in determining the formulation and the success of certain control strategies against malaria in the country (Ibid. 2004).

A political ecology of health approaches issues from a slightly different vantage, focusing on the access to health services and not strictly on the patterns of disease. Blaikie and Brookfield (1987) have discussed the socially produced unequal access to arenas of health decision-making and have demonstrated how this consequently renders certain groups in society more vulnerable than others. Similar exemplary works to this direction have come from authors, who do not identify themselves as political ecologist but incorporate questions, methodologies and analyses that are keen to the discipline. The examination of the birth-control policy in S. Africa by Susanne (2006), for example, reveals how the official decisions entailed elements of national pride, discrimination against "poor whites" and political pressures from groups "whose competing interests whether nationalist, politically moderate, feminist or eugenic" (Ibid. 2006: 106). The work of Farmer (2005) closely looks at how access to healthcare is intricately linked to people's struggles for social and economic rights and how the experienced inequalities in those fields "can indeed generate a kind of quiet brutality" (Amartya Sen in the Foreword of Farmer, 2005) against the health of the least powerful.

Studies such as the above are not clearly addressing aspects of access to natural resources or environmental change, but are rather focused on the political economy and institutional analysis of health(care). Nevertheless, these studies are good examples of what is missing from the so far written political ecology of health and disease. As Collins (2001) has noted, "studies that are able to identify the processes and perceptions that define a political ecology of healthcare, are rare" (Ibid 2001: 240). This additional focus would enable research to see health in its institutional complexity and to question it as a cultural and social category, as a subject of control and as a means of controlling. In other words, a political ecology of disease would have to deal with the idea and the concept of health, not only as an outcome, but more as part of the process that shapes health outcomes (Fig. 2.1).

Figure 2.1: From non-problematized views to an integrated and critical analysis of water-related disease



Own elaboration

As Roseberry (1988 cited in Leatherman 2005) pointed, uniting structure and agency is exactly where the strength and unparalleled potential of political ecology lies. It is therefore crucial to involve agency when looking at how structures in the fields of health and water interact and what this interaction produces, as it is governed by power distributions and power relations. In doing so, the valuable conceptual and methodological tools used in critical medical anthropology are being considered.

2.2.2 Borrowing from critical medical anthropology

In the first part of this chapter, I discussed why ethnographic and deconstructive approaches to disease are considered valuable. Although this study is not entirely anthropological, the field is considered a great conceptual and analytical resource for dealing with health risk perceptions and health-related behaviours. These are considered important in understanding why certain preventive measures are successful and why others are not, in specific contexts. The connection of health behaviours to cultural norms, social structures and local beliefs can point to useful approaches for the control of health risks but can also reflect back to the society and illuminate important structures therein.

Previous studies from an anthropological vantage, particularly on diarrhoea, have shown its cultural aspects and how these shape people's attitudes and actions towards the disease, eventually shaping its outcome:

> "Connotative aspects of a diarrheal episode might involve subtle cues which trigger the memory of a past illness experience, feelings of fear or vulnerability related to a particular season, celestial event, or environmental happenstance, or ideas about causality linked to humors, sexual behavior, the excessive consumption of sweet foods, witchcraft, or the evil eye. They might also index cultural notions of blame or responsibility, issues related to entitlement which influence health seeking behavior; or the need for secrecy associated with stigma."(Nichter, 1996b: 116)

Under this light, when seeking to adequately explain the disease's spread and to provide recommendations on its control, questions of meaning, belief and culture gain in significance. Some medical anthropologists have further acknowledged how inextricable culture and behaviour is with the holding and the exercise of power. Young (1982 cited in Lock 2001 :480) locates this political aspect of health in that "all medical knowledge and practice is historically and culturally constructed and embedded in political economies, and further, subject to continual transformation both locally and globally". When looking at the prominent or submerged forms of knowledge about disease or about health and the human body, one will inevitably question the scientific field of medicine. As Starr (1982 cited in Wolpe, 1985) comments, the medical profession has acquired through time, a sort of "cultural authority" in society. According to Navarro (1984 cited in Weiss and Lonnquist, 2003), this is achieved through the use of coercive mechanisms that powerful groups possess and use in order to force this authority onto others. Thus, when anthropological accounts trouble issues of health discourse and practice, they ought to also look at how struggles and claims in the field connect to the socio-economic spheres in national and international levels. In other words, a medical anthropology needs also to be critical.

In the field of critical medical anthropology, health is explored by laying bare issues of access to wealth and power, relating them to patterns of disease and the cultural meanings ascribed to it (Joralemon, 2010). Baer and Singer define the field as:

> "[...] an approach to understanding human health at the local, regional, national, and international levels, that emphasizes the central role of interaction between structural factors (like the distribution of power in society and the structuring of social inequality), biological factors (like human biological evolution and pathogenic adaptation to human hosts), and cultural patterns (like social beliefs systems, practices, and organization) on human health and health-related behaviours." (Baer and Singer, 2009)

Such an approach would not only offer explanations on how disease is experienced, but would also answer the question of *why* this happens. In this regard, the principles and themes that are considered in critical medical anthropology are very relevant for a wide range of fields. Looking at its typical fields of enquiry, one observes the complementarities and overlaps between critical medical anthropology and a political ecology of health and disease, as discussed above.

Box 2.1: Lupton's fields of enquiry for critical medical anthropology

- The social production of medical knowledge
- The functions of medicine and public health in social control
- The importance of consciousness and agency in health-related behaviours and beliefs
- The relation of health and medical language to power
- The identification and labelling of disease
- The contestable nature of medicine and disease as biomedical realities, and
- The meaning of the illness experience (citing Singer 1990)

Adopted by Lupton (2012a).

Baer (1996) has detected the potential and advantage of uniting these approaches as "critical medical anthropology shares with political ecology a commitment to merge theory and social action", while content-wise they address the coupling of socio-environmental and cultural aspects in the study of health. This merging however leaves room for criticism, in terms of their epistemological contradictions. Despite the numerous exceptions, political analysis has often maintained a rather positivist and constructivist scientific view. Anthropology, on the other hand, has been predominantly deconstructivist in its approach. The importance of balancing the two analytical pathways (the critical and the interpretive) has been in the foresight of criticism from those arguing that when critical, medical anthropology can lose focus from the subjective personal experience of illness (Scheper-Hughes and Lock 1986 cited in Joralemon, 2010: 47). As Joralemon (2010) argues however, critical questions are inherent to cultural-anthropological enquiry and should not be seen as complementary or external to the lived reality of people. In accordance with him, Lupton (2012b) contends that "at their most political, social constructivist approaches are hard to differentiate from critical medical anthropological studies".

Whether in greater or lesser extent, the differentiation that has existed between studies is not to be seen as a daunting barrier, but as an indicatory mark of where attention should be paid when attempting to merge theoretical approaches and follow a clear epistemology. Transcending boundaries is more an opportunity than a constraint to research, which nevertheless has not been yet attempted greatly between these two fields. Even though medical anthropologists have considered engaging in a political economy type of analysis of health at least since the beginning of the 1980s (Morsy, 1979), the integration of views from political ecology is a more recent endeavour. The work of Baer and Singer (2009) discusses and embraces the unity of the two currents, tracing their differences and their meeting points. The problems put forward by political ecology, critical medical anthropology and the political economy of health, might depart from different stimuli and might also use distinct concepts and methods, but they do converge in the questioning of given political, social and economic systems in relation to human health. Drawing from the meeting points of these disciplines, this thesis aims to elucidate *what* connects the sectors of water,

healthcare and disease in terms of policy, politics and practice, as well as *how* and *why* these sectors are connected.

2.3 Analytical fields

Within the theoretical grounds discussed, the angles that this study seeks to analyze can be roughly divided between the politics of risk communication and the epidemiology of health messages. Information about diarrheal disease is risk-related information, which according to Bennett et al. (2010) is continually and intricately "constructed, tested, communicated and validated (Ibid. 2010:25). The politics behind the prevailing discourse and thus, behind the policies that follow, are situated in the core of this study's enquiries. The communicative process is then seen as "a tangled web of signs symbols and messages" (Krimsky and Plough cited in Bennett et al., 2010:56) and the perception of risk that is shaped through these processes, is "a critical part of risk amplification and stigmatization" (Kasperson and Kasperson, 2005: 175). The 'infectivity' of health messages and their potential to be adopted as healthy behaviours, depend on this communicative process; on its content and its ability to include and involve the public. In turn, these elements can reflect aspects of the wider socio-political environments within which disease is encountered. In consideration of the above, the analysis focuses on the processes of health education and health-related information circulation, questioning the levels of public participation and social empowerment that they involve.

2.3.1 The politics of risk communication

There are many aspects that pertain to the politics of risk communication. Firstly, the content of this communication is being shaped through processes that involve contestation about the origin and the nature of a risk, as well as about how to mitigate it. Bryant (1998) spoke of how political this process of identifying problems is in a society, emphasizing that "the process of knowledge production reflects and in turn often reinforces social and economic inequalities in so far as knowledge claims may be used" (Bryant, 1998b). Since problems are the outcomes of risks and risks themselves are social problems, any message that seeks to be informative or educative entails an assumption or a claim on the validity and relevance of some piece of knowledge over another. It is thus useful to examine which messages came to be prominent in health risk communication, through which processes this took place and whose interests did it reflect.

Apart from the mere content, the means and methods employed in risk communication can also be imbued with intentions of exercising authority and controlling. The use of language, the room allowed for questioning and altering the communicated messages and the underlying discourse that accompanies them, can all emerge from and result in, the distribution of power. Looking for instance at how certain groups -or places- can be discursively stigmatized as the carriers of a health risk, Bennett et al. (2010) stress how "language used to communicate complex scientific issues is important in helping to shape the nature of the debate and the attendant understanding that comes with it" (Bennett et al., 2010: 34). Similar observations of how risk perceptions are being built emphasize that "as a place comes to be dominated by a single negative attribute, while other attributes characterizing the place recede into the background or insignificance, identity is altered and stigmatized"(Kasperson and Kasperson, 2005).

Seeing the centrality of political and social power in shaping the messages around risk and the means to communicate these messages, gives rise to the question of *where* and *what* is "the political". One should begin from the concept of power, which Paulson (2003) explains not only as an exogenous pressure exercised on individuals but also as "a social relation built on an asymmetrical distribution of resources

and risks" (Hornborg 2001 cited in Paulson, 2003) and an internal characteristic that constitutes the subject: us and others (Butler 1997 cited in Paulson, 2003). Based on these understandings, a definition can be possible that looks at politics as "the practices and processes through which power, in its multiple forms, is wielded and negotiated" (Paulson et al., 2003). Politics can be then found not only in the official political and decision-making arenas but also in every day interactions, language expressions and people's practices. Politics in this form can often be silent, indirect or underlying.

Based on this definition of politics, risk communication processes and outcomes are worth examining in formal and informal spheres, through the officially circulated discourse but also through the discussions and meanings to be found in lay contexts. Resonating with Paulson's approach, Swyngendouw (2008) argues against the conceptual compromise of the political as simply a part of what politics do. He defines the political as "the articulation of voice that demands its place" (Swyngedouw, 2008) and "the space for the arrangement of public encounter of heterogeneous groups and individuals" (Marchant 2007 cited in Swyngedouw 2008). Unlike Parfitt (2002), who holds that politics is (rather than *should* be) "about controlling power, stipulating rules and conventions to limit abuse of power", Swyngendow (2008) see politics (of today) as being post-political. Nonetheless, Parfitt (2002) does recognize that the space between un-decidability and decision is where the political works; meaning that one decision necessarily excludes another and thus, in the process of decision-making "some will benefit while others not" (Ibid, 2002:101ff). When such inequalities are exacerbated, according to Farmer (2005:16), some people's political rights are hollowed -even if they are exercising them- as their voices are unable to translate into policy.

Being a one-party rule state, Vietnam becomes a particularly interesting field for examining the implicit and explicit demonstrations of power though direct and indirect political processes of risk definition and communication. The central government's authoritarian attitude in policy and decision-making, has been seen as preventing the development of truly bottom-up processes (Brocheux, 2012). According to others, it is Vietnam's Leninist tradition that cannot allow for true participation, but rather for what was termed by Roeder as a process of coproduction; "an implementation of decisions already made" (Roeder, 1989 cited in Smith 2002: 34). Nonetheless, many authors have recognized that the Vietnamese public has developed way of acting politically, even if their political rights are formally rather restricted (Gainsborough, 2010a, Smith, 2002). Beresford (2008) in particular has noted for example that the *đổi mới* policy renovations made information more accessible and has allowed the rise of more critical opinions, both from the press and from within the government. Fforde (2012) has even come to question the sovereignty of the ruling Party due to the unprecedented criticism that it received due to the recent negative aftermaths of Vietnam's economic policy. On the other hand, as Fforde emphasizes, the local arms of the party-state remain coherent with state ideology and have managed to maintain their top-down authority, "often leading to striking results in terms of local development and order" (Ibid. 2012: 108).

Through the process of communicating disease-related information, the Vietnamese state produces messages that shape public opinion around the causes of disease and around the ways possible to address it. In a context of a directly exercised control through party politics and a salient political expression through socio-cultural processes, it is interesting to examine how interpretations and explanations of a water-related infectious disease are worded and communicated. How much heard are the voices of people who suffer disease more than others and with what means does the state control the formulation and the voicing of public concerns and demands? Who is given the space to participate in shaping the discourse around disease? What shapes the ability of making healthy decisions and how can different groups in society get access to valuable resources and information that will empower them towards this direction?

2.3.2 The "epidemiology" of health messages

It was discussed in the beginning of this chapter how failures in public health continue to occur worldwide, despite the amplitude of knowledge developed in the field of disease prevention and cure. One of the main challenges for public health has been to find ways for adapting information and expertise to the various different contexts where those are needed. An even greater challenge has been to do this with the participation of local people and with respect to local culture (Trostle, 2005:26ff). Studies on the perception of risk have recognized that scientific knowledge can be very different from the public awareness around the same risk, stressing the importance of education and information processes "where both sender and recipient interact in order to develop a common frame for the understanding of the problem" (Hampel, 2006). Nichter asserts that "as important as an epidemiology of disease is an epidemiology of health communication" (Nichter, 1996b :125). In other words, in order to understand which aspects determine impactful public health, we need to examine why certain health messages become "contagious" and useful, while others obliterate and fade in the various social and cultural contexts. Nichter further argues for an approach to health education that departs from "studying what a population *does* know, conceptually and experientially" (Nichter, 1996b: 140) and against one that tries to inject understandings of what that population is thought of as simply not knowing.

Public participation is a crucial aspect in shaping and communicating health messages, as it informs policy of the community's concerns, ideas, abilities and demands on issues that surround health risks. Any approach that would treat such aspects of public knowledge and attitude towards risk as irrelevant, would "fail to understand the basis of public concerns and [would] provoke feelings of antagonism and rejection" (Bennett et al., 2010: 32). Moreover, the receptivity of health messages depends greatly on the usefulness that the public sees in them. As Moore rightly points out, "people do not need information for information's sake, but as a means of taking responsibility for personal choices, improving their own or their family's well-being or supporting their role in society" (Moore 2002 cited in Bennett et al., 2010). As more and more studies have come to show, a successful process of health communication needs to be informed of the understandings and the experiences of the people whose health is at stake. In the words of Nichter (1996b):

> "Lack of sensitivity to the health concerns of lay persons, and the introduction of educational messages that fail to take their health culture into consideration will result in misinterpretation, the compartmentalization of information, and desensitization to priority issues." (Nichter, 1996a: 399)

Following the positions of Nichter and Nichter (1996a) and in concert with wider efforts to combine epidemiological and anthropological undertakings[27], it is of great interest to examine "epidemiology of health messages" around diarrheal disease in the hotspots of its prevalence, such as in the Vietnamese Mekong Delta region. This would require questioning whether the health education approach has been participatory and inclusive or not and seeing how this has affected the receptivity, the use and the sustainability of health messages within local communities. It would also require engaging into the firsthand exploration and analysis of those lay understandings and concerns, which one would wish to find reflecting in health education messages. Combining the above, thus, a medical anthropology would require looking at the discourses and the practices around disease through a combination of cultural and institutional analysis. But medical anthropology needs also to be critical. Within the wider politics entailed in processes of risk definition and communication within societies (section 2.3.1), there is a critical aspect of risk communication which connects with an "epidemiology of health messages" and deserves particular attention: the potential of health education to empower.

[27] For a historical review of how the disciplines of Anthropology and Epidemiology began to bridge their approaches during the last decades of the 19th centuries, see Trostle (2005: 21-41).

The empowering potential of health education

When health education efforts are able to foster good understandings of how and why to protect oneself from disease, they can achieve not only a change in disease-specific behavior but can also have "broad effects and benefits for prevention, disease management, and well-being across the life span" of a population (Fisher et al., 2011). Strengthening the sector of health education via widespread comprehensive information on various health topics is a process that promotes people's health literacy. Health literacy is a concept which, according to Nutbeam (2000), can be defined as "the cognitive and social skills which determine the motivation and ability of individuals to gain access to, understand and use information in ways which promote and maintain good health" (Nutbeam 1998 in Nutbeam 2000).

One of the key points of this definition is the necessity for health literacy to address three aspects of health- related information: access, understanding and use. With regards to the prevention of diarrheal disease, for example, health literacy is not achieved solely through increasing the availability of hand-washing promoting material, if hand-washing benefits are not understood and/or if the practice of hand-washing is not adopted by the public. Similarly, health literacy cannot be achieved simply when there is a realized need and desire for ORS treatment against diarrhoea, if people lack the ability to attain it. The second key point in the above definition is that health literacy entails social skills. Thus, the ability of taking health-related action is socially shaped within society and thus goes beyond the individual's awareness of preventive health measures and of their usefulness. As Nutbeam continues, "[...] by improving people's access to health information and their capacity to use it effectively, health literacy is critical to empowerment" (Nutbeam 1998 in Nutbeam 2000).

Seen under this social light, health education is not only about individual understandings and participation, but also about involving the community, setting common goals and motivating each other through emergent health beliefs and social expectations of behaviours (Rosenstock et al., 1988). Bandura (2004) has elaborated on the 'social cognitive means' of health promotion, discussing how the effects of health education can be strengthened or by which factors they can be hampered. Focusing on the importance of people trusting in their own capability to control and change their health through their choices, Bandura (2004) stresses on the notion of self-efficacy beliefs. The author argues that people's health behaviours are shaped by a multitude of questions, which include: what kind of outcomes do people expect from their changed health behaviours; what reactions are those changes expected to receive in their social environments; how well do they think they can perform those changes and how much are those behavioural changes attuned to wider goals that people value as important (Ibid. 2004).

Through this approach it becomes clear that an epidemiologically successful and socially empowering health education is not only a personal but a social matter, as "it requires changing the practices of social systems that impair health rather than just changing the habits of individuals" (Bandura, 2004). The views of Bandura resonate with what Nutbeam described as health literacy, which cannot be achieved without appropriately shaping the content and the methods used in health education programs and campaigns (Nutbeam, 2000). Wallerstein and Bernstein (1988) inform us of Freier's empowerment approach to education and offer a model adapted to health, defining empowerment as "a social action process that promotes participation of people, organizations, and communities in gaining control over their lives in their community and larger society" (Ibid. 1988). In this regard, the target of empowering health education is to bring individual and group structural change, through promoting community organization and control over circumstances that -they know- affect their health.

Health information, education and communication (IEC) activities have been largely used in the prevention of infectious epidemics, such as diarrhoea. Behavioural change is usually proclaimed to be one of the basic instruments for the eradication of disease (GTZ and Zimbabwe National Family Planning Council, 1994), but ideas of health literacy, self-efficacy and empowerment in health education have not seen much emphasis or application in public health approaches. In consideration of the Vietnamese socio-political context, it is interesting to trouble issues of inclusion and bottom-up representation with regards

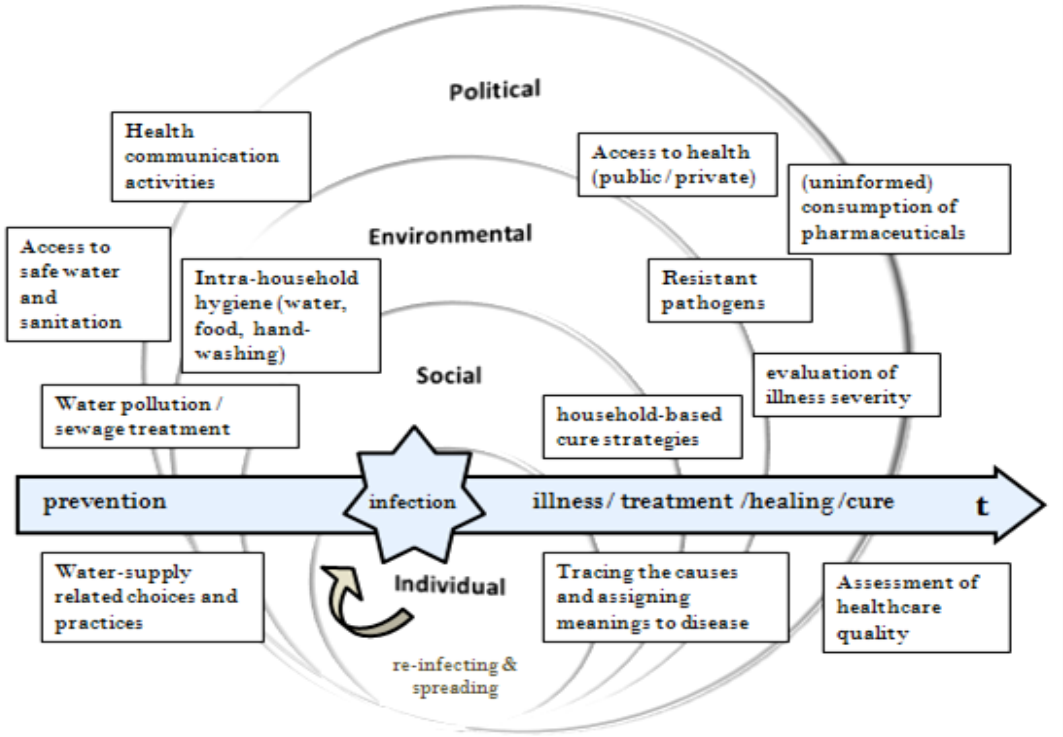
to health. Seeing how the political is to be found when voices try to be heard and groups strive to encounter (Swyngedouw, 2008), the spheres of access to health education and of empowered community action, appear greatly relevant. Recognizing people's uncertainty behind the science of health and the professional authority that medicine has gained, it is easy to see how feelings of self-efficacy can be hampered and control over health can be lost, both in individual and social levels. Questioning why this is the case, appears to be a lacuna in literature, which a framework of political ecology and critical medical anthropology can substantiate.

2.3.3 A framework of analysis

Human health is a complex field and research on health needs to embrace the challenge of employing complexity in its empirical and analytical endeavours. Many of the reports addressing environmental health and proposing models for examining how the human-nature-society interaction results in the exacerbation or mitigation of health risks, have largely been inconsiderate of how inter-woven the socio-economic, environmental and cultural contexts really are. As a consequence, many of these approaches remain critically restricted as they don't examine these connections. Briggs (2003), for example, offers a framework of examining children's health, especially looking at health risks that are shaped by environmental phenomena. Although the author (Ibid. 2003) elaborately develops a set of indicators, he provides no clear explanation of the connections between the "contexts" and the preventive or remedial actions (of individuals, communities or institutions), apart from recognizing that both the contexts and the actions have an impact on risk exposure (Fig 1 in Annex). In a similar example, Morris et al. (2006) discuss environmental health by encapsulating context as one important, but rather non-problematized, determinant of people's exposure to health risks. The authors (Ibid. 2006) provide a framework which deals with health challenges in reference to environmental, behavioural, social and economic factors, but in a rather depoliticized context. Namely, the approach falls short of analyzing contextual aspects of culture and politics and to relate those, not only to the exposure and the effect of a risk, but also to its drivers and to the policies (actions) around it.

Despite the potential usefulness of the above models to fuel discussion on integrating approaches to health problems, they can hardly capture the complexity that human issues present in the different cultures and places where they are encountered. The concept of complexity has been a re-occurring theme of scholarly pursuit, especially in research that moves across disciplines (Urry, 2003). Gatrell (2005) has linked complexity with health studies and emphasized on the analytical advantage of using complexity "as a vehicle for moving away from reductionist accounts [...] in research on health inequalities, spatial diffusion, emerging and resurgent infections, and risk" (Ibid. 2005). Complex systems, according to him, are basically composites that bare emerging characteristics and thus behave in ways that cannot be predicted using knowledge on their singular composing elements (Ibid. 2005). Conceptualizing the incident of diarrheal disease as it evolves in time and as it is affected by preventive, treating, healing and curative strategies and experiences, this thesis tries to organize its analytical sub-fields without drawing strict dividing lines between the sources and the outcomes of phenomena (Fig 2.2).

Figure 2.2: Conceptualization of the analytical framework for the study of diarrheal disease



*The placement of the different boxes (events, conditions and processes) is random in relation to the contextual spheres. As it is explained in the text, each of these boxes represents an expression and an outcome of the interplay between these spheres.

Embracing the concept of complexity, but also attempting a level of systematic analysis, it traces some events and conditions that relate to the incident of diarrheal disease and seeks to examine how these are shaped through the interaction of four contextual spheres: the individual, the social, the environmental and the political. This framework is meant to address the challenging fact that "both pathogens and ideas about pathogens are transmitted through populations" and thus that "the tools and theories to understand these phenomena must be able to move between the intracellular and the interpersonal, tracing causal relationships among pathogens, behaviour, power and disease"(Trostle, 2005: 41). The temporal assortment of conditions and events that shape the vulnerability of individuals to disease is seen in relation to the interpenetrating spheres of environmental, social and political contexts. At the same time, it is acknowledged that the individual experience, reaction and behaviour in relation to disease can impact on the other spheres as well. For example, the excessive use of antibiotics (individual), promoted by practitioners or pharmacists (institutional/socio-economic) can contribute to pathogens' resistance-building (biological/environmental) and make other individuals more vulnerable to disease (social). On the other hand, an organized reaction of a community against an industrial source of water pollution (social/political) might have an effect on the adopted policies of water management (political/environmental) and in turn benefit the residents of the communities who were previously exposed to such waste (social /individual). It is therefore important to emphasize that the four contextual spheres, are not meant as non-interacting boxes, but rather as being in constant interplay.

This conceptualization was inspired by Scheper-Hughes and Lock's (1987) 'three bodies approach' to health, adapted particularly for the exploration of diarrheal disease, in the Mekong Delta. The individual sphere resembles what authors (Ibid. 1987) described as "the individual body" of health and here refers to the physiological characteristics of individuals, such as their medical history or their nutrition habits. Moreover, it refers to the different ideas that people have on how disease is caused and treated and their practices in relation to these beliefs. Lastly, the individual sphere captures the structural conditions that

define the individual, regarding for example the access one has to healthcare of good quality or the ability to pay for medical treatment. The social sphere, following the "social body" (Douglas 1970 cited in Scheper-Hughes and Lock, 1987), consists of categories that are ascribed to certain social groups in relation to disease and the various ways in which the risk of the disease has been connected to social values, morals and behaviours.

The environmental sphere is something which Scheper-Hughes and Lock (1987) do not extensively trouble. The introduction of an environmental sphere was considered important for two reasons. First, due to the inextricable connections between diarrheal disease and water, it was seen as useful to underline issues of water management and water pollution, as well as flooding events or clean water scarcity experiences. Secondly, the environmental sphere was meant to represent the biological aspects of disease also from the side of the pathogens' complex ecology, and not only from the side of the human body physiology, where the focus usually lays. This sphere thus, represents the biophysical conditions and phenomena, including pathogens, ecosystems and the climate, but also human population dynamics and their activities in using natural resources or causing the pollution and degradation thereof. Finally, the political sphere includes more than the "body politic" of health as it is discussed in the three-body approach of Scheper-Hughes and Lock (Ibid. 1987). This sphere here is meant to capture the wider spaces and topics around which negotiation takes place and through which power is expressed. These might not only act to directly control human bodies, but also to define the fate of natural environments, to distribute the benefits from the use of resources and to define access to public goods and services. This includes the processes through which certain knowledge claims come to dominate in the discursive practices of various actors around issues of health, water and disease.

CHAPTER 3

FIELDWORK METHODOLOGY

This chapter outlines and discusses the methodological approach that was followed for the collection and analysis of data. It describes how research set to investigate aspects of individual, social, environmental and political spheres that relate to the spread and the control of diarrheal disease, guided by the theoretical and conceptual framework described in the previous chapter (2). With the purpose of the research being to link the biophysical attributes of disease with the discursive practices around it, the analysis needed to move from statistical to interpretative grounds and from obtained "factual" data to more critical views of their origins. The combination of qualitative and quantitative methods is explained and its advantages pointed out (3.1). After briefly justifying the research strategy approach and the use of the case-studies, the chapter offers a short listing and description of the data collection methods. Furthermore, the key characteristics of Can Tho City and the two case-study areas are being discussed (3.2). Finally, the special characteristics of Vietnam as a field for social research are commented with regards to how they affected the methodology of this research (3.3).

3.1 The social side of disease through a mixed-methods approach

Informed by the epistemology of medical anthropology, which "has so thoroughly grounded its contribution to the study of health and disease on a combination of qualitative (e.g. participant observation and open-ended interviews) and quantitative (e.g. surveys and questionnaires) methods of investigation" (Joralemon, 2010: 11), this research embraced a mixed-methods approach. Each method that was used, offered information (i.e. interview transcripts, printed material of health communication, legal documents, health statistics and household survey results) which was analyzed both quantitatively and interpretively, trying to look at secondary and primary data critically and to place them in context with the circumstances and the motivations that guided their generation.

According to Blaikie (2009), "the use of single methods is usually associated with narrow and perhaps one-off research topics. Such research provides limited opportunities for advancing knowledge. The use of a variety of methods, however this is organized, should be seen as the norm". As this research is ground-based and constructivist in its approach, it uses multiple methods in order to shed light to multiple angles of the problem. Investigating the socio-political and cultural determinants of disease was considered to be a venture needing to trace the policy, the practice and the type of discourse that institutions and people generate. For this, the critical analysis of printed documents, official reports and of statistics was essential, but it was also necessarily accompanied by an analysis on the views and opinions that are circulating within pertinent formal and informal spheres. Although both qualitative and quantitative approaches were employed, the focus for data collection and analysis remained mainly qualitative, as this was considered to be most appropriate in the overall scope of this research. Aiming to explore how the spread of diarrheal disease is affected both by the macro-level processes of policy and by the micro-level aspects of policy acceptance, transformation and implementation, the flexibility to move between institutional, sociological and anthropological analysis was needed.

Using the semi-structured interview as a main qualitative research method, a range of topics were discussed with a range of respondents, from state representatives and experts to residents of urban, rural, poor and non-poor households. Some of the findings would be successfully triangulated, while others

would be conflictive or inconsistent. Complementary qualitative methods of observation and in-depth interviewing were also employed, in order to explain the contradictions or to strengthen the findings. In order to obtaining information on local people's current practices around water, disease prevention and healthcare, as well as to capture their prevalent ideas and attitudes around these issues, led to the execution of a household survey. While executing the survey, an open-ended and in-depth manner of interviewing was attempted, to allow for discussions beyond the questionnaire's pre-defined questions and categories. Secondary state-generated statistics (of healthcare, disease, water supply, sanitation, water quality, hygiene) were analysed and compared with primary results from the household survey and with secondary scientific literature from the region. In this regard, research followed a rather praxeological knowledge approach, in which contradictions between quantitative and qualitative results were not seen as contradictive of an assumption about reality, but were critically examined and seen as "part of reality" (Harrits, 2011: 162). It is however important to stress that the combination of research methods that was employed to each institution and to each respondent, was limited to what was allowed by the Vietnamese state authorities and to local behavioural norms which I tried to pay respect to, with the advice of the local research assistant (see also chapter 3.3).

3.1.1 Abductive research strategy and the use of the case study

The use of qualitative methods, particularly during the first stages of the study, allows for the complexity of the research question to arise and crystallize (Maxwell, 2004a, 2004b cited in Harrits 2011). Through a number of semi-structured interviews with local experts and state representatives, the research problem was delineated in dialogue with information coming from the field. Research maintained a grounded theory approach by identifying and examining a problem through an explorative and reflective process, rather than having clearly defined research hypothesis. The results of this explorative phase led to the decision of selecting and examining two areas that would be distinctively rural and urban.

Namely, there was an emerging argument from public office representatives, that people living in urban and rural places get affected by diarrheal disease in a different way. Moreover, the studied literature and the collected secondary data were indeed pointing to the phenomenon of urbanization as a vivid on-going process in the region, strongly affecting the local population. The drive for urbanization was seen to be a consistent leitmotiv in nationally and locally proclaimed targets of development. For all these reasons, urbanization was considered to be a valuable aspect against which to further the analysis of a health risk. The comparison of urban and rural areas would allow "for a very intensive dialogue between theory and evidence" (Mahoney and Rueschemeyer 2003 in Mollinga, 2008) about the process of urbanization itself and of how -or whether- urbanization affects the incidence of disease.

Gerring defines a case study as "an intensive study of a single unit with an aim to generalize across a larger set of units" (Gerring, 2004). In this sense, the units of this study would be considered to be (i) the urban and (ii) the rural division of a district, representing accordingly the rural and urban regions of the Mekong Delta or of the country; depending on the generalization that one is willing to attempt. Urbanization, however, is not considered as static outcome and thus, can hardly be seen as completely absent from some places (rural) or a finished product in others (urban). Seeing urbanization more as a process, it is then perhaps more useful to use Yin's definition of a case study, as "an inquiry that investigates a contemporary phenomenon [like urbanization] within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident" (Yin, 2003 :40, my addition in bracket). Based on Yin's (2003) case-studies types, this study covers the nexus of diarrheal disease determinants in the context of the Vietnamese Mekong Delta. Within this nexus, research examines two cases (an urban and a rural area). This two-case design involves embedded units of analysis that include the state, organizations within and beyond the control of the state and individual citizens (for a visualization of Yin's types of designs, see Picture 1 in the Annex).

3.1.2 Methods of data collection and analysis

The qualitative methods of collecting data included the semi-structured interview, the unstructured in-depth interview and the observation of participants by the researcher. In total, there were 87 interviews held, most of which (78) were with semi-structured interviews with local cadres who were involved in water and/or health issues. The rest nine were in-depth interviews with selected household members in the case-study areas. Moreover, there were eight informal discussions, held with informants who prefer to remain anonymous and are thus not included in the listing of the interviews (Table 3.1).

Table 3.1: Number of interviews conducted by research phase and by administrative level

Research phase (chronologically listed)	**Number of interviews**				
	Commune	District	Province	Ministry	TOTAL
Phase 1: Contextualization with the field	-	13	10	4	27
Phase 2: Selected districts	3	18	-	-	21
Phase 3: Household survey in the communes	131				131
Phase 4: Selected households in-depth	9	-	-	-	9
Phase 5: Targeted offices	8	10	6	6	30
TOTAL	151	41	16	10	218

The notes and jots that were used to document observations from the visited offices and households were being transformed daily into fieldwork diary entries. Photographic material was collected on occasion to complement these observations. The quantitative method of collecting data was the execution of a household survey, conducted in a total of 131 households. Nearly half of these households were located at the urban case-study of Le Binh ward[28] (62 households) and the rest at the rural case-study communes of Truong Long and Giai Xuan (69 households). The findings of the survey were geo-referenced through the collection of GPS points (see Picture 3.2).

Secondary material was collected from governmental offices, libraries and from the internet. This included statistics, laws, policies, reports and maps. Data related to the presence of water supply connections, the use of other water sources, the types of sanitation, the quality of water in the households and the prevalence of diarrheal disease, were analyzed in Microsoft excel. Local articles of the press were collected from online versions of provincial and national newspapers, providing with 53 selected pieces, most of which were published during the research period (2011 – 2012). All the written works and documents that were not available in English were being translated by the local research assistant. The overall duration of fieldwork was no more than ten months (from May 2011 to March 2012). Throughout this period, any interaction with governmental offices or local household members had to be pre-scheduled and approved by the Vietnamese state's administration of the district and the provincial level. In order to comply with this process of 'official research permit' acquisition, the fieldwork was divided into five distinct chronological phases (Table 3.1).

The need for official approval was also often an obstacle to the intuitive flow of research activities, taking away opportunities for extended discussions, informal meetings and spontaneous interviews. However, it also allowed for the necessary periods in-between data collection, which proved valuable for reflection on the research findings. As a consequence, each new research phase was not only guided by the original research objectives but also enriched by the field data. Details about the methods followed during each of

[28] In Le Binh ward, interviews took place in two distinct areas: Yen Binh and Yen Hoa.

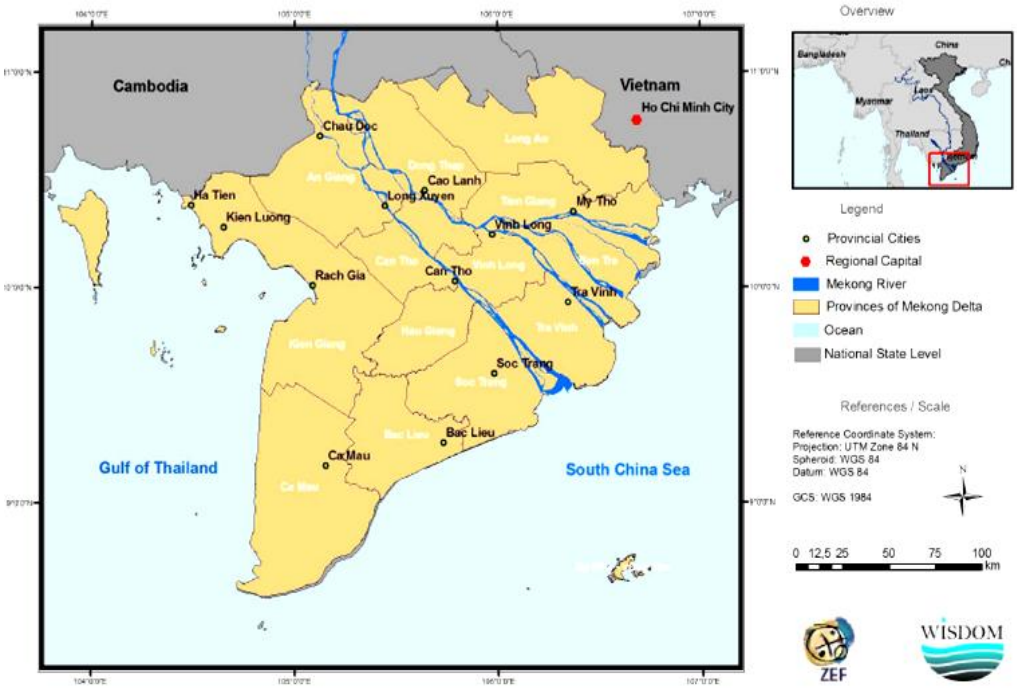
the above research phases and about how these methods corresponded to each of the study's objectives, are provided in the section "Trajectory of fieldwork" of the Annex (I).

3.2 Location background: rural and urban case-studies

Research was situated in Can Tho City, the central province of the Vietnamese Mekong Delta (Picture 3.1). The selection of Can Tho versus other provinces of the Delta had been already established by the WISDOM project team and by the academic supervisors, before the start of this study[29]. Can Tho used to be a primarily agricultural area, which in recent years has been urbanizing rapidly, developing its infrastructure and transforming industrially. Much of the agriculture and aquaculture remains strongly present, but these sectors are also experiencing their own transformations. At the same time, an evolving mesh of new socio-economic activities has been on the rise during the last 30 years. The trend to modernize and develop is being witnessed in the whole region of the Delta and experienced strongly by the residents of Can Tho City.

The combination of traditional living habits and new emerging realities that one encounters vividly in the different parts of the province makes Can Tho a fertile ground for exploring how socio-economic changes affect health outcomes. The fact that Hau River, one of the main legs of the Mekong, constitutes the province's northeast border makes it ideal for studying a waterborne epidemic disease, such as diarrhoea. After the first few months in the field, the study areas within Can Tho were defined. The collection of data in the district-and-below levels focused on the urban district of Cai Rang and the rural district of Phong Dien (Picture 3.2).

Picture 3.1: Map of the Mekong Delta, Southern Vietnam



Scale: 1: 2.000.000. Original source: Sven Genschick, ZEF

[29] The fact that the project had already established collaboration with a network of local academic and administrational institutions in Can Tho City was an advantage which could not be overlooked. Moreover, the project's previous and ongoing research provided for a knowledge pool, from where the researcher could constructively draw on, in a timely manner.

Box 3.1: Rural and urban definitions in Vietnam

It needs to be noted that the official administrative characterization of urban and rural areas in Vietnam, is mostly made on the basis of population numbers, population density rates, prominent types of land use and economic activities. The law defines areas, which can be found in any level from city to district as "urban centres", as long as they fulfil the minimum numeric requirements of certain indicators, such as population numbers, hectares of land, number of administrative sub-units within the area, presence of ethnic minorities and other (GoV, 2001, GoV, 2009b). In summary, an area can be characterized as urban if the **majority** of its population is occupied in economic sectors other than agricultural and if **most** of its infrastructure is "developed"". The interesting consequences of this definition are described below:

- Once an area is labelled as urban, based on statistical majorities, all the population within this area is also characterized as urban, even if a significant part of this population lives under rural circumstances and is being occupied in agriculture.

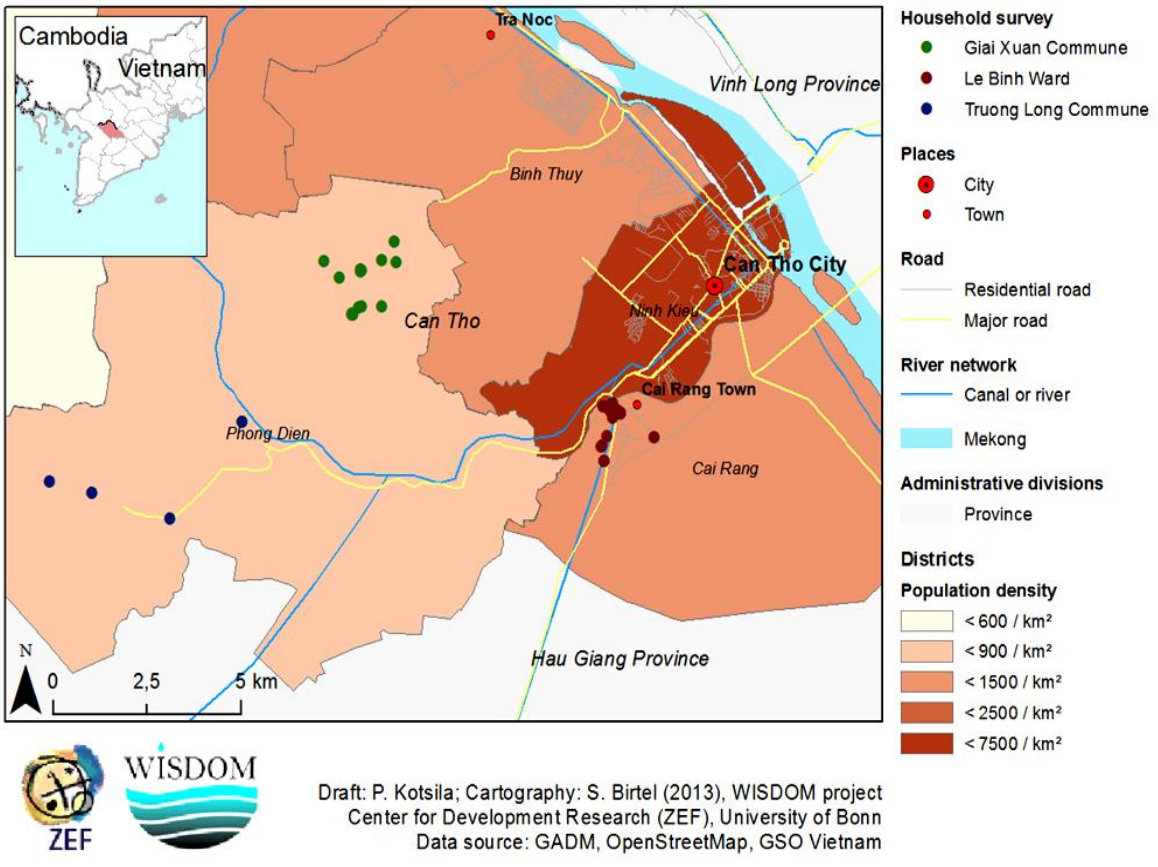
- Contrariwise, this is not the case with rural characterizations, for which there exists no specific law.

- Namely, if the centre of a rural district (town capital) is an "urban centre", the inhabitants of this town are counted as urban in the aggregated statistics for the province.

- Unlike so, in urban districts, the rural parts of the population are not aggregated with the rest rural of the province, and are thus "lost".

Can Tho is recently established as a "city", but it contains rural parts. Some of this rural population is collectively reported as urban, because the administrative unit within which it pertains (district) satisfies the criteria of urbanity, as described above. Taking into consideration that urban provinces and districts are able to absorb funds easier (Han Sun Sheng and Vu Kim Trang, 2008) and also that urbanization is a nationally proclaimed goal accompanying modernization and industrialization (Central Committee CPV and Communist Party of Vietnam, 2001), this legal particularity seems to intentionally push some districts and provinces towards the urban label, without actually having an urban character.

Picture 3.2: Map of study area and location of surveyed households



*Note: The marked spots do not represent individual households but the different neighbourhoods where the households were located.

3.2.1 The rural communes of Phong Dien district

Neighbouring to urban as well as rural districts, Phong Dien is quite diverse, but most of its communes are still loosely populated and maintain an agricultural character. According to the development plans, Phong Dien is on its way to urbanization, but is still being officially reported as a rural district (Statistical Office of Can Tho City, 2011). Due to its proximity to the centre of Can Tho City and also due to its promoted touristic sector, not all of the communes within Phong Dien would be a representative example of the Mekong's Delta rural character (for a map of the district see Picture 2 in the Annex). For this reason, interviewees from 15 offices and organizations were asked to assess and compare the socio-economic situation in each of the district's six communes, with particular reference to the water supply and sanitation infrastructure.

This revealed that Truong Long and Giai Xuan communes are those that mostly represent the rural and remote character of rural areas commonly found in Can Tho City. Therefore, they were selected as the rural case-study areas. Other communes in the district were also agricultural (like Nhon Nghia and My Khan), but have a micro-economy that is more versatile than simply rice agriculture, including big areas of fruit gardens and a "floating" river market. Attracting tourism and being supported by the government, these characteristics in a away constitute dynamic factors for different economic developments (Hoang Xuan Thanh et al., 2008) and thus make these communes slightly different from the typical rice-cultivating rural areas of Can Tho.

In the selected case-study communes, land-use was mostly dedicated to rice, with two thirds of the residents being rice farmers. Small-scale aquaculture also existed, though in much smaller numbers and following a rather declining trend during the last years (DSO Phong Dien, 2010). Aquaculture was claimed as a strong source of water pollution in both these communes, affecting the quality of water in the canals that flow along the villages:

> "Aquaculture happens mainly in Giai Xuan and My Khanh communes with large-scale fishing activity which causes the discharge of untreated wastewater in the channels." (Top official in the district branch of the YU, Phong Dien, 13.09.11; group interview)

It is along these same channels and canals that houses are traditionally built by residents in the area, as they attempt to have direct access to surface water sources. The loosely distributed hamlets are nowadays interconnected with roads, but many of the inner neighbourhoods, farms and houses are often only accessible via canal bridges. These bridges can be as narrow as to only be suitable for a bicycle or a moped, but not cars. Despite the numerous other practical limitations that this suggests, the remoteness of some households is also claimed to be an impediment to the expansion of the piped water network in those areas:

> "Truong Long is a rural area which lacks transportation network, having a big size and some very spread out houses, which is not really allowing for water to be easily delivered to each household or establishment." (Official in district Office of Education, Phong Dien, 08.09.11; personal interview)

> "Giai Xuan represents many faces of the district; it has a main street cutting through it but also has those areas in the boarders that were only recently connected with roads, meaning that they still have remote characteristics and the people face difficulties in everyday living." (Official in a rural commune branch of the YU, Phong Dien, 13.09.11; group interview)

When looking at the officially produced statistics, Truong Long and Giai Xuan present a rather better rate of access to piped water when compared to the rest communes. On the other hand, these areas appear to have much higher percentages of poor households and also present the lowest rates of access to hygienic sanitation facilities (Table 3.2).

Table 3.2: Demographic, poverty and WSS characteristics of Phong Dien district, by commune

Communes	Population	Population density (pop/ km²)	HH classified poor	HH hygienic water access (%)	Population with piped water (%)	Population using hygienically treated river water	HH hygienic toilet (%)	Population using fishpond toilets
Phong Dien (central town)	10.760	1.425	134	74%	35%	-	12%	913
Giai Xuan	**15.337**	**738**	**320**	**70%**	**33%**	**-**	**22%**	**2.493**
Tan Thoi	13.692	782	166	77%	27%	1.124	35%	1.738
Truong Long	**18.308**	**616**	**499**	**68%**	**48%**	**155**	**27%**	**3.125**
My Khanh	10.451	893	179	74%	32%	2.427	44%	1.418
Nhon Nghia	17.139	825	188	66%	36%	-	29%	2.842
Nhon Ai	14.040	899	158	56%	25%	5.988	37%	2.034
Total	99.727	807	1.644	69%	35%	9.694	35%	14.563

HH= households. Data sources: The Phong Dien district statistics office (2010) for demographics, the OoH of Phong Dien (2011) for poverty and CERWASS (2011a) for water supply and sanitation data.

Nevertheless, when a doctor from the hospital of Phong Dien was discussing people's access to hygienic water supply and sanitation, in relation to the incidence of diarrheal disease, Truong Long commune was said to be one of the most problematic in the whole district (Medical doctor in Phong Dien district Hospital, 08.09.11; personal interview).

The data above shows that the number of people using "hygienically treated" river water is much lower in Truong Long and Giai Xuan than in other communes. But how about those using river water that is not "hygienically treated"? And what are the definitions for this treatment? At the same time, the number of fishpond river toilets presents the highest rates in those two communes. But to which extent do these statistics reflect the real situation of clean water and sanitary facilities? Moreover; to what extent can this be linked with the spread of disease? The above data and questions are all fields of further enquiry, but the selection of these communes as case-study areas was based on the premise that they were identified as the most rural and most problematic in terms of diarrheal disease risks, by most of the interviewees in the local administration offices.

3.2.2 The urban ward of Cai Rang district

Cai Rang district is a vibrant and rapidly urbanizing district, despite its very small size of about 70 km² of land. The share of the population that is occupied in agriculture shifted within the last ten years, from 69% in 2000 to only 36% in 2009. This is particularly observed in the district's central ward of Le Binh, where only five people are documented as farmers in the latest statistics (DSO of Cai Rang, 2010). Although it is overall classified as an urban district (Statistical Office of Can Tho City, 2011), Cai Rang hasn't entirely lost some rural characteristics. Of all the wards within Cai Rang, it was only in Le Binh ward, where one could clearly see a more modern and dense architecture, an extended and busy road network, a total shift to third-sector economy and an evidently higher population density (Table 3.3).

The tendency to urbanize has of course affected many of the other wards, with at least half of their land being now non-agricultural (DSO of Cai Rang, 2010). Nevertheless, the population density in those wards is much lower than in Le Binh; with the only exception of Hung Phu ward (Table 3.3). During the explorative research phase, Hung Phu ward was also visited. The developments there attested of an effort to radically re-organize the housing pattern. Namely, as much in Hung Phu as in a number of places in the Delta, development programs have suggested the relocation of people to newly constructed residential areas that are constructed inland and not near the river, in the face of flooding episodes that the region is frequently facing (Stumpf, 2012). Hung Phu ward is one example where these residential areas have expanded and have in many ways changed the livelihoods of people:

> "People are being bought off their land and pushed to live elsewhere. Some cannot be farmers anymore; therefore they try to learn something else to do." (Top official in WU district branch, Cai Rang, 22.09.11; personal interview)

> "There are many different classes of people living there [residential areas]. There is a lot of movement. Some come as resettlers and the ones who where there before have to go. There is a lot of disorder in these areas." (Top official in the OLISA of Cai Rang district, 29.09.11; group interview)

The emerging plethora of socio-economic changes in wards like Hung Phu, touches upon particular issues of resettlement, ownership, international intervention and the use of space, which all go beyond the locus of this study. Therefore, despite its urban characteristics, the Hung Phu ward was not included as an urban case-study area.

Table 3.3: Demographics, poverty and WSS characteristics of Cai Rang district, by ward

Wards of Cai Rang district	Population	Population density (pop/ km^2)	HH classified poor	HH with hygienic water access (%)	Population with private tap[30] (%)	Population using hygienically treated river water	HH with hygienic toilet (%)	Population using fishpond toilets
Le Binh	**15.545**	**6.559**	**88**	**97%**	**73%**	**-**	**97%**	**212**
Hung Phu	17.901	2.371	163	96%	72%	2.793	96%	278
Hung Thanh	10.029	1.007	139	61%	19%	512	61%	423
Ba Lang	6.266	1.129	91	66%	3%	202	66%	623
Thuong Thanh	11.951	927	172	87%	50%	142	87%	1.318
Phu Thu	17.620	874	392	64%	30%	2.625	64%	1.730
Tan Phu	6.383	653	186	34%	12%	587	34%	920
Total	86.150	1.249	1.231	78%	44%	6.861	65%	5.504

[30] It has to be stressed that the total population reported by CERWASS is not corresponding to the total population reported by the Statistics Offices of each district within Can Tho. CERWASS reports on the population within the parts of districts with yet no access to centralized piped supply. In other words, what CERWASS reports as total population might correspond to the actual total population in rural districts, but in urban districts this is not the case, as it does not include the central parts which are served by a private water company (look also chapter 4). Thus the percentages in the table are based on the number of people CERWASS reports as having access to water and sanitation (2011), divided by the total population reported in the district's statistical yearbook (2009).

Data sources: Cai Rang District Statistics Office (2010) for demographics, Office of Labour, Invalids and Social Affairs of Cai Rang district (2011) for poverty data, and CERWASS (2011a) for water supply and sanitation data.

The officially produced statistics on the wards of Cai Rang show how the better coverage of clean water access and of sanitary toilet facilities is correlated with the level of urbanity. Le Binh ward appears to have an extended network of water supply, a high percentage of households with hygienic sanitation facilities and the lowest number of fishpond toilets, comparing to the rest wards. Due to the high price of land in urban areas, occupying it with fishponds is rather a bad investment and this is probably part of the reason why fishponds are not so common in Le Binh. Moreover, houses are built close to each other and often have no direct access to surface waters; thus, open defecation in the river is also rather restricted. However, there exist many households that are built along the river and have access to surface water. One of the case-study areas included households with access to surface waters (Yen Binh area). Some of those households had the front door facing an asphalted road while the back of the house had direct access to the river stream (Picture 3.3). The part of the households with access to water would be usually where the kitchen is located and the presence of a river toilet was not rare. It is not clear whether this housing model serves the purpose of collecting water or for disposing sewage, or whether it is nowadays just a tradition that survived (Le Anh et al. 2007 cited in Herbst et al., 2009).

Picture 3.3: The back part of houses built along the river in Yen Binh Area of Le Binh ward

Picture by author, 2011

Despite the expanded network of water supply and the improved sanitation facilities, Le Binh ward faces increased environmental sanitation problems as a consequence of its congested population, and an insufficient or non-integrated disposal and treatment system for sewage and solid waste. The busy floating market in the Hau River is one example of concentrated economic activity and production of waste which, according to interviewees, is leading to increased health risks:

> "The floating market area is a place where one can easily get waterborne disease because all garbage and wastewater are being discharged into the river." (Top official in WU district branch, Cai Rang, 22.09.11; personal interview)

Near where the floating market takes place, one finds the so-called "floating houses" of Yen Binh area. Their residents have very limited financial capacities and this reflects on their housing infrastructure. Not being able to afford buying land, they build their houses over the river. Interviewed families described their problems in water supply, sanitation and healthcare, which owe to their poverty and to their officially unrecognized state. As one interviewee claimed, "because we live in a floating house we are not registered, therefore, we cannot get free health insurance for our kid" (Head of household N16, Cai Rang district; personal interview). The household survey included 13 of these households, constituting about half of the

sample from the area of Yen Binh, meaning to represent this usually unheard and undocumented reality that co-exists in the modernity and development of the urban environment.

3.3 The field's character: social research challenges in Vietnam

As part of the methodological limitations and decisions, it is important to portray the distinctive character of Vietnam as a field for social research. Previous works have documented how the region is particularly challenging for researchers that aim for participatory and unbiased data collection (Reis, 2012, Scott et al., 2006, Howie, 2002, Ehlert, 2011). However, the entrance of foreign researchers in the country is now easier than in the past and the research process is more facilitated, even though still majorly controlled and overseen by state administration. The Vietnamese government has a long history of introvert and sceptical attitude towards any activity that involves intermingling with what the state does; let alone questioning it. Social science is inherently interrogative and critical, thus a researcher is facing the additional challenge of framing her research so that it will not cause undesirable reactions by the Vietnamese state. Apart from the limits on the nature of questions one can ask, the research activities have to also take forms which local authorities are familiar and comfortable with.

In the case of this study, the above constraints changed the way research methodology was chosen and executed. Firstly, requirements for foreign researchers demand a research permit to be issued and approved by provincial level authorities, for every part of the research activity (i.e. visiting public offices and interviewing individuals). After central approval is obtained, the district authorities must also approve the planned research activities and each targeted office or organization has to also confirm their consent and availability. If any of these steps is problematic, happen then the whole process has to be repeated. The inability of the researcher to directly contact the offices of interest caused a lot of delay and limited the overall flexibility of the research. Moreover, in order for this research permit to be issued, the researcher had to provide a detailed schedule of the activities (i.e. which day and time) and present a sample of the interview topics. It was often the case that interviewees would not answer questions that had not been pre-stated in the research permit application and thus were not approved by the central authorities. It was also very common that the selected representatives of each office or organization would come prepared with answers, to the questions made available to them beforehand by the central authorities.

This very rigid idea of interviewing revealed not only the suspiciousness that the Vietnamese state showed towards the researcher (in some cases there would be a secret police officer to supervise a number of conducted interviews), but also a feeling of state-supervision felt by the representatives of offices in the lower administrative levels. Public office staff of the province and the district would be very wary of distributing state-produced information and of speaking openly on policy implementation matters. This reservation was not so much observed in the administrative extremes of the lower (hamlets, wards) and the higher level (national), where opinions were usually more freely expressed. Nevertheless, all cadres tried to project an image of a well-managed, well-informed and legally complying peasantry, or community or nation. This was evident not only in their all-positive descriptions of party-policies with regards to local problems, but also in their behaviour when accompanying the researcher to interviews. For example, local cadres would be constantly prompting household members to give the "correct" answer; one that would correspond to the official guidelines and the social duties prescribed by the state (i.e. water treatment, hand-washing practices, sanitation facilities present in the household). This restricted the spontaneity and openness of the respondents, who often hesitated to answer difficult questions in the fear of giving "wrong" answers. Notwithstanding the above, these limitations were confronted as findings. The hesitation of the interviewees, the contradictive statements between representatives of the state and the

obvious effort of the Vietnamese government to hide part of the picture in water and health issues, while projecting another, were all analysed as aspects of policy implementation and politics. Since the generation and communication of messages were central parts of this study, it was of great value to be able to observe the kinds of channels that information goes through and to gain insights on how official discourse is built. These aspects are being further discussed within the empirical chapters of this thesis.

Not being able to speak Vietnamese was a further research obstacle, as the process of holding a conversation or an interview was less spontaneous. Discussions were necessarily filtered through the research assistant's translations and thus, the resulting transcripts were often poor of the richness of expression that can be found in everyday language and verbal mannerisms. For this process of instant oral translating that was taking place during the interviews to be accurate, a significant amount of time and effort had to be invested in order to perfect the collaboration between the researcher and the research assistant. Moreover, getting more familiar with the context through time, in a way helped transcend language barriers. As Farmer notes, understanding a place and its people "is not about linguistic competence. To get beyond the first (people's) silence, requires compassion and solidarity" (2005). In that sense, fieldwork was rich of interaction, collaboration, shared everyday life experiences and mutual appreciation between the researcher and the research subjects. This to some extent enabled the understanding of things that remained untold or not translated.

CHAPTER 4

HEALTH AMIDST CHANGE

Vietnam has experienced a remarkable economic upheaval of fast pace, after the opening of its markets to the global economy in 1986, when the renovation processes (đổi mới) concretized. These changes led to a system of market socialism which, under a one-party rule, allowed private investment to enter spheres previously entirely owned and administered by the state. One of such domains has been healthcare. The transitioning nature of the Vietnamese health system has long been an appealing subject of study. From a socialist past of expanded basic healthcare provision during the 1960s, which reflected in improved health indicators (Bryant, 1998a), it has now adopted a market-guided character which matches the economic policy directions of the last 20 years. Three of the major changes taking place after the initiation of the renovation policies and affecting the health sector, include the allowance of private investment in health since 1987, the financial autonomy of health units -with a consequent introduction of fees- in 1989 and the compulsory character of health insurance for part of the working population -apart from farmers and self-employed people- in 1991 (Minh Nguyen Thang and Popkin, 2003, Nghiem Tran Dung, 2010). This chapter looks at how the health system is structured today (4.1) and at the repercussions of the above changes on public healthcare accessibility, availability and usage (4.2). Moreover, the chapter reviews the health status of the population, as this has been reflected on the morbidity and mortality rates of common infectious diseases, particularly looking at the frequency of reported diarrhoea episodes during the last decades (4.3).

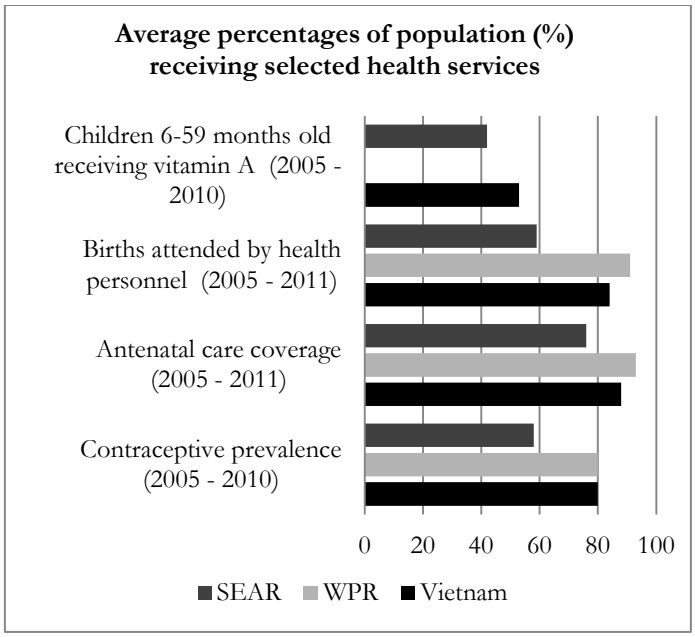
4.1 Declared policy objectives and contradictive realities in healthcare

The government of Vietnam has been enriching and improving the legal framework of the health sector over the last 20 years, with a number of governmental decisions and directives that accompany the produced policy strategies and plans in the sector. The most recently issued 10-year Plan on Vietnam's healthcare system (MoH, 2007b), is addressing a spectrum of problematic issues, like the need for better preventive medicine, grassroots healthcare, healthcare services and drug regulation. As one example of often proclaimed socially relevant health policy, the Plan projects an image of a welfare state, emphasizing the goal "to achieve equality, effectiveness and development, to meet the increasing and diversified demands of the people for health protection, care and improvement, to reduce morbidity and mortality rates, increase life expectancy and improve the living quality of the population"(MoH, 2007b :172). As this section will discuss, a legal affluence of declarations has hardly translated into tangible improvements in the sector.

4.1.1 Past achievements and the challenges ahead

Vietnam has been improving its basic health indicators throughout the years from the 1980s until today. Comparing with neighbouring regions, Vietnam performs better in some selected indicators of healthcare services, than the average of countries in South East Asia and falls slightly behind the average of West Pacific countries (Fig 4.1).

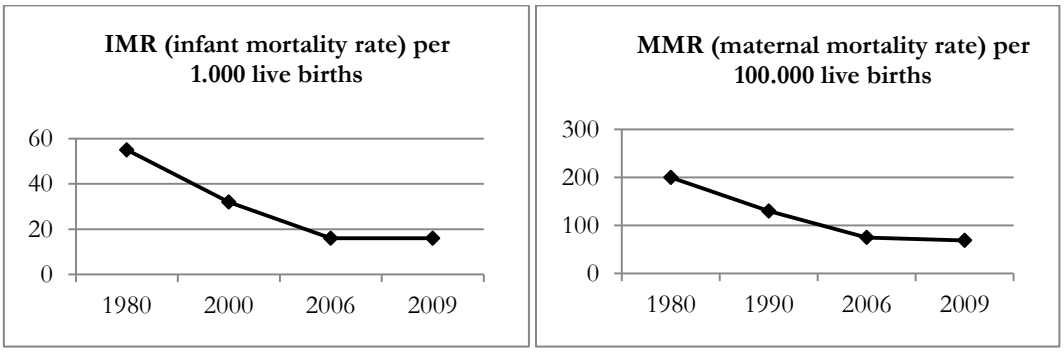
Figure 4.1: Selected health indicators for Vietnam and surrounding regions



WPR= West Pacific Region, SEAR = South East Asian Region. Figures are given in percentages (%)
Based on data by WHO (2012e). Design by author.

Improvement in healthcare services are accompanied also with better results in population health status indicators. This includes a crescent life expectancy, that is now reaching 75 years of age in the country (World Bank (WB), 2011), and the significantly lower rates of infant and maternal mortality, comparing to 30 years ago (Fig 4.2). In fact, Vietnam managed to reduce by half the mortality rates of children under five years old, comparing to the year 1990 (WHO, 2012c), showing dedication in contributing to the Millennium Development Goals[31]. Nevertheless, some contextual concurrent events that took place during these three decades, such as the exit of the country from extreme poverty, the recovery from war and the fast-paced economic growth, have certainly assisted in raising life standards and in the general improvement of the population's health (Gainsborough, 2010a: 265). It is also noteworthy that despite their upward course, these basic health indicators seem to have reached a standstill during the last few years (Fig 4.2).

Figure 4.2: Trends of infant and maternal mortality rates in Vietnam



Based on WHO (2008, 2012c). Design by author.

The World Health Organization (WHO, 2012e) has before punctuated that in order to assess the health and healthcare conditions in a place, one needs to look beyond the reported incidence of disease and to

[31] The objective of MMR in order to reach the MDG is to reduce by 5.5% each year globally. The fourth MDG is to reduce children mortality (infant and under-five) by two thirds, between the years 1990 and 2015 (WHO 2012: 58).

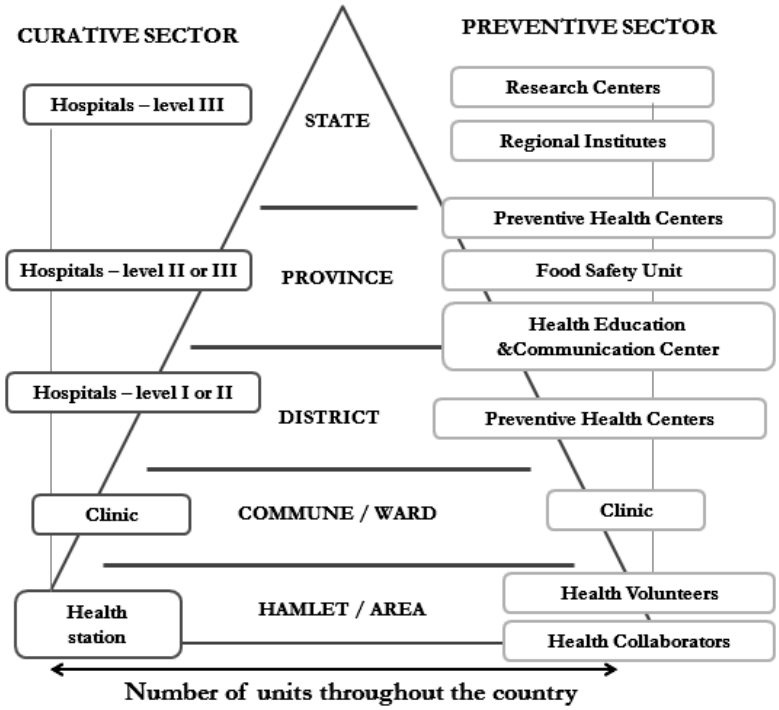
include questions on the functions of health institutions and on how those functions reflect in society. Namely, authors have accentuated the need to examine health outcomes together with issues like health workforce, health inequities and health expenditure[32] (Ibid 2012a). In particular, the WHO has elsewhere recognized how health systems have the potential to improve the health of a population and that "a failure to achieve that potential is rather due to systemic failings than to technical limitations" (WHO, 2000: 2).

In Vietnam, the post-reform period has been marked by a dramatic decrease of state investment in health, which has largely impacted on the functions of institutions. As a number of authors note, the changes shook the grounds of a previously established universal access to healthcare (Fritzen, 2007, Minh Nguyen Thang and Popkin, 2003, Witter, 1996) and it has come to the expense of the poor, who are actually now facing exacerbated health risks (Priwitzer, 2012 :185). Therefore, despite the noticeable progress in health during the last decades, the extent to which this progress was brought forth due to the effective function of health institutions is as questionable as its current sustainability.

4.1.2 A pyramid with weak foundations

Following the wider administrative and political system in Vietnam, the organization of the health sector has a pyramidal structure, with subdivisions from the hamlets and the communes to the central-state level (Fig 4.3).

Figure 4.3: Health institutions offering curative and preventive services in Vietnam



Based on fieldwork material and documents issued by the MoH (2007b, 2006). Design by author, 2011.

Gradual decentralization in the sector brought many health institutions which were previously entirely under the control of the Ministry, mainly of the provincial and district level, to operate more freely and gain a certain autonomy. The Ministry of Health (MoH) is still the overall governing body but does not maintain direct funding and reporting relationships with all of the health units in the levels below the

[32] The aspects proposed as appropriate to assess health systems are: life expectancy and mortality of the population, cause-specific mortality and morbidity, status of selected infectious diseases, healthcare service coverage, health risk factors, health workforce, infrastructure and essential medicines, health expenditure, health inequities, demographic and socioeconomic statistics, health information systems and data availability.

Province. In fact, only a certain number of health research institutes, colleges and hospitals have remained under the immediate jurisdiction of the ministry (MoH, 2007b: 178, MoH, 2006).

This autonomization however, has had serious economic impacts both on the curative and the preventive sector, with most of the assigned national health budget (80%) going towards level- III hospitals and away from local healthcare and prevention units, from the beginning of the reformation period (Fritzen, 2007). The responsibility for the economic survival and the function of these local units has been transferred from the central state to the local governments of the province and the district. At the same time however, in spite of economic and functional "independence", the decision-making powers have remained concentrated in the Ministry. The importance of strengthening grassroots health units for the prevention of epidemics has been emphasized in the official national strategy (MoH, 2007b :88ff), but the actual economic practices contradict the policy declarations.

Grassroots healthcare

The healthcare units in the rural hamlets and the urban areas are the health *stations* (Fig 4.3) which comprise the foundations of the health pyramid together with the health *clinics* of the communes and wards in the next level of administration (Fig. 4.3). Both these types of establishments deliver curative and preventive services, but none of the two are supported entirely by the state. A recently issued legal regulation states that the staff of the stations and the clinics (which are collectively referred to as "local health workers") are entitled to monthly allowances by the state, as well as to additional funds from undefined "other" sources (GoV, 2010b). However, previous research by Bloom (1998) showed that, in practice, health stations are operating purely on their own expenses. Fieldwork has confirmed Bloom's findings, with respondents repeatedly pointing to the 'open' character of this legislation which does not define a salary nor specifies what the additional sources of funds could be and thus, is leaving room for very little actual economic support towards these units[33].

Empirical observations from the five visited health stations in hamlets within Can Tho City, showed that they are usually staffed by no more than two people and can only handle outpatient conditions. They are considered to be the first step of care in the local level, prescribing medicine and performing basic health examinations. However, their operation is not guaranteed in all the hamlets or at all times, as it depends on the availability of a person capable and willing to be in charge. The financial viability of the health stations depends on the incomes they generate through the retail of medicine[34], but as informants said, running a health station is anything but a profitable occupation:

> "This is a place to treat simple, normal diseases so that the people don't have to go to the higher levels of healthcare. They just come here and get cheap medicine: only 10.000 for three doses of medicine for normal disease [....] and the people get well, they are satisfied with the treatment. We only get support from the state for the information material that we will distribute. The place or the equipment is our responsibility. Luckily we make enough from the medicine we sell. We only keep 5% of the price, so we can make some living. But if I was to ask for something, it would be some chairs for the people to sit and a new bed, because the one we have is rusty." (Top official of a Health Clinic in rural commune, Phong Dien district, 15.09.11; personal interview)

The requirements for the staffing of health stations are not demanding and they simply include: "(i) having a minimum level of health education, (ii) living and working permanently in the locality, (iii) having a sense of responsibility and enthusiasm for participating in social activities and (iv) being physically fit to perform

[33] Sources: NGO expert in Water Supply and Sanitation (11.12.11), top official in district Office of Health (Co Do, 18.07.11), top official in health station of a rural hamlet (Phong Dien district, 15.12.11) and top official in central health station (Cai Rang district, 13.12.11); all personal interviews.

[34] Health stations are only allowed to sell medicaments that are manufactured within the country and mentioned in a list issued by the MoH (top official in health station of a rural hamlet in Phong Dien district, 15.12.11; personal interview).

the prescribed duties" (GoV, 2010b). The blending of professional and social attributes is worthy of notice in this regulation, while –as data has indicated- the required "social enthusiasm" can be translated as a willingness to work for very limited economic rewards. As a consequence of the limited professional demands and of the requirement to work in a nearly voluntary manner, one can find a wide spectrum of individuals in the health station worker's post, from retired doctors, to nurses and pharmacists or people who have only received a three-month vocational training[35]. Thus, instead of the healthcare and consultation centres they are supposed to be, the limited quality of infrastructure and staff that they can achieve has local health clinics able only to provide cheap medicine.

Generally, allocating medical staff in rural and remote regions has become very difficult, especially in the case of doctors. Many chose to live in more central and urban areas, as the opportunities for work in the private sector are there increased (Fleßa, 2003). This difficulty reflects not only on the staffing of health stations, but also in the rural commune clinics and district hospitals and is pushing towards a more lax control on the requirements and the licensing of medical facilities, especially in the more remote areas (Nguyen Ha, 2011: 3). The recently issued national five-year plan for the health sector (MoH, 2010a), suggested that improving local healthcare quality, especially in the more remote areas, should be attempted by rotating some better-educated and experienced personnel to the health stations, in order to train health workers and enhance their capacities (Ibid. 2010). Nevertheless, this policy was not mentioned by any of the 45 interviewed health cadres and medical personnel in Can Tho City; indicating its absent implementation so far in the province.

The commune (or ward) health clinics are more professional and better-equipped establishments. They are generally better able to deal with a wider variety of cases health issues and can offer examination as well as some basic treatment services. According to reports, there is a health clinic in each of the 85 communes within Can Tho (Statistical Office of Can Tho City, 2011). Notwithstanding their expanded presence, the quality of healthcare offered in these clinics can vary a lot and depends on their space capacities, their infrastructure and their available personnel (LONDON 2008b: 122). According to national regulation, there should be one health clinic worker per 1000 – 1200 inhabitants (MoH, 2007b: 180). The reported figures from the two case-study districts of Cai Rang and Phong Dien presented an average of half what these standards demand (Statistical Division of Cai Rang district, 2010, Statistical Division of Phong Dien district, 2010). This shortage of personnel, however, was not recognized as a problem by any of the interviewed state representatives; many of which supported instead, that the clinics are in good shape and are performing their duties very well. Some Vietnamese authors have supported that the quality of clinics has at least ameliorated in the last 15 years (Tuan Tran Van; Thi Mai Dung; Neu, 2005: 324), but instead others do not see any significant improvements (Minh Nguyen Thang and Popkin, 2003: 260). The weak function of clinics has been assigned to their funding dependency on local governments ever since the 1990s, as a consequence of which, the quality of basic healthcare in poor and usually rural areas is compromised (Tran Tuan 2004 cited in Fritzen, 2007: 1613).

Despite the present difficulties in meeting staffing criteria, the government promulgated a new and more demanding law for the clinics, according to which all clinics should have a medical doctor employed for at least three days of the week (GoV, 2011). Furthermore, each clinic is required to have an examination room and ten more types of specialized rooms[36], a pharmacy and available traditional medicine services (Ibid. 2011). Centrally produced documents encourage local governments to invest and improve commune clinics, setting a high target of 80% clinics meeting national standards by the year 2010. This target is still, however, far from being reached (MoH, 2007b). Despite the legislative provisions, the MoH

[35] Sources: Top official in district Office of Health (Co Do, 18.07.11), top official in health station of a rural hamlet (Phong Dien district, 15.12.11), top official in central health station (Cai Rang district, 13.12.11); all personal interviews.

[36] These consist of: a laboratory room, a sterilization facility, a first aid room, an emergency room, a room for pregnant patients, a room for gynaecological exams, a delivery room, a vaccination room, a population and family planning counselling room and an administrative room.

informs that only 69% of the communes in the country had any doctors at all, during the reported year of 2009, while the nurse-to-doctor ratio remains among the lowest in the region of South East Asia (MoH, 2010a). Observations from the study sites within Can Tho confirm the lack of staff, space and equipment (Picture 4.1), confirming previous empirical findings from Fleßa (2003), who showed that only 5, 8% of his study-communes in Cao Bang district had a medical doctor (Fleßa, 2003). More recent literature also suggests that legal requirements for health clinics are not commonly encountered and especially not in the country's rural communes (DSW (German Foundation for World Population), 2011: 9).

Picture 4.1: Health clinic in Le Binh ward, Cai Rang district

The picture shows the receiving area, where medicine is also being sold. The rest of the clinic consists of an examination room and a laboratory room. Photo by author, 2011

Being the first step of public healthcare and the most accessible units for medical advice, the grassroots network of the health stations and clinics, is crucial for the timely diagnosis, treatment and control of infectious diseases, like diarrhoea. Not only is healthcare offered by these units supposed to be the closest and cheapest option for most of the rural and poor inhabitants (see also section 4.2), but is also meant to serve as a cushion for the common episodes of easily treatable disease and thus to relieve hospitals of patients overload. Apart from recognizing the above and praising the functions of primary healthcare, the central government has, however, not embraced any concrete supportive policies to enable their potential in safeguarding people's health. The financial dependency of health stations and clinics on the local office's budget is making their upheaval rather challenging, with repercussions not only on their ability to offer curative services but also on the prevention of disease and the control of epidemics.

4.1.3 The weaknesses reflected in preventive health

One of the national priorities regarding healthcare and prevention is to control big epidemics (MoH, 2007b). Some of the still prominent diseases, such as HIV, human influenza and children's malnutrition, are placed in the centre of attention (Ibid. 2007b: 125), emphasizing the need to raise the public awareness around their prevention, through health information and education activities. Similarly to primary healthcare improvements, preventive health priorities are punctuated but are not given a concrete framework of action based on which to create tangible outcomes. The National Strategy distributes preventive medicine responsibilities to ten different ministries, to all People's Committee divisions and to all the organizations under Vietnam's Fatherland Front (Ibid. 2007b: 130) and is, thus, making public health another issue for which everyone is responsible but no one is accountable.

Box 4.1: **A summary of the priorities relevant to the prevention of diarrheal disease proclaimed in the "National Strategy on preventive medicine to 2010 and orientations towards 2020"**

- Among the Strategy's future targets is to strengthen the function of the provincial and district Preventive Health Centres (PHCs) and to improve the surveillance system of disease (:126).

- Environmental sanitation and food safety are placed in the centre of attention and the need for more enforcement and control in these sectors is underlined. Safe water supply is not considered anymore a priority, since good quality drinking water is considered to be "assured" for the majority of the population (:103).

- Intestinal diseases are a recognized health risk baring the possibility of outbreaks (:106). Specific target-measures for the prevention and control of diarrheal diseases include (i) to keep mortality rates of cholera less than 1/100.000 (deaths per population) and to contain its epidemics; and (ii) to control the mortality rate of typhoid to less than 8/100.000 (deaths per population).

- The mitigation of diarrhoea, which is not classified as cholera or typhoid, is not mentioned as an overall health target, but is only mentioned as part of protecting children's health (:122). Moreover, there is the aim to reduce children malnutrition rates to below 20% and to reduce the rates of Vitamin A insufficiency to below 5%; both of which would assist in the prevention of diarrhoea.

(MoH, 2007b)

The national targets in the sector of preventive health need to be reflected on the priorities of the Preventive Health Centres' and thus, in the formulation of their "preventive health programs"[37] (MoH, 2007b:89). The responsibilities of the PHCs with regards to these programs are twofold. One responsibility is to report on the incidence of each prioritized disease or health issue. The second is to keep the public informed around these health risks and to promote the adequate preventive measures. The district PHCs are responsible for compiling and reporting such health-related statistics, while the PHCs of the provinces are mostly coordinating and supervising these activities. The tedious collection of data from the communes and wards was seen to basically confine the activity of the district PHCs to purely bureaucratic procedures. Empirical research in Can Tho showed that the health education activities performed by these units were limited to the occasional banners or posters within their premises. The MoH (2010) admits that the preventive health network remains weak "especially in the district level" and as a consequence, "the understanding and the awareness of the people and of some cadres, around health protection and promotion, is weak" (MoH, 2010a:32).

Contrary to the limited spectrum of activities that was noted for the district PHCs in Can Tho, other than collecting data and producing reports, the provincial PHC had multiple departments[38] and a wider range of responsibilities, including the organization of public health educative and informative campaigns. However, as it will be discussed in detail in the following chapters (see chapter 5 and 6), these campaigns are scarce and do not manage to reach the majority of people in the localities. Many of the representatives from district and provincial PHCs claimed that the preventive health programs are implemented with great success. These claims were justified by the reported execution of certain activities and the relatively decreasing numbers of certain diseases(PHC Cai Rang, 2011a, PHC Cai Rang, 2011b, PHC Can Tho City, 2011a, PHC O Mon, 2011b, PHC O Mon, 2011a, PHC Phong Dien, 2011). The evaluation of public

[37] In Can Tho City, seventeen of such national programs were reported to be in operation, targeting: dengue fever, children's vaccination, food safety, malaria, tuberculosis, HIV-AIDS, eating disorders, diarrheal disease, sanitation expansion, malnutrition, medical education, occupational hygiene and maternal and neo-natal health (top official in PHC of Cai Rang district, 16.12.11; personal interview).

[38] In the PHC in Can Tho City there were claimed to be departments of: (1) public health, (2) infective disease management and vaccinations, (3) malaria and internal disease (covers lesions of lungs, heart, gastrointestinal tract, rheumatic lesions), (4) public nutrition, (5) laboratory – for the chemical and physical analysis of samples which includes water quality samples and blood samples suspect of carrying epidemic diseases (Top official in PHC Can Tho City, 14.07.11; personal interview).

health success was thus based on quantifiable criteria, most of which describe what the local health bureaucracy does and not whether there is a positive impact on the population's health understandings and preventive practices.

Local communicators

While the provincial PHCs set the preventive health priorities and the district ones compile the reports, most of the communicative part of the preventive health programs and the most of the surveys for the collection of information, is undertaken by the health staff in the commune and hamlet levels. The health clinics are the units of reference for the collection of statistics in these lower administrative levels and are assigned the responsibility to mobilize and train the health workers of the health stations in issues of public health (GoV, 2011):

> "Commune health clinics will deploy communication and health education activities, population and family planning, through mass media and through communication in the community: when visiting families and when people come to have examination and treatment in the commune clinic and in the schools" (GoV, 2011).

The public health duties of the clinics expand in areas of food hygiene, malnutrition, maternal health and many more (GoV, 2011). Considering their shortage of qualified staff, their infrastructural limitations (see section 4.1.2) and the fact that commune clinics principally operate to offer curative services, the requirement of successfully executing preventive activities appears to be a real challenge. Results from the field revealed that there exists a complementary network of health "volunteers" and health "collaborators", which helps in the execution of these activities and is unique to the region of the Delta[39].

Discovering the actual legal rights and responsibilities of the health volunteers and collaborators is a truly bemusing issue. Representatives from health-related offices and organizations across Can Tho have all referred to them as being the communicators of preventive information to the public. They are selected and trained by the commune clinic's staff[40] and their main method of public health education was said to be visiting households and being in direct contact with local people, at the same time collecting survey data. Their financial compensations, however, do not reflect their important and cumbersome responsibilities. Firstly, as their title already insinuates, health volunteers do not receive any payment for their services. Interviewees strongly claimed that health volunteers and collaborators do not do this job for money, but to help their communities:

> "In this commune there are 13 health volunteers, some of them are also health collaborators, and some of them are the same people who run the health stations in the hamlets. They don't get paid; they do it from their hearts. They will go around and talk to people, telling them how to prevent accidents [...] Also regarding diarrhoea, they will talk about keeping a clean house environment and being hygienic when eating and drinking." (Top official of a Health Clinic in rural commune, Phong Dien district, 15.09.11; personal interview)

> "Most of them [health volunteers/collaborators] are living in the commune and are somehow related to the health sector. They are either the ones who run the commune or hamlet clinic, or retired doctors or people that have been trained on health in the army." (Official in the National HSPI, Hanoi, 09.02.12; personal interview)

The health collaborators were said to be specifically trained for carrying out the family-planning health program[41], reporting the number of kids in each family and keeping track of new births. Despite their thematic focus, health collaborators were found to be outnumbering the volunteers in the case study

[39] Source: Official in the National HSPI, Hanoi, 09.02.12; personal interview.

[40] Source: Top official in central ward clinic, Cai Rang, 13.12.11; personal interview.

[41] Source: Top official in health station of a rural hamlet in Phong Dien district (15.12.11), top official in central health station (Cai Rang district, 13.12.11); personal interviews.

areas, up to three or even four times. Their work is supported with a monthly salary of an amount that is not defined by law, is unstable and depends on the locality (usually 100.000 VND[42]), in what seems to be a symbolic gesture to create incentive. As UNICEF (2011) reports, the majority of health collaborators in An Giang province were not getting any financial support and many were abandoning their posts every year (UNICEF, 2011).

In the example of these local public health communicators, it becomes again obvious how the proclaimed priorities in health do not translate into factual support for the sectors that need it. Whereas the the limited access to preventive information is acknowledged (MoH, 2007b: 96) and the importance of an effective network of health education in the hamlet level is punctuated (MoH, 2010a), the role of the health communicator is not mentioned. The legal absence of these posts was justified by the claim that they only operate in a rather informal fashion and only in the South of the country[43]. The vagueness around their duties was however evident also within the Mekong Delta, as health representatives were not able to give clear definitions:

> "There are the health care units who are basically retired doctors or nurses that offer health care services in return to a very small payment. They don't get paid from the government, they are somehow volunteers. They have a sign outside their doors, so that people know who they are and where they are. They also have the right to sell some normal, out-of-counter medicine." (Top official in district Medical Center, Co Do, 18.07.11; personal interview)

> "The health volunteers or collaborators are people that talk to people and work towards family planning and HIV prevention. These people are trained on these and more topics, like malaria, malnutrition, and prevention of disease, by the district or the city's Preventive Health Centre. Some of them have some specialization, but many don't and they just get the training afterwards." (Top official in district PHC, Phong Dien, 15.09.11; personal interview)

Overall it seems that health workers, health volunteers and health collaborators, are usually the same people that undertake interchangeable posts. They constitute the remaining echoes of what Bloom (1998) refers to as the Vietnamese brigade nurses, of the 1980s who were part-time health personnel at the hamlet level and who had received training in order to offer basic preventive and curative services. They also have been mentioned as being very knowledgeable of each household's situation regarding their practice and awareness of preventive health measures. They are, for example, supposed to be good evaluators of which households are in need of water supply or sanitation improvements. The results of their assessments are affecting the execution of supportive policies in these sectors (see chapter 5.2.2), but they are, however, nowhere justifiably documented. Moreover, it was often the case in the case-study areas that their duties would be taken over by local cadres, such as the head of the hamlet, the head of the Farmer's Union or –as repeatedly mentioned above- the health workers from the commune/ward clinics. In consideration of this fact, the validity of their assessments with regards to the distribution of supportive funding demands further interrogation (see chapter 5.3.2).

Most of the interviewed local cadres have praised the work of local communicators as honourable, appreciated and very successful, as they fulfil their assigned duties. However, the efficacy and impact of their work with regards to its quality and its coverage, is often upbraided as purely bureaucratic and not motivated or engaging for the public:

> "The problem in the execution of information and education activities in practice, is not only that people in the local levels do not have the capacity or the education to understand everything that concerns a health issue, it is also that the people [health workers/communicators] do not care whether the population understands or not; they only care to fulfil the objective of visiting a specific number of households, ticking that box and filling in their reports that they did it." (NGO expert in Water Supply and Sanitation, 11.12.11; personal interview)

[42] This is equal to about 3.5 Euros.

[43] Source: representative of the National Health Strategy and Policy Institute (HSPI) in Hanoi 09.02.12

Whether due to their low rewards, their undefined legal status and their unclear responsibilities, or due to their limited educational backgrounds and insufficient training, it seems that what these posts actually serve is again the bureaucratic gathering of statistics and not the targets of health education and promotion. Ironically, the resulting collected statistics (on water safety, hygienic toilets, environmental sanitation) are viewed by higher-level experts as unreliable[44]. However, it is on the basis of these reports that local and district authorities compile their short-term assessments on how successful the preventive health programs have been. This focus on numerical, rather than quality-based, results is stemming from the objectives that higher-level offices set and which they expect the local levels to realize. While chapter 6 looks closer at those issues of target-setting in public health, it is already becoming evident how the reasons lying behind the weak impact of health education might be, not only the gaps in funding and in capacity, but also the way public health policy is designed and the principles upon which it is being assessed. A clear pattern emerges from this brief analysis of the institutional function of the health sector; one where the state -on paper- declares support to the fundamental units of primary healthcare and preventive health action, but where contrariwise –in practice- neglecting the dereliction of the local health curative and preventive networks. As it will be further analyzed, this is paralleled with a shift in people's health-seeking behaviours, as well with the -yet unmitigated- prevalence of preventable diseases, such as diarrhoea.

4.2 Reshaping access to public health

In 2008, the government allocated 7.3%[45] of the overall national GDP to public health in 2008, providing for only 38.5% of the total health expenditures in the country (WHO, 2012a). The national health budget has been overall shrinking ever since the reformations of the 1990s and is nowadays unequally distributed among administrative levels, with most of the health funds being directed towards higher-level and centrally-managed hospitals and research units. This has been putting pressure both on health professionals, who are blaming the unsatisfactory payments in the sector or being the straits of good healthcare (HSPI, 2012a) and on private individuals, many of which have to pay out-of-pocket for health services. The limited central support and the high rates of people without health insurance, are far from facilitating the financial upheaval of the public healthcare system and are rather hampering its better staffing, internal organization and functionality (London, 2008a: 125). In combination with the concurrent privatization in the sector, the above have majorly altered public access to health.

4.2.1 New rules and new players in the "game" of healthcare: the private sector

It was before mentioned how the higher-level and specialized healthcare units of the country (hospitals) are since the launch of decentralization policies allowed to operate on a cost-recovery rationale (GoV, 2002, GoV, 2006b). This has radically changed the landscape of specialized health examinations and treatments that are offered in these units. The introduction of fees was expected to improve the financial situation of the hospitals and to boost their performance, but beyond the question of how far this has been achieved, the profound impact it has had on re-shaping healthcare access opportunities has been noteworthy (London, 2008a, Minh Nguyen Thang and Popkin, 2003). With hospital services being no longer offered for free and with the allocation of patients in the hospitals of the different levels being also subject to their residential registration, many of the poor, uninsured and rural residents face a multitude of obstacles in accessing the healthcare that they need.

[44] Sources: Top official in IHPH of Ho Chi Minh City (28.07.11), UNICEF representative (Ho Chi Minh City, 29.07.11); personal interviews.
[45] This is equal to about 7 billion USD.

Decentralization came together with privatization in the sector of healthcare. The number of private hospitals, pharmacies and medical practitioners has been on the rise during the last three decades. More than 137 private hospitals exist today in the country and a vast number of physicians are operating in a private manner. Most private hospitals are found in urban centres (Kieu Linh, 2012) and despite their expansion, they are still in lower numbers than the public ones[46] (GSO, 2011b, Nghiem Tran Dung, 2010). Their further expansion is said to be tampered by the legal complexity that surrounds the issue, as well as by the still low demand for highly-priced healthcare from the country's poor and middle-income population (Kieu Linh, 2012). In fact, only 65% of the private hospitals in major urban hubs[47] have accepted to contract with the public health insurance program (HSPI, 2012c) and are thus making their services accessible only to individuals who can afford to pay the entire fees on the spot.

Unlike the elite character of the private hospitals, the charges of individual private doctors are not as high and thus not so exclusive. The numerous independent doctors that work on a private or "semi-public" [48] basis, have the liberty of basing their clinics anywhere they chose. As mentioned before, this is seen as the reason why doctors have accumulated in the urban areas (see also section 4.1.2). However, the gathering of better health facilities (and health professionals) in urban areas has been, according to Bloom (1998), a trend in Vietnam even before the renovation policies. According to Forsberg (2011), the private sector has given doctors the opportunity to much better incomes, comparing to the low and unsatisfactory salaries that they are paid in the public sector. Many of the publically employed doctors who were interviewed admitted that they also work privately in the evenings. In fact, one of them claimed that though his family lives in Ho Chi Minh, where he works privately, he also works in rural district hospital in Can Tho out of choice, in order to contribute to the hospital's capacity. According to him, if he leaves his public health position, "the hospital will be left without a properly trained medical doctor" (Medical doctor in Phong Dien district Hospital, 21.07.11; personal interview).

Another problem that emerges from the extended usage of private instead of public healthcare is that the activities of the former remain at large undocumented. Many of the clinics are unregistered and thus the services they offer are not standardized and are largely uncontrolled. The Health Strategy and Policy Institute found that most of the private clinics in fact lack the equipment that is necessary to provide the healthcare services covered by the basic insurance program (HSPI, 2012a, HSPI, 2012c). Other authors have found that actually many of the private clinics that are operating in rural areas, were technically of much lower standards than the public ones (Tuan Tran Van; Thi Mai Dung; Neu, 2005). However, what makes private clinics generally more preferable for primary healthcare, is their better perceived attendance and attention to the patient's needs and their availability in more convenient times, comparing to the public ones (Dat V. Duong et al., 2004, Gaudine et al., 2009). As the next section discusses, the evaluations of the public with regards to the best attainable healthcare quality that they can get, is not only shaping the everyday health-seeking decisions but also has repercussions on longer term strategies followed in health, with regards to people's participation or not in the health insurance scheme.

4.2.2 Loopholes in the health insurance scheme

The approach to insurance policy changed in the country ever since the 'Health Care Fund for the Poor' (HCFP) policy in 2003, that ensured free basic healthcare for the members of classified poor households, as well as for those living in disadvantaged areas and communes and for ethnic minorities mainly in the country's mountainous regions (International Labour Organization, 2012). The law also provides free healthcare for all the children below six years old (Decree 63), but the pupils and the university students

[46] There are more than one thousand public hospitals in Vietnam, according to the GSO (2010).
[47] These are the cities of Hanoi, Ho Chi Minh City and Da Nang.
[48] This is meant in the sense of moonlighting practices while employed in the public sector, as described by Priwitzer (2012).

need to pay a reduced health insurance premium of three percent the minimum monthly salary in the country[49]. For all the rest, the basic premium corresponds to 4.5%[50]. When the public health insurance scheme was first introduced in 1992, the rate of insured individuals was below 10%. In 2006 the rate has climbed up to 40% and has been significantly increasing ever since. The government has been continuing its efforts and enacted a Law which foresees the insurance of all employed individuals and students, apart from the self-employed and the farmers, under the 'Compulsory Insurance Scheme' (GoV, 2008). After this, the rate of the population that was insured with the public scheme, either through their employment or by being beneficiaries of social policies, reached 60% (Nghiem Tran Dung, 2010). Notwithstanding these improvements, it is noticeable that the number of self-employed individuals who voluntarily choose to join the insurance scheme has hardly increased throughout these years (HSPI, 2012b). Within the scope of salving the health system's finances, the government publically committed to make health insurance obligatory for all Vietnamese by the year 2014 (Vietnews, 2012).

Beyond the question of whether there will be a further rise or not in the rate of insured people in the country, is the question of why the finances of the health insurance scheme are not improving. With 60% of the population already signed up, the scheme should be viable. Instead, it is facing a serious financial squeeze since 2005 (Nghiem Tran Dung, 2010). This indicates that there exist some loopholes ingrained in the system. Literature suggests that one of the missteps in the system lies in the adverse selection of beneficiaries with free healthcare rights. Namely, local authorities which have the power to allocate free healthcare insurance cards, according to the criteria mentioned above, often distribute them to people with increased health risks, even if the latter do not belong in categories of poverty or disadvantage (Lieberman and Wagstaff, 2009, Hien et al., 1995).

Considering the limited number of free health cards that the HCFP can provide, these local practices of adverse selection and moral hazard, not only jeopardize the longevity of the insurance scheme (Lieberman and Wagstaff, 2009), but also take away health benefits from those who do belong in the socially sensitive categories that the law foresees. A survey conducted in over two thousand households, revealed that 20 – 30% of the poor were still not insured (Dam Viet Cuong, 2009). The national General Statistics Office gives similar percentages of poor people visiting public healthcare units but having no healthcare insurance (GSO, 2008). It is not specified whether the uninsured status of people in these studies was due to their non-classification as poor (or other categories), or because they were not yet reached by the HCFP program. Looking at the processes of formulating poverty inventories, however, it becomes clear that similarly to the distribution of free healthcare cards, the inclusion or not in these inventories often comes down to the personal judgments of local cadres. The ductile nature of these processes is worth taking into account when assessing the equity and the efficiency of the health insurance scheme but also of a wide range of pro-poor policy implementation.

Box 4.2: A summary of how official inventories of poor and non-poor households are created

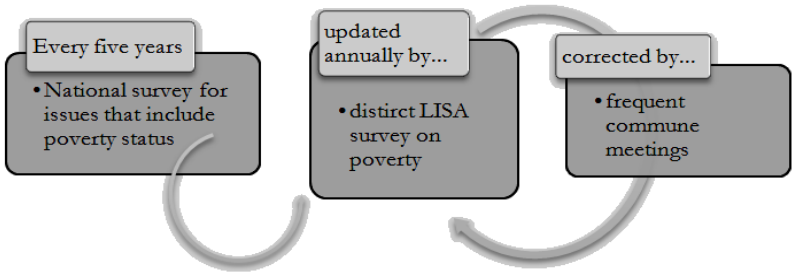
1. Large-scale surveys are taking place every five years in order to define the poor and nearly-poor families. These surveys include questions and inventories regarding the family's income levels, their other revenue sources and an inventory of the household's belongings (see table 1 in the Annex).

2. Due to the possibility of a household changing status (i.e. shifting from poor to non-poor), there is an annual evaluation and re-examination of these five-year survey results. This is done by local authorities and namely, the district offices of Labour, Invalids and Social affairs (LISA). These offices produce updated inventories, with the consultation of the local governments, as well as the health workers and health communicators of each commune/ward (Department of Labour Invalids and Social Affairs, 2010).

[49] Source: Top official in district Office of Health, Phong Dien, 12.09.11; personal interview.
[50] The minimum salary in 2011 was 830.000 VND, equal to about 30 Euros.

3. Interviewees[51] described how the results from these LISA surveys are discussed and assessed in commune level meetings, where cadres, citizens and health representatives confirm or deny their validity according to their personal knowledge on the status of each household under question.

4. The responsibility for the official final stamp of approving these annual inventories of poor households lies in the hands of the 'Steering committee for the alleviation of poverty' of the district and provincial levels. These committees however have no evidence at hand to question what is being presented to them by the local levels.



(Department of Labour Invalids and Social Affairs, 2010).

Looking at the function of the health insurance mechanism and particularly at the persisting unwillingness of people to voluntarily join the schemes indicates the development of public mistrust towards the benefits that the scheme can provide, in return to the investments it requires. For those who sign up to the basic premium of public health insurance, the first step of care-seeking is to visit the health stations and clinics, where outpatient basic care is offered. If patients need to be hospitalized, they will normally be referred to the district hospital of their locality, based on their officially registered residency. If need be, the staff of the district hospitals can decide to consign patients to specialized hospital units of a higher level. Throughout this care-seeking path, the insured individuals have to contribute 20% of the treatment expenses, if those surpass the amount of 120.000 VND[52]. People also have the option of directly checking in a public hospital of their own choice, but in that case they would have to pay 70% of the expenses. It is worth mentioning that these rules of access do not apply for medical staff and government cadres, whose special health insurance schemes provide for entrance to any public hospital, with their contribution not surpassing 5% of the total expenses[53].

Even though the insurance scheme takes administrative divisions as the basis of assigning patients to hospitals, not every district or provincial hospital is of the same quality. Hospitals are classified in grades, according to a system of evaluation that follows criteria of capacities (number of beds, human resources), administrational location (district, province, central), levels of expertise and available infrastructure, technology and specialized equipment, among others (GoV, 2005). Interestingly, the administrational superiority of hospitals is rewarding them with points of quality. Thus, if a hospital is under central administration (level-III) it is likely that it will also be granted more points and thus get a higher grade, even though the connection between healthcare quality and administrative position is not legally bound. Corresponding to the pyramid model (Fig 4.3), there is a hospital of level -II or III in each of the districts and according to the above criteria, it can be of any quality grade (MoH, 2007b). Considering that funding for healthcare depends by large on the localities, the quality of each hospital is also a function of how financially successful a district or a province is. As Priwitzer informs, district hospitals are being less visited than the ones under the province or the city (Priwitzer, 2012) and people have generally expressed their dissatisfaction with the quality of health services in local healthcare units (Phan 2006 cited in London, 2008b). During a household interview in a rural district, the member of a better-off family

[51] Sources: Top officials in OLISA of Phong Dien district, 26.09.2011 & Cai Rang 29.09.12; personal interviews.
[52] This amount is equal to about 7 Euros.
Sources: Top official in district Office of Health, Phong Dien, 12.09.11 and top official in the Red Cross branch of Phong Dien district, 07.09.2011; personal interviews.
[53] Sources: Top official in the Central General Hospital of Can Tho, 21.06.11 and household representative, Yen Hoa area of Cai Rang district 18.10.11; personal interviews.

explains why, since insurance only provided access to the district hospital which they considered to be of low quality, they preferred to quit the scheme and pay 'out-of-pocket' treatment in the central hospital of their own choice[54].

Specialized provincial hospitals have a reputation of offering the best quality of services. However, even though they usually have five times the bed-capacity of district hospitals, they are always overloaded with patients. Their specialized expertise is rare and thus they get assigned the treatment of many patients from around their region. Their good reputation brings in also many patients who chose to circumvent the official care-seeking path, even if their health problems do not demand for specialized care (Vian et al., 2012). The Paediatrics Hospital of Can Tho City, for example, attracts hundreds of visitors from around the Delta, as it is considered to offer the best healthcare for children. However, the hospital's capacities are not enough to support such huge numbers of visitors. The congestion of children patients in combination with a lack of nursing staff and a lack of organization often results to the severe deterioration of inpatient care that the hospital can offer (Picture 4.2). Dramatic patient overflows are noted in many of the central high-level hospitals of the country, which are encountering challenges in delivering good healthcare services (MoH, 2010a, Priwitzer, 2012), as it has been also admitted by their administrational staff[55]. As Lieberman (2009) informs, this overcrowded status is to an important extent exacerbated by the hospitals' own policy to keep inpatients for prolonged stays. Following a "per diem" instead of "per case" system of charge, not releasing patients on time gives the hospitals much better economic returns, but it of course works against the public benefit and it compromises the overall quality of their services.

Picture 4.2: The department of diarrheal disease in the Paediatrics Hospital of Can Tho City

Children are held in hammocks outside of overcrowded rooms. The role of nurses is taken up by relatives and friends, as is the case in many overcrowded hospitals, baring the risk of secondary infections and further spread of disease (Luxemburger et al., 2001).

Picture by author, 2011

The function of the public health insurance scheme must, therefore, be looked at in combination with the function of healthcare units and in relation to the policies that surround both. Regardless of the prevalent where the best quality of healthcare is offered, the final decisions people make are largely dependent on their financial capacities. The health insurance scheme does not always guarantee the health access one might aspire for, either because public grassroots healthcare is too unprofessional or hasty, or because the specialized units are overcrowded, messy or not accessible. Most self-employed individuals seem to prefer

[54] Source: Household representative, Thoi Giai hamlet of Phong Dien district 05.10.11; personal interview.
[55] Sources: Top official in Paediatric Hospital of Can Tho, 27.06.11 & nurse in Paediatric Hospital of Can Tho, 11.07.11 & Top official in the Central General Hospital of Can Tho, 21.06.11; personal interviews.

to pay out-of-pocket for their "everyday" or "normal" health expenses and do not account for possible future "serious" problems in need of specialized and expensive healthcare, which they will not be in the position to pay. As a result of taking such risks in their care-seeking strategy, many families are suffering unbearable health expenses and fall into heavy debts. As the next section discusses, health access inequalities are persisting and mostly experienced by the country's poor and remote populations.

4.2.3 Combined impacts of access inequality

The picture of health access is not homogeneous, with the rural and the poor being the most underprivileged with regards to healthcare. It was before mentioned how, regardless of their vast number, local healthcare establishments fall behind in terms of technical and professional capacities (Axelson et al., 2009).Considering also the increased offer of private medical consultation (Nguyen Ha, 2011: 10), their reducing utilization for outpatient cases does not come as a big surprise, in both urban and rural areas (Bloom, 1998). But rural areas have significantly less units of primary healthcare, that are also of lower capacities (MoH, 2010a: 6). A recent survey by the GSO (2008) showed, the access to central hospitals is also conditioned by location. People from rural areas appeared to have fewer opportunities to receive examination and treatment in central hospitals, in comparison to their urban counterparts (Ibid. 2008). This was not independent to factors of health insurance and poverty, seeing how rural areas are also the ones mostly inhabited by farmers, who in turn are usually both uninsured and of a lower income level.

Most of Vietnam's poor are indeed living in rural areas (General Statistics Office, 2009) and poverty is intensifying the difficulties in accessing health insurance schemes and healthcare services. Most of the rural inhabitants that could get inpatient treatment in high-level hospitals belonged to the rich quintile of the population and this disparity was even wider when considering also the use of outpatient services (GSO, 2008). In general, the health spending of the poor is averagely 3 times lower than of the rich (GSO, 2008), but even so, the spending of the poor constitute 40,5% of their overall household income (London, 2008a). High out-of-pocket spending is actually one of the most persisting problems in the country, with many people finding themselves in need of unbearably expensive treatment, due to their non-coverage by health insurance. It was reported that catastrophic health expenses are forcing three million people to go below the poverty line annually, even during recent years in Vietnam (Vian et al., 2012: 3). The smallest unexpected health expense might be too much to deal with for the uninsured and especially for those households whose income levels have irregular patterns (Fleßa, 2003).

Apart from structural factors that define disparities in healthcare access, there are also institutional reasons why some people cannot get the same quality of healthcare as others. In hospitals, the offered services are seemingly different for those who are insured and for those who pay 'out-of-pocket', with the latter being better received and more attended:

> "There are two different sections in the hospitals: one where people get medicine from if they have insurance or a health card and they don't pay anything, and one special 'services' section, where people have to pay for treatment and medicine. The 'health insurance' section is slower than the 'services' and not effective" (Household representative, Yen Hoa area, Cai Rang district, 18.10.11).

London (2008) has before referred to this informal but institutionalized division of service delivery in the hospitals (London, 2008a: 125). Similar observations are made by Forsberg (2011) regarding the better reception and treatment of governmental officials, in contrast to lay citizens with basic healthcare insurance (Forsberg, 2011: 4). Noticing this type of double standards that are in play in public hospitals, Priwitzer (2012 :175) further describes how if patients are willing to pay doctors more money they will get better inpatient conditions; thus creating a "two-tier system" where public and private boundaries are blurred (Ibid. 2012). The issue of corruption through "under the table" payments, is a commonly discussed "plague" of the health system in Vietnam and especially in the healthcare units of high-demand (Than Tung, 2012, Dao et al., 2008, Hien et al., 1995, Vian et al., 2012, Thanh Nien news, 2012). This

practice of additional illegal payments, has been so common as to be considered necessary by a public in agony of good quality healthcare services (Ha Mi, 2013) and has contributed to the creation of high institutional boundaries to healthcare access for the poorer. Issues of mismanagement and corruption have been continually on the rise since the hospitals became autonomous, including the practice of unnecessarily prolonged bed occupancies that was described before (Lieberman and Wagstaff, 2009). This has been strongly indicating the need for the increased supervision, monitoring and inspection in the sector (Nguyen Khanh Phuong et al., 2009, Ha Mi, 2013). Although there was an attempt by the government to establish an independent auditing body for issues of health governance during the formulation of the Law on Examination and Treatment (GoV, 2009a), this idea was abandoned.

Having so far described the institutional structures and functions that encircle healthcare provision, it is understandable why people's attitudes towards the health system are governed more by fear rather than trust. Many prefer to visit a pharmacy and self-medicate, rather than interacting with medical facilities (Khe et al., 2002), especially for sickness which they are familiar with or consider not serious. The majority of national health expenditures in Vietnam comes from people's out-of-pocket payments (Axelson et al., 2009, Ha Nguyen Thi Hong et al., 2002, Dao et al., 2008), a quarter of which is towards the purchase of medicine sold in the private sector (Lieberman and Wagstaff, 2009: 6). In a country of 88 million people, this has produced a huge pharmaceutical sector. The prices of medicine, however, remain largely uncontrolled in practice (Le Thanh Ha, 2010), despite the regulation that the MoH recently issued (MOH et al., 2007). What was noticed in the numerous pharmacies across the country is the promotion of certain medicaments over others and the push of patients to over-consume drugs (Ha Nguyen Thi Hong et al., 2002). The same has been noticed in the practices of doctors, who promote and illegally sell medicaments from their private clinics (MoH cited in Ha Nguyen Thi Hong et al., 2002: 2).

The uninformed consumption of medicine is exacerbated since the requirement for medical prescriptions is largely ignored by those working in private pharmacies. These individuals often are not even licensed pharmacists (Lieberman and Wagstaff, 2009, Okumura et al., 2002: 1876, Vian et al., 2012, Bloom, 1998). Yet, they are practically deciding on the medical treatment for millions of people in the country. A meta-analysis and review of studies on the issue (Van Nguyen et al., 2013) revealed that more than 90% of the doctors in hospitals overprescribed antibiotics in post-surgery cases, due to their "lack of confidence in laboratory reporting and infection control policy" (Ibid. 2013). This irresponsibly advised medication can have serious repercussions on the health of those individuals and the wider community. Diseases that remain untreated, or are treated with the wrong medicine, can exacerbate and spread. Over-use of antibiotics causes pathogens to mutilate and become resistant, constituting serious threats for public health. A study conducted by Okumura et al. (2002) revealed that one third of their interviewed individuals (505 in total) were keeping medicine which they would take in case of future illness. Among these medicaments were various types of antibiotics, carelessly used for catholic treatments of coughs and diarrhoea (Ibid. 2002).

The line that connects the institutional decentralization and privatization in the health sector, to the illegal practices of bribing or unadvised retail of medicine, is not visible at first site. The analysis so far has shown how people's health access is very much defined by the organizational aspects that govern the sector of health and the mechanisms that exist to control and regulate its function. The rural and the poor stand in much weaker grounds than the urban and the richer, in terms of access to healthcare of good quality. When seeking medical advice and attention, the first are usually left with unqualified health workers and pharmacists, or are forced to suffer severe economic losses in their efforts to access private and higher-level specialized units and to safeguard their health. Even though this might be easier for the second (urban and/or better-off), they are still subjected to internal hospital corruption, drug over-promotion and to a generally unregulated private sector, as described above. Considering also the crippled system of preventive health education, people become extremely vulnerable to diseases and epidemics for which they are not informed and do not know how to protect from. The next section examines the

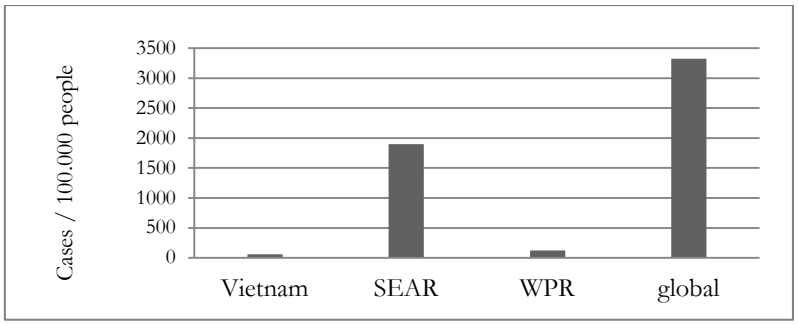
current status of some major infectious diseases in the country, drawing parallels with what has been so far highlighted for the health system.

4.3 Controlling epidemics in Vietnam

4.3.1 The status of infectious diseases and the distribution of diarrhoea

The incidence and the mortality rates of certain highly infectious diseases are some of the main indicators when assessing the success of preventive health policy in the country (see also section 3.2.3). The WHO (2012a) reports that, in Vietnam, the morbidity of infectious diseases has decreased by 34.6% and the mortality correspondingly by 5% from 2007 to 2010, with that decrease being even higher when compared to the period from 2001 to 2005 (52.6% and 18.7%). One successful example is the control of malaria, which is kept in low morbidity and mortality rates nowadays in the country (Fig 4.4).

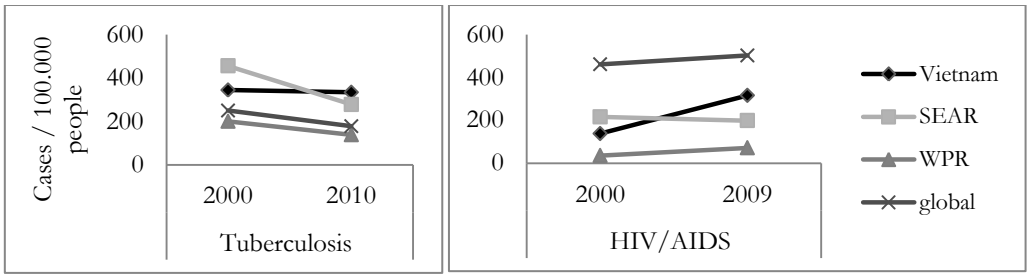
Figure 4.4: Reported malaria rates in Vietnam, surrounding regions and the world, during 2009



Based on data by WHO (2012e). Design by author.

Considering the outbreaks of over one million cases that were noted in 1995, the progress made in this front is indeed noteworthy. Current research, however, detects some trends of resistance-building to anti-malaria drugs in the region, seen as partly as a result of the manufacturing and usage of imitative medical products (WHO, 2012f). Despite the success in malaria control, some other infectious diseases, like dengue fever, pneumonia, and tuberculosis keep afflicting much of the country's population (WHO, 2012a). The HIV virus epidemic is particularly worrying, as the morbidity rates have been escalating during the last 10 years (Fig 4.5). Apart from these rather known diseases, new health threats are also on the rise and are proving extremely complex to control, including the severe acute respiratory syndrome (SARS) and the influenza A (H5N1) virus (WHO, 2012a). Due to the social, epidemiological and environmental particularities of each the above mentioned diseases, it is hard to comment on what it is exactly that stands on the way of their effective management. Nevertheless, their persisting incidence does indicate that their prevention is facing institutional pitfalls.

Figure 4.5: Morbidity rates for tuberculosis and HIV/AIDS in Vietnam and in surrounding regions

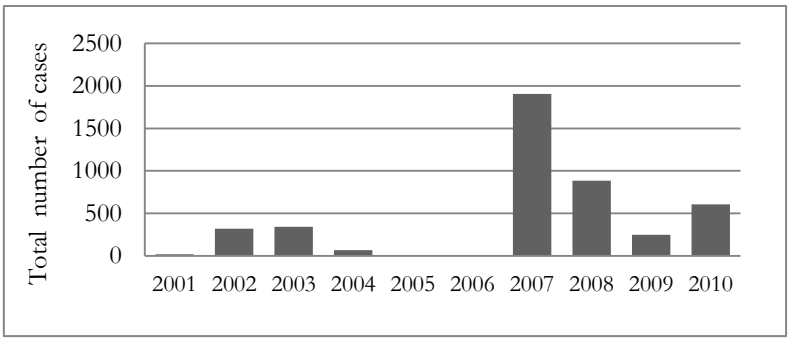


Note: WPR= West Pacific Region, SEAR = South East Asian Region.

Based on data by WHO (2012e). Design by author.

With regard to diarrheal diseases, the WHO reports that, even though most outbreaks are being successfully detected and controlled (WHO, 2012a), it remains one of the leading causes of morbidity in the country. The more severe expressions of diarrhoea, seen in the infections of cholera and typhoid fever, have reduced since dramatically 1997, but they keep re-appearing as short-term epidemics (WHO, 2012a). The latest and most severe cholera epidemic took place in 2007 in the country (Fig 4.6).

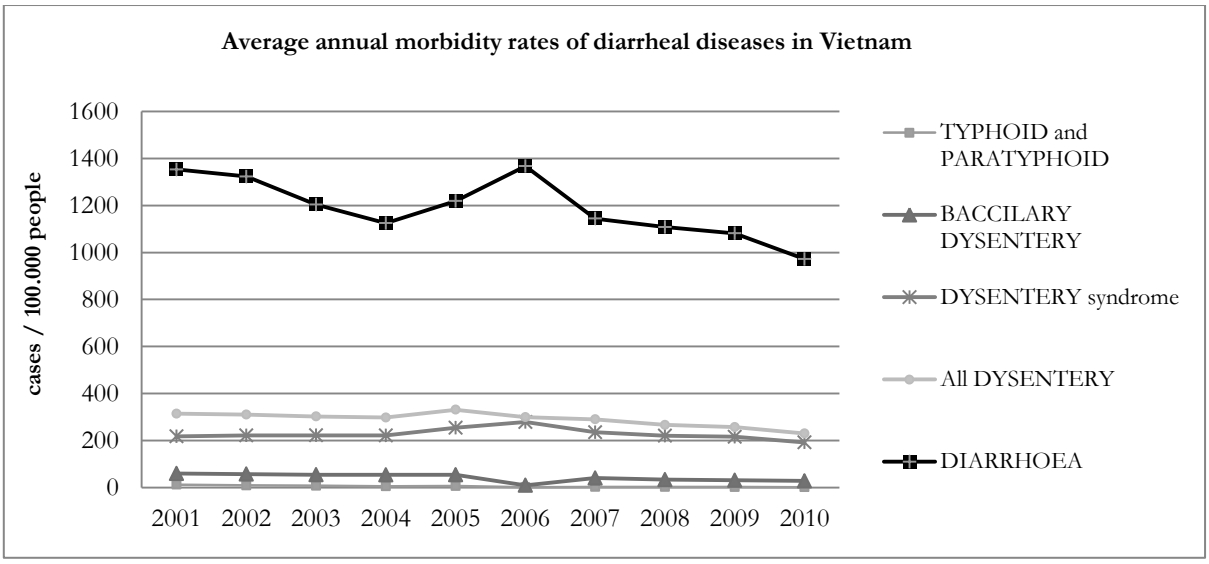
Figure 4.6: Annual numbers of cholera cases in Vietnam for the years 2001 to 2010



Data source (MoH, 2012b). Design by author.

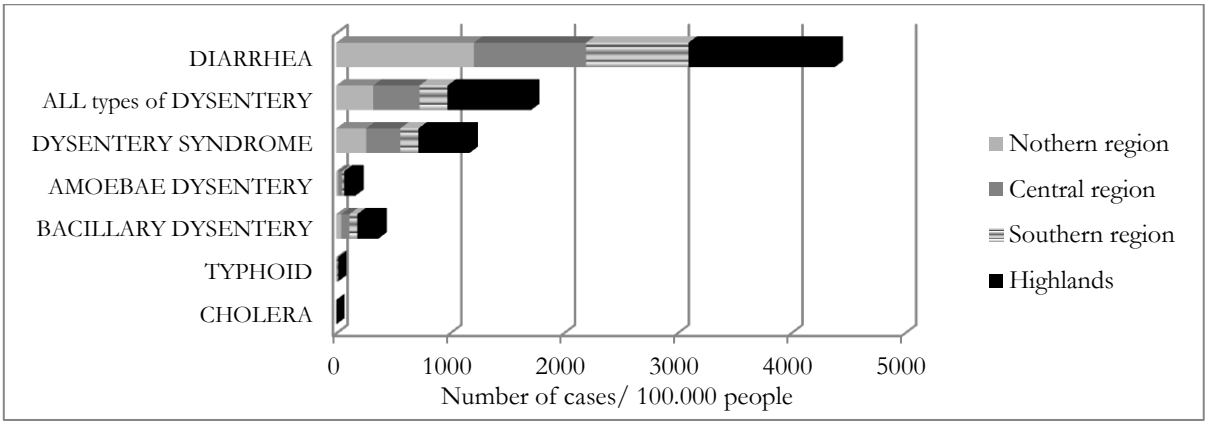
One of the diarrhoea types, the syndrome of Shigellosis dysentery, has been steadily in very high levels in the country (Kelly-Hope et al., 2008). Other types of diarrhoea that are caused by protozoa, helminths or warms, have been largely under-studied and unreported, both in Vietnam and worldwide. Acute diarrhoea, that is neither dysentery nor typhoid) is the most prevalent diagnostic type of diarrhoea reported in the country (Fig 4.7) with an average of over 1.5 million documented cases annually during the years from 2005 to 2011. The Northern and Highland regions are comparatively more prone to the disease, presenting the highest morbidity rates for the same period (Fig 4.8). These provinces are characterized by high rates of poverty (Nguyen Thang et al., 2006) and also accommodate groups of different ethnic origin. This already indicates some type of co-evolution between socio-economic and health phenomena in the country. When looking particularly at the provinces of the Southern Mekong Delta one observes how the city of Can Tho is among the six provinces that are mostly hit by diarrhoeal diseases (Fig 4.9).

Figure 4.7: Reported morbidity rates of diarrheal diseases in Vietnam, by diagnostic type



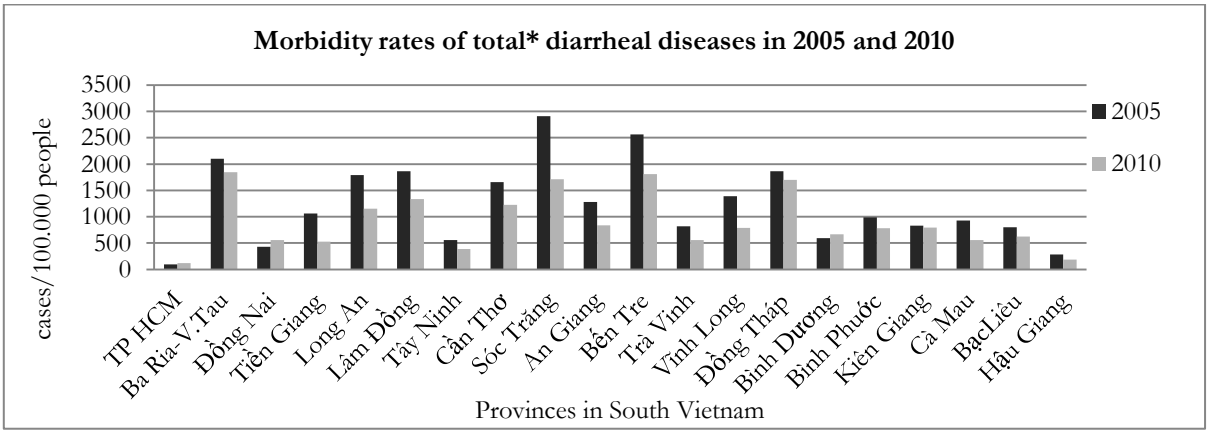
Data source: (MoH, 2012b). Design by author.

Figure 4.8: Reported morbidity rates of diarrheal diseases in Vietnam by region, averagely for 2001 to 2010



Based on data by MoH (2012b); design by author.

Figure 4.9: Reported morbidity rates of all types of diarrheal diseases for the Southern provinces



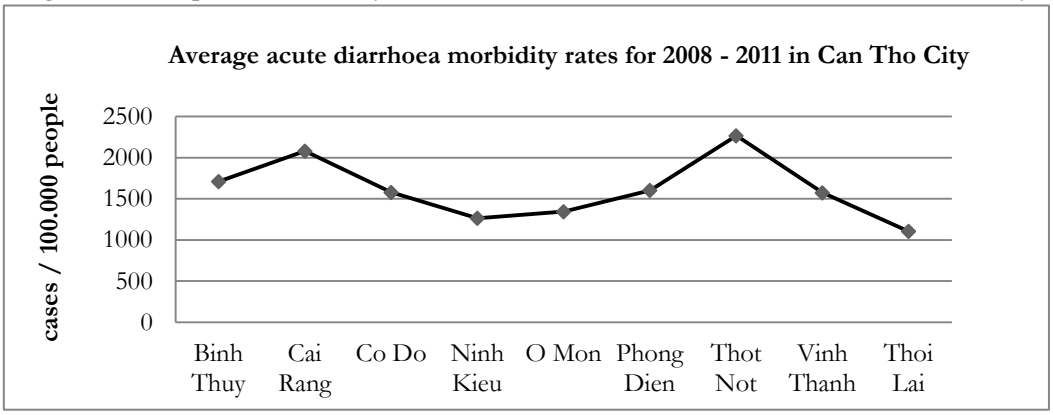
* Including acute diarrhoea, dysenteries, typhoid and cholera. Data source: IHPH (2012); design by author.

Most of the above reported southern provinces (Fig 4.9) are officially characterized as rural, apart from Can Tho City and Ho Chi Minh City, which are classified as urban (GSO, 2012b). The province of Ba Rau is the only one of the 18 rural provinces where the number of urban and rural residents is almost equal

(Ibid. 2012); thus, Ba Rau could be seen as the "urbanizing" case in the provincial level. Among the rest, Can Tho City is considered to be one of the most developed provinces in the Mekong Delta, from both an economic and an infrastructural perspective. The health data shows that whereas the overall number of diarrheal disease cases has decreased in the South between the reported years, the urbanizing province of Ba Rau is facing an increase and was actually the mostly hit province for the year 2010. Considering that Can Tho City is also facing more cases than many of the rural provinces, it seems that urbanization does not necessarily come together with public health improvements, at least in terms of diarrheal disease prevention. On the other side, the least hit province appears to be Ho Chi Minh City, which is indeed the most urbanized and developed among the above.

Zooming in the nine districts of Can Tho City and focusing on what is being reported as acute diarrhoea, the rural or urban characterizations do not seem to affect the distribution of the disease's morbidity (Fig 4.10). Namely, the mostly hit districts of Cai Rang and Binh Thuy are officially classified as urban districts. The most central and developed district of Ninh Kieu actually reports higher morbidity rates than the truly rural district of Thoi Lai.

Figure 4.10: Reported morbidity rates of diarrheal disease in the districts of Can Tho City



* Data for the population is from 2011 (Statistical Office of Can Tho City, 2011),

Based on data by the PHC of Can Tho City (2011b). Design by author.

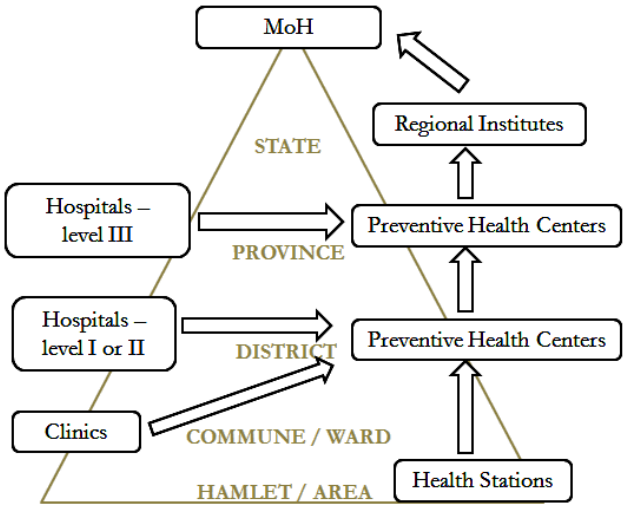
What can be extracted from the health data above is that urban and rural categorizations cannot fully describe what shapes the spread of disease. Even if the process of urbanization does impact on the risk of diarrheal disease, this impact is not to be understood as clearly positive or negative. More importantly, before rushing into conclusions about what the spatial distribution of disease incidence indicates, one needs to interrogate the credibility of health statistics and look at how this data is being produced from the local to the national level.

4.3.2 The disease reporting mechanism and the case of diarrhoea

The information on the occurrence of infectious disease is aggregated in a bottom-up manner, from the communes to the MoH, in a process that is being coordinated by the PHCs (Fig 4.11). Reports on the status of disease are produced daily, monthly and annually, aggregating the statistics as the reports move up levels[56].

[56] For example, the district-PHCs have daily statistics of the number of diarrhea cases, per commune. The regional institutes of the South, on the other hand, only have aggregated data per province and in most cases they only kept monthly or annual statistics.

Figure 4.11: The reporting of infectious diseases within the health system in Vietnam



Based on descriptions by health representatives and collected health reports and on Decree 48 of the Government of Vietnam (2010a).

If a case of highly infectious disease appears in one of the involved units of health reporting, this unit must immediately report it directly to the provincial authority (PHC), which in turn has the duty to apply a "case management plan" and keep the spread of the epidemic under control (Article 47 in GoV, 2007). The management plan for cholera, for example, includes the transfer of the patient to a district or provincial hospital, where a 'disease control strategy' is employed, according to the instructions issued by the MoH (2007a). The national guidelines for the management of children's diarrhoea, define it generally as "the passing of watery stool three or more times within 24 hours" (MoH 2009) but also classify it according to the different aetiologies and recommend the adequate treatments (see also chapter 6.2.2). Generally, health professionals claimed to base their treatments of diarrhoea on the diagnostic characteristics and not on laboratory analyses, prescribing antibiotics for the feverish type of bloody dysentery and oral or intra-venus re-hydration therapy for the acute watery diarrhoea[57]. From the overall answers of the interviewees it seems that only specialized hospitals are in the position to diagnose and treat diarrhoea in detail and thus, the cases that are not administered in the hospitals fall under the general category of diarrhoea and are reported and treated as such. Interestingly, there is no "case management plan" for diarrhoea that is not classified as cholera and does not concern children.

Many citizens and health professionals usually referred to adult's diarrhoea as a "light", "common" or "everyday" disease, characterized by mild episodes which do not reach severe de-hydration stages and thus do not receive special medication or inpatient care. According to informants, only when a case of acute ("serious") diarrhoea is detected in a health unit, the PHCs in the central, provincial and district level will coordinate to control its spread[58]. The preventive mechanism against diarrheal disease in the country is kept alert through the frequent re-circulation of directives and decisions from the MoH to the localities, especially during periods of increased risk for foodborne or waterborne epidemics (see also chapter 6.2.1 and 6.2.2). The electronic Disease Surveillance System in the country is based on the reporting of infectious diseases (Fig 4.11) and is used to early detect and control the outbreaks of epidemics. However, the system can only recognize the morbidity rate of an infectious disease as an outbreak, when this rate surpasses a set baseline. The baselines are defined based on the average rate of each disease during the

[57] Source: Top official in Paediatric Hospital of Can Tho; 27.06.11; personal interview.

[58] This only takes place if the symptoms indicate the presence of infectious cholera or typhoid, or a group food poisoning case, but not for the case of the milder individual diarrhoea episodes.
Source: Top official in PHC Can Tho City, 14.07.11; personal interview.

previous five years[59]. As a result, the constantly high numbers of a disease, like acute diarrhoea, are not considered to be outbreaks unless they present an abrupt rise of reported incidence.

Summarizing, the detection and the confinement of a possible outbreak, depend on the reporting that takes place in the healthcare units and on the fast communication and coordination between the preventive organizations involved. Even if diarrhoea is the second most prevalent disease in the country, its spread seems to be rather normalized by the reporting and curative health institutions in the country. In terms of medical attention, the millions of episodes of diarrhoea that are noted annually are not considered as alarming, unless they are of a deadly type (like cholera). In terms of preventive action, these episodes do not motivate for further examination and control of their sources, unless they spread rapidly in numbers that exceed the average. Furthermore, the reported statistics only show the tip of the iceberg of the actual cases of disease in the population and often prove untrustworthy, as they present inconsistencies in their reporting methodology.

Inconsistencies and "escaping" numbers in the case of diarrhoea

It is particularly difficult to conclude on whether the reported statistics on diarrheal disease reflect the reality of how many people experience it in the country. Such problems begin when different reporting categories are used in the various health units[60], which are however not clarified in the produced reports and thus, can easily lead to the comparison or aggregation of "apples and oranges" (Table 2 in Annex). Many of the health clinics and hospitals in Can Tho City only report on patients that are under-five years old. Many of the reports from the district PHCs also only report one number of total patients with diarrheal disease. The provincial department of health, on the contrary, separates its statistics between children patients and the total number of patients (Department of Health, 2009), but the source of data for this separation is unknown. The Paediatric Hospital in Can Tho, on the other hand, which reports 1.500 annual acute diarrhoea cases averagely for the years 2009 - 2011 (Can Tho Regional Paediatrics Hospital, 2011), is not specifying that these numbers actually only represent inpatient and not outpatient cases. A closer look into the detailed records from the hospital's archive was able to show that in fact, there were up to 12.000 check-in visits of children with diarrhoea, most of which were simply not diagnosed as "severe" cases and thus were sent home as outpatients.

When comparing the resulting data from the different authorities within Can Tho, many discrepancies arise (Table 2 in Annex). The district PHC of Binh Thuy, for example, reported 140 cases of children patients for the first semester of 2011. This number did not appear in the report of "children's infectious diseases" compiled and provided by the PHC of Can Tho City, for the same year, which only reported 10 cases of children's diarrhoea. As a result of this confusion and vagueness in the methodology of collecting data on diarrhoea, health statistics from the various organizations in the country can provide for various interpretations on its spread, depending on how much of the "meta-data" is known and on how far can data triangulation prove their validity. The problems of health reporting go beyond the issue of diarrheal disease, seeing how even the vital registration system in Vietnam has been proved flawed and fails to provide accurate numbers of mortality rates and causes of death (WHO, 2012a). While the WHO and other international organizations supported some provinces with equipment and technical training for properly reporting diseases, most provinces still rely on governmental support or hospital revenues, which so far, are said not to be enough (MoH, 2006). While reporting is a core activity for numerous health offices, this reporting proves to be a rather un-synchronized and incomplete information exchange between these offices. In the words of a medical doctor from a rural district hospital in Can Tho City, "the real disease in Vietnam is the reporting system" (21.07.11, personal interview). In the case of diarrhoea,

[59] Source: Official of the WHO in IHPH, Ho Chi Minh City, 29.07.11; personal interview.

[60] For example, some units report only on children patients, some only on inpatients and some report all the patients with diarrhoea.

this also owes to the fact that, both policy and action for its control are rather compartmentalized and de-prioritized (see also section 6.2.2).

Another issue that hampers the accurate representation of the spread of diarrheal disease involves the cases that completely escape the reporting system. As earlier explained (section 4.2.3), many patients do not turn to the public healthcare system, either because they seek advice elsewhere (private healthcare, pharmacy) or because they do not consider their illness as requiring medical attention and treatment. Based on the findings by Nguyen et al. (1997) and on the reported rates of disease by IHPH (2012) the difference between statistics and empirical results is noteworthy (Box 4.3). Notwithstanding the significant drop in the disease's morbidity rates since the publication of the above study (Nguyen Thi Kim Tien et al., 1997), there appears to be a significant gap between what is captured by the reporting mechanism and what is revealed by such empirical studies. As the representative of the IHPH stated particularly for diarrhoea, "the numbers of reported patients are only the tip of iceberg that is visible on top of the ocean. What happens underneath, we cannot really know, but it certainly exists" (top official in IHPH of Ho Chi Minh City, 28.07.11; group interview).

Box 4.3: Comparing data from an empirical collection of date with official statistics of diarrheal episodes

Empirical findings of Nguyen et al. (1997): A study from the Pasteur Institute in the Southern Vietnam documented that in Cai Be district of Tien Giang province, the incidence of diarrhoea was high for infants (71.2 episodes per 100 children annually) and for the age-group of 6-12 months (60 episodes per 100 children annually); constituting a serious health problem in all of the 24 studied communes (Nguyen Thi Kim Tien et al., 1997).

Considering that about 25% of the country's population are children under-five years old (CIA, 2012) and assuming that this applies also for the population in Cai Be district, a simple extrapolation of the study's data would give an incidence rate of about 50.000 annual cases of diarrhoea in children for Cai Be district. This figure is five times higher of what was reported for the whole province of Tien Giang during the years 2005 – 2010 (IHPH, 2012).

With a confusing and mildly representative reporting accompanied by a drop of utilization in public healthcare, it is questionable whether the harmoniously declining numbers of diarrheal diseases in the country are at all representative. Taking into account the institutional normalization of the "everyday" diarrheal episode, there is the risk of ignoring a possibly very high incidence. This firstly, points to the failure of the preventive mechanism to take the necessary measures and eliminate the risk of its spread. Secondly, it of course indicates that many adults and children are facing the disease's frequent recurring. If not treated on time and with proper medication, this can transform into persistent diarrhoea (Nguyen Thi Kim Tien et al., 1997) with adverse effects on a person's nutritional status, on their susceptibility to other diseases and on their general development and well being.

4.4 Conclusions

As this chapter portrayed, the changes of economic policy that Vietnam embraced after 1986, seem to have deeply affected the functions of the healthcare system and the way Vietnamese people experience health. The implementation of decentralization and privatization policies in the sector, has not managed to balance the disparities, which instead have been growing since. The responsibility to strengthen the healthcare services has been transferred from the central to the local state. Inequalities of access persist horizontally, with the rural and the poorer areas finding it hard to cover their healthcare needs, but also vertically, with the health units in the lower administrative levels (communes and wards) facing huge difficulties in fulfilling the healthcare and preventive responsibilities that the law -subtly but consistently- transfers to them. The insufficient financial support that reaches the sector of primary healthcare is not allowing these grassroots units to upgrade the quality of services they can offer. This is majorly felt by the poor, who cannot get access to more central public healthcare of better quality, unless they pay additional

fees. People, who are experiencing a low level of services, seem to be losing their trust and underutilize primary health units more and more throughout the years.

As Roberts et al.(2003) suggest, assessing the performance of public healthcare systems needs to incorporate three goals: "the health status of the population, the satisfaction that citizens derive from the system, and the degree to which citizens are protected from the financial risks of ill health" (Roberts et al. 2003). The combined phenomenon of lack of trust and lack of access towards healthcare, often leads to individuals being uninsured and seeking unadvised medication. As a result, many over-consume drugs, follow wrong treatments and are not being properly and timely diagnosed by a physician. The practices of many medical practitioners is the core of many problems in healthcare service provision, as they demand under-the-table payments, they maintain a double status of work (both in the private and the public sector) and they are illegally selling medicine from within their private clinics. Overall, nor the health status, the satisfaction or the protection of the citizens is currently guaranteed through the health system in Vietnam. Transforming healthcare, from a state duty to a commercialized good and an individual responsibility, the Vietnamese government has put many of the country's citizens in the risk of suffering ill health and unbearable expenses, as they are constantly trying to balance between what they think is best for their health and the financial burden that this would involve.

The impacts that the current set-up and function of the health system has on the spread of infectious diseases, like diarrhoea, are manifold. Firstly, the "everyday" or "normal" incidence often goes unreported and perhaps not medicated, until it reaches a stage of severe dehydration and thus, until it constitutes a risk for the individual's life. In a scenario of limited access to a medical facility and of self-medicating practices, a timely examination of a case might never take place. Due to the circumvention of public healthcare, many cases of disease are never reported and thus the assessment of their spread is under-estimated. As the next chapters discuss, the weaknesses that have been evidenced in the foundations of primary healthcare and preventive action, are bound to reflect negatively on the stability of the whole construction of public health and particularly with regards to the control of epidemics.

CHAPTER 5

QUESTIONING THE PANACEA OF WATER SUPPLY AND SANITATION

Having examined the context of health institutions and health-seeking behaviours within which disease can be encountered, treated, prevented and controlled, some main weaknesses of the sector have been outlined. Institutions of health are however not alone in shaping the risks of disease. The sectors of water, sanitation and food safety come in as major determinants in the prevention and control of infectious diseases, such as diarrhoea. Having seen that the rates of diarrheal disease episodes remain high in the country and in the region of the Delta, this chapter will begin to question the way the Vietnamese state addresses this problem, from the preventive side. Focusing on the sector of water supply and sanitation (WSS), this chapter looks into how policy is implemented and what are its impacts on water-related household practices and ultimately on people's access to safe water and sanitary environments. Trying to set clear the factors that govern this access, multi-sourced information is used to compare and contrast the official discourse with local opinions on the subject and with secondary findings of water quality and environmental hygiene from the region. The long-disputed issue, of whether and how much improved facilities of water supply and sanitation contribute to the elimination or lessening of the risk of (diarrheal) disease, is brought to the table through closely examining the case of Can Tho City.

5.1 A discursive jump: from infrastructure to health benefits

The fact that clean water and better sanitation are main players in the fight against waterborne disease is supported by numerous scientific works worldwide. A study from the An Giang Province of the Mekong Delta found indeed that children with access to improved water sources, suffer 75% less episodes of diarrhoea than children whose drinking source is the canal or river water (UNICEF, 2012a). Statistical findings of the sort are impressive and provoke enthusiasm for the potential of WSS facilities in solving persistent health problems. However, a focus on technical improvements might cause a disregard of the use and maintenance of these facilities by individuals, which is truly crucial in defining the hygiene of people's water, food and living environment. Furthermore, the presence of improved WSS in the household level, is not enough to provide for environmentally sustainable sanitation if the systems of wastewater collection, treatment and use are not integrated (Saravanan and Gondhalekar, 2013). Last but not least, the increase that is noted in the numbers of such improvements does not imply anything for their equal distribution. Existing and persisting social, ethnic or gender inequalities are not visible thorough the mainstream indicators and leave open the questions of who and why is benefiting from the investments in the sector. For all the above reasons, the contribution of WSS to the prevention of disease needs to be questioned on the basis of microbiological, social, cultural and institutional context.

5.1.1 Water supply and sanitation vis-à-vis disease prevention

There have been a large number of studies on the benefits that improved WSS bring to communities around the world. Many of them emphasize how the positive impacts in relation to health, mostly accrue when the technical improvements are combined with the promotion of hygienic practices, such as hand-washing with soap, proper treatment and storage of water and good kitchen hygiene (Cairncross et al., 2010b, Clasen et al., 2006, Fewtrell et al., 2005, Sugita, 2004, WaterAid Australia & International Water Centre, 2008, UNICEF and WHO, 2009). The question of whether positive health impacts would be of the same extent without the accompanying promotion of hygienic practices remains open, due to the

difficulty to draw causal lines between these issues. Nevertheless, the importance of practiced hygienic awareness is proving central in the sector of water-related improvements of well-being.

Ignoring this importance was an often observed pitfall in Vietnam, despite the strong focus to expand piped water supply networks and modern sanitation systems in the country, which has been particularly connected to the fight against waterborne and water-related diseases. This connection is evident both in national documents which declare the fight against disease as a primary goal of WSS expansion (MARD and MoC, 2000), as well as in the content of health campaigns which promote WSS as the answer to disease[61]. The strong relationships between water quality, sanitation and the risk of diarrheal disease are indeed part of the discourse of many citizens and state cadres. Their descriptions and experiences, however, tell somewhat different stories:

> "The problem of waterborne diarrheal disease is intensified in the rural areas because of the lack of water access and sanitation and because of the inadequate hygienic behaviour of the people." (Top official in IHPH of Ho Chi Minh City, 28.07.11; group interview)

> "The awareness of people around issues of disease is on the rise continuously in Ninh Kieu district, judging from the declining statistics of diarrhoea incidence […] Households now use the modern toilets and no longer the fishpond ones. I don't know of any programs for improving sanitation in Ninh Kieu, as the situation is already improved, but I know in [rural] Ca Mau for example." (Official in PHC Ninh Kieu district, 23.06.2011; group interview)

> "When I was using river water I would get a lot of diarrhoea. One time I was suffering for days, I turned purple and my neighbours took me to the hospital, I almost died. Now with tap water, diarrhoea only happens to me two or three times a month. The state said they would give us a subsidy to build a toilet last year, but they still haven't yet" (Head of household in Truong Long commune, Phong Dien district 11.10.2011, in-depth interview).

As the director of the IHPH underlines, it is not only the lack of facilities that results in the disease's spread but also the poor hygienic behaviours of people, which he particularly assigns to the rural areas. However the difference between the two is blurred, in the words of the PHC representative, who sees the declining rates of diarrhoea disease and the increasing rates of WSS facilities, as the main –if not the only- indicators of people's hygienic awareness and behaviours. These assessments and assumptions take more social flesh through the descriptions of the above interviewed woman, who describes her experiences with disease and with access to water and sanitation. Despite having less episodes of diarrhoea now that access to rural tap water is possible, the health problem persists, even if in lower frequency. Moreover, access to sanitation is for her not possible, due to the lack of financial support from the state.

The above firstly point to the diversity of factors that create the problem of diarrhoea and which are a nexus of people's own hygienic behaviours, the quality of water that they have access to and their ability to exercise safe sanitation without imposing health risks to themselves and their community. Secondly, it becomes obvious through these short excerpts of interviews, how different the discourse is when carried by lay citizens, by high-level representatives of health or by local cadres and how it reflects the different interests at play. The household interviewee states her experience and points to her problems and needs, while the local cadre portrays the result of a successful policy implementation, without mentioning any of the problematic aspects in the sector. The director of the IHPH, on the other hand, gives a less involved and more technocratic view of the situation, describing the problem but not questioning its causes.

As this chapter discusses in detail, what the local representative of the PHC supports, contains a faulty argument and a false assumption. What he falsely assumes, is that people's increased awareness on the issue of waterborne diarrheal disease can be proven by the presence of WSS facilities. As literature has highlighted, these two issues constitute separate challenges and, even though related, are not equivalent to each other. The respondent is also rushing to argue that his point is proven by the health statistics

[61] This is discussed in detail in chapter 6.

concerning diarrhoea in the district of Ninh Kieu. However, this district actually reports much higher rates of disease than its rural counterparts which are significantly less developed in terms of WSS (see Fig 4.10 in chapter 4.3.1).

The same line of arguments were provided by many other state representatives, who gave misleading evaluations of the diarrhoeal disease risk, solely looking at the expansion of "hardware" solutions while not directly examining the success of "software" measures, assuming that the former well represent the latter. Moreover, the case of the interviewed woman points to the fact that even if the statistics of WSS coverage were to tell us something about the risk of disease and the levels of hygienic awareness, they fail to adequately portray the inequalities that persist in the sector, as they focus on the majorities and they do not usually distinguish categories of poverty, gender, ethnicity etc. As many have underlined, notwithstanding the potential benefits of WASH(Water, Sanitation and Hygiene), a disregard of the structural and social inequalities can indeed counteract the impact of WASH improvements in fighting disease (Cairncross, 2003, Carter et al., 1999, Elmendorf and Isely, 1983). One of the few interviewees that acknowledged this side of diarrheal disease was the representative of the WHO in Ho Chi Minh City. Upon his words, the study of diarrhoea in the region constitutes a deeply social problem which needs to be looked at beyond one-dimensional indicators:

> "One third of the population in the South of Vietnam will get waterborne diseases; especially the kids under five years old. The poor, those with no access to water supply, no ability to construct and maintain sanitation facilities, those with unequal access to health services and treatment, they are the most vulnerable." (Official of the WHO in IHPH, Ho Chi Minh City, 29.07.11; personal interview)

5.1.2 Seeing beyond "improved" indicators

In Vietnam, the promotion of water supply and sanitation gained momentum towards the end of the previous century, when developments in the sector were boosted mainly in the urban areas (ADB, 2007). A few years later, the National Strategy on Rural Water Supply and Sanitation (NRWSSS) was adopted as part of the National Target Plan (MARD and MoC, 2000) and signified the expansion of WSS also in rural areas. These efforts actuated with the financial assistance of international donors (ADB, 2007 :124) and under the coordination and administration of the provincial Centres for Rural Water Supply and Environmental Sanitation (CERWASS) of the Ministry of Agriculture and Rural Development (Reis, 2012: 56). A fast-paced development is now presenting results of remarkable progress in the country, with 95% coverage of improved water sources and 60% of improved sanitation, in the year 2010 (Fig 5.1 and 5.2). However positive the overall change, the globally observed trend of urban and rural disparities in WSS coverage (Graham and Selendy, 2011b, Graham and Selendy, 2011a) is strongly present also in Vietnam (Fig 5.1 and 5.2).

The rural areas are still behind the targets of 70% hygienic sanitation coverage and 85% of clean water access, set for the year 2010 (GoV, 2006a, MARD and MoC, 2000). According to reports from the MARD, only 40% of rural residents had access to water that complies with national standards of safety[62] and only 43% had access to toilets that officially qualify as hygienic[63], during the target year of 2010 (MARD and MoC, 2000). Noticing the significant difference between what being reported by MARD and what is presented by the JMP above, the differences between "improved" and "hygienic"[64] or "safe" also come into view. Thus, interpreting statistics in order to understand the reality of water supply and

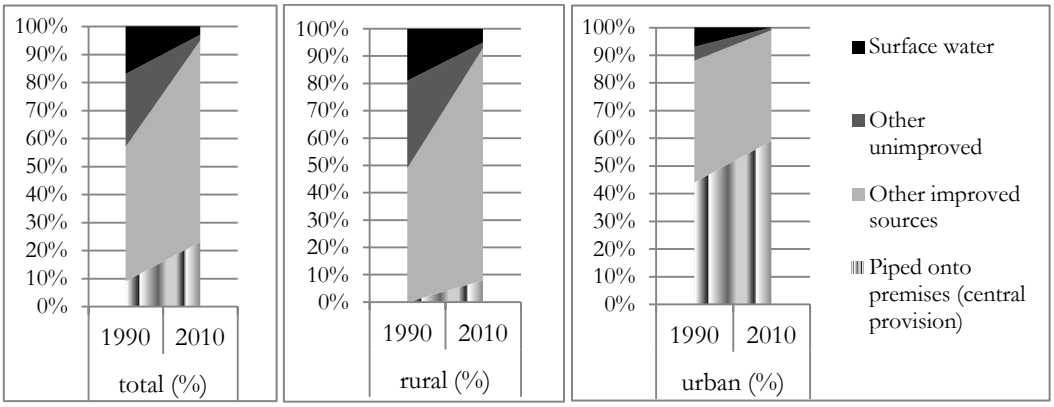
[62] Standards of domestic and drinking water are defined in Decision 09 of the Minister of Health, "on Issuing the Sector Standards-Hygiene Standards for Clean Water" (09/2005/QD-BYT. Hanoi).

[63] According to Decision 08 of the MoH, "on the Hygiene Standards for Various Types of Latrines" (08/2005/QD-BYT Hanoi).

[64] The use of quotation marks for the word 'hygienic' (or 'clean' and 'safe') is when the word stands for a category that is defined and reported by Vietnamese state authorities. It does not indicate any particular evaluation or standard of water quality that the author has conducted or agrees with.

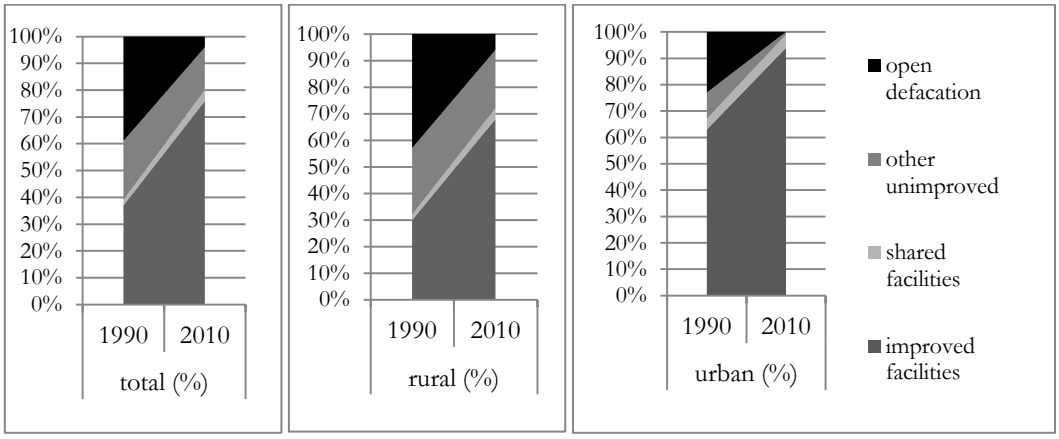
sanitation that people are actually using is an important and challenging venture. Apart from questioning the trustworthiness of any produced data, it is the interpretation of what is reported as "improved", "safe" or "clean" with regards to health that needs to be done with caution.

Figure 5.1: The evolution of improved water supply access in Vietnam between 1990 and 2010, for rural and urban areas



* The category of "other improved sources" includes: public taps or standpipes, tube wells or boreholes, protected dug wells, protected springs, or rainwater collection. In the case of Vietnam, this category also includes mini-supply (CERWASS) water stations that deliver treated groundwater in the rural areas. Data based on the Joint Monitoring Program(JMP Vietnam, 2012a). Design by author, 2012.

Figure 5.2: The evolution of improved sanitation access in Vietnam between 1990 and 2010, for rural and urban areas



Data based on the Joint Monitoring Program (JMP) of WHO and UNICEF (2012b). Design by author.

Bain et al. (2012) elaborate exactly on why the availability of an "improved" water source does not guarantee health risk avoidance. Firstly, the source of water does not necessarily speak of its safety. The quality of one type of water (i.e. groundwater) can vary significantly with location, even within the same village. Moreover, the quality of water at the point-of-use depends greatly on the treatment, the handling and the storage to which water is subjected after its collection (Jensen et al., 2002). In most cases, these handling practices, which usually take place in the micro-level of the household, are assumed to be homogeneous and ideal, when in reality they are not so. Speaking of "improved" sanitation carries assumptions of a similar nature, with regards to the hygienic benefits of a certain latrine type in personal and in community levels. The promoted toilet exemplars are designed to safely dispose and treat sewage, so that they indeed remove much of the health risk factors related to bad sanitation. However, their detailed construction and mostly, their manner of usage and maintenance are issues that depend on the individual households and can hardly be captured by the produced reports. More importantly, safer

household sanitation does not necessarily mean safer community or environmental sanitation, if systems of wastewater collection are not integrated with systems of wastewater treatment (Saravanan and Gondhalekar, 2013). In a water-rich and water-complex environment, such as the Delta, the disposal of sewage that has not been treated can detrimentally affect the spread of water-related disease and is interweaved with issues of safe water supply and usage.

Last but not least, "improved" models of water supply and sanitation might not agree with local definitions of cleanliness, safety or complacence, despite their scientifically proven hygienic virtues or practical usefulness. This might be because such models do not conform to the context in which they are introduced. The idea of having a toilet inside the house or of reusing treated wastewater, has often been rejected due to cultural sanitary taboos (Jewitt, 2011). In the example of Southern Vietnam, it is not acceptable to use plant fertilizer that originates from human waste compost and thus, the composting pit latrine is not an option. On the other hand, Reis and Mollinga (2012) have before noted how the idea of the modern and "beautiful" septic tank latrine has bared more social and aesthetic perceived benefits than recognized hygienic and health ones. It is, therefore, important to emphasize the social and cultural aspects of preventive solutions like safer water supply and sanitation, when attempting to understand whether and why these solutions are successfully adopted.

Recent global monitoring targets on WASH, urge for a step towards more in-depth and better disaggregated indicators, which will go beyond the typically reported "improved" facilities. The newly formulated indicators of improved WSS, evaluate *quality* differently from *accessibility* and *availability* and recognize that non-discrimination should be a cross-cutting evaluation criterion for each project's success (JMP, 2012a). The issue of urban poor minorities is also given more attention by asking for poverty-specific data that include urban areas (Ibid. 2012). Moreover, the need to address the "gap in access" between different income groups and other sensitive social categories is integrated into the organization's future targets. In terms of sanitation, criteria do not only examine the number of certain types of latrines but also their durability and their ability to effectively contain excreta, setting also high priorities on safe treatment and possible re-use of sewage. Last but not least, the practices of hygiene (hand-washing, food hygiene, menstrual hygiene management) are emphasized "as fundamental to good health, dignity, and quality of life" (Ibid. 2012: A21). Based on international acknowledgments for a more socially and environmentally sensitive focus in the sector, the chapter continues to examine how impactful has been the policy and the discourse around WSS in the region of the Delta, with relation to the prevention of diarrheal disease.

5.2 Safe water access in the Delta: whose reality and whose delusion?

Safe water is a rather blurred term that cannot be descriptive enough if not specified in detail. In biochemical terms, water can carry different concentrations of many kinds of substances and microorganisms, some of which can be potentially dangerous for human health. These concentrations are often neither stable in time, nor able to be monitored in full detail, especially in the case of the vast amount of water that flows in the Delta. Moreover, interpreting concentrations in relation to human health is a complicated and contested issue. Therefore, when talking of safe water, one needs to specify for which water, at which instance, for what type of usage and in which amounts. International and country-specific regulations of water quality define the parameters for water that is safe to drink or adequate for daily use. It is not within the scope of this thesis to question such limits and thus, the analysis that follows is referring to the established Vietnamese standards of water quality (MoH, 2009b), specifically focusing on the indicators of bacterial/microbial pollution. This section examines whether and

when the produced reports on "hygienic" water coverage reflect a reality of safe water access in terms of waterborne disease, and when this access consists more of a popular delusion.

5.2.1 Rural supply schemes, urban water companies and the hampered alternatives

The establishment of water supply mini-stations which use groundwater and can serve up to 100-200 households each (Reis, 2012: 73), has been the promoted and expanded solution for the delivery of treated water in the rural areas of the Delta. There are about 428 of these stations today in Can Tho City[65], yet not all the rural households in need have managed to get access to the network. The morphology of the Delta region is claimed to make water developments a challenge, as "there is a complicated system of canals and channels so it is hard also for the water supply network to reach every household or every area in the communes" (top official in the Red Cross branch of Phong Dien district, 07.09.2011; personal interview). It is basically a financial problem, as the expansion of the network to remote areas would demand for increased expenses, which CERWASS does not cover and the residents are not willing to pay for. Nevertheless, some have said that even when there is demand, the local authorities will not set out to expand the network:

> "Because the river flows along this commune [Nhon Ai], people seem to use river water and one third of them do not have access to tap water. There is the demand, but for some reason the government does not build the infrastructure. There is a road and it is close to the centre of the district so I don't understand why they don't take care of it. My family also takes water from the river." (Top official in the district branch of Women's Union, Phong Dien, 08.09.11; personal interview)

The alternatives to piped water supply comprise of collecting rainwater, drilling or digging private wells, using river water or purchasing bottled water. Among these, the use of untreated surface water is the most popular cost-free alternative and part of the local culture, as "most people traditionally live along the river in Vietnam and they follow the habit of using river water" (top official in the Red Cross branch of Phong Dien district, 07.09.2011; personal interview). However, it is also a practice that exposes people majorly to the risk of waterborne disease. It is often the case that even when households are connected to piped supply, they will be making use of the many other alternatives and supplement their water needs for drinking or for daily usage (Herbst et al., 2009).

As it has been argued before by Reis (2012 :96), a sustainable year-long access to clean water for rural households in the Delta, constitutes a complicated issue that is primarily a question of a household's financial capacity[66]. Discussions with local residents and state representatives from rural areas in Can Tho City, indeed confirmed her findings:

> "Well, those who have money they buy bottled water, or a purifier and their kids know when they get thirsty they can drink this water." (Household representative HH3, Phong Dien district, 21.12.11; personal interview)
>
> "Those who still cannot have access to mini-water stations will drill their own wells. The poor, who cannot afford to do that, collect rainwater." (Top official in district PHC, Phong Dien, 21.07.11; personal interview)
>
> "A lot of people don't want to connect to the water supply system because they don't want to pay for it and they don't care that much about their health. The government cannot force them, but they could support them financially to do so. Hopefully the policies will change towards this direction and the situation will improve." (Top official in district PHC, Binh Thuy, 12.07.11; personal interview)
>
> "It is really difficult for the government to give water to all the hamlets that want it. It is hard to satisfy all the people's demands. Some rich people cannot stand to wait, so they use their own money to drill a well." (Official in district branch of the Farmers Union, Phong Dien, 09.09.11; personal interview)

[65] Source: Top official in PHC of Can Tho, 12.12.11; group interview.

[66] By classifying households into categories, Reis (2012) proposed that an estimated 30 -50% of the rural population in Can Tho has problematic water access in terms of availability, quality or reliability.

In the urban areas, piped water supply is centralized, organized and managed by water companies. These are Joint Stock Companies(GoV, 2004), meaning that the local People's Committee holds part of the shares (28%) and private individuals hold the rest (72%). In contrast to the minimal growth of the CERWASS network (a rise of 0.6% annually from 2010 to 2011), the central water projects are very successful, with twelve operating stations in Can Tho and with an aim to reach a consumption of 150 litres per capita in the year 2015[67]. The Water Supply Company of Can Tho City (CTWSC) is supposed to only serve urban areas[68], but the definition of "urban"[69] can go beyond the administrative definitions by district (Reis, 2012 :90). This means that water companies might deliver water in "urban" centres of rural districts, if it makes financial sense. Working as private entities with a for-profit ethos, they do not include social considerations in their water provision plans:

> "The water companies in the urban areas are businesses that necessarily have to make profit. They have many shareholders and they manage their viability by themselves, getting loans from the Bank. The households pay money to them and they have to balance their expenses with their profits, so that they survive and grow. It is hard to reach remote areas; it costs a lot for them, so they don't do it" (HELVETAS local representative 15.12.11, personal interview).

Having access to centrally provided tap water does not necessarily mean that households will use exclusively this source for their daily and drinking needs. Groundwater exploitation is a popular alternative in both urban and rural areas, as groundwater is considered a year-long reliable and improved water source. The issue of licensing water extraction remains under-regulated (KBR (Kellogg Brown & Root Pty Ltd.), 2009 :136) and problems of over-extraction are seriously threatening the sustainability of the resource. The expenses of drilling a well, which will be able to provide water for more than two years, vary from 800.000 to 1.700.000 VND[70]; equivalent to the monthly salary of a well-paid state cadre of the region. This is slightly higher than the costs of connecting to the rural piped supply network[71]. Considering the price of CERWASS-provided water (3.000/m^3 in the rural areas)[72], comparing to the free private extraction of groundwater, the investment on a well makes more financial sense in the long-run:

> "If the households have financial constraints they are not willing to pay to get connected, they rather drill a borehole and get groundwater. After they drill the hole, they don't have to pay for anything else, it is for free" (Vice-head of district Office of Agriculture, Phong Dien 06.09.11, personal interview).

Nevertheless, contrary to private groundwater which requires home-based treatment, CERWASS-provided water has already undergone filtration and chlorination. Overall, it seems that many people choose not to connect to a water supply network or to keep a multitude of water sources available, in order to balance their financial potential with water of an acceptable quality.

In order to address the difficulties of some sensitive groups in accessing piped water supply, the Vietnamese government, with the support of numerous international donors (MONRE and UNDP, 2008: 34), has been offering free or subsidized water connections[73]. Providing subsidies for improvements has been generally discussed as a patch-up strategy of development, which cannot not foster sustainable change on its own (Pattanayak et al., 2006). Moreover, the process of becoming eligible for these beneficial programs can be debated as not very transparent[74] and eventually not able to benefit the very

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[67] Source: Top official in the DPI of Can Tho, 14.12.11; group interview.

[68] Source: Top official in PHC Can Tho City 12.12.11, group interview.

[69] For rural and urban characterizations, see also chapter 3.2.

[70] Source: Official in district branch of the FF, Phong Dien, 13.09.11; personal interview. The amount is equal to about 28 and 60 Euros accordingly.

[71] This amounts to 700.000 VND (25 Euros), not considering additional pipe-extension costs in the case that the household is located more than 20 meters away from the station.

[72] Source: Official in primary school of remote commune, Phong Dien district, 16.09.11; personal interview.

[73] Source: Top official in the OLISA of Cai Rang district, 29.09.11; group interview. The implementation of microcredit and subsidizing policies is described in detail in chapter 5.3 for the sector of sanitation.

[74] See Box 4.2 in chapter 4.2.2 on the example of official classifications of poverty.

poor in Vietnam. Previous literature particularly discusses how the implementation of programs that provide financial support for household WSS improvements is subject to corruption in the country (Reis, 2012 :81, SNV, 2010 :28). Apart from subsidizations, this includes programs of micro-financing for households that are meant to encourage people to invest in WSS. Micro-financing was an idea that was put forward ever since the 1980s in development policies, but its potential to alleviate poverty, empower women and provide more opportunities for well being, has been under question (Karim, 2008, Rogaly, 1996, Elahi and Danopoulos, 2004). In Vietnam, the administered loans are provided with a low interest rate by the Vietnamese Bank for Social Policy (VBSP) and are administered locally, through the formulation of credit groups, which involve organizations like the Women's Union (Sakata, 2006, SNV, 2010).

In the study region of Can Tho, the promotion and administration of microcredit has been presented as the strongest, if not the only, tool used by local cadres to enhance water supply and sanitation expansion in rural areas. More specifically, the microcredit loans seem to be nowadays exclusively directed to the development of sanitation and not so much to provide for clean water solutions. Almost all of the interviewees, from district and provincial authorities, referred only to the construction of toilets when describing the usefulness of microcredit programs. The only informant who mentioned the use of loans in water supply improvements, was hesitant to further discuss how the distribution between the two sectors is regulated, saying that "this is a sensitive matter and we can't talk about it" (Official in CERWASS, 30.06.11; personal interview). The official national statistics show a higher coverage of "improved" water sources and a lower one of "hygienic" sanitation (Fig 5.1 and 5.2), thus the focus on sanitation can be somehow justified. Nevertheless, there are still 60% of rural inhabitants without access to water that is safe to drink (MARD and MoC, 2000).

Investments on clean water provision are not only de-prioritized, they are also particularly restricted in the options that the state officially proposed and promotes. In Can Tho, the only solution provided to rural residents was a connection to the network of CERWASS mini-supply stations. However, the groundwater aquifers that CERWASS uses to supply water, have been suffering exhaustion and salinization (Thang, 2002, NUBER and STOLPE 2008 cited in Fortier, 2012). It is thus for both social and environmental reasons, that more and better clean water alternatives still need to be re-envisaged and given more priority in the region. Informants spoke of other alternatives that provide access to clean water and which have been implemented in several provinces of the Delta in a fragmentary manner[75]. These include the SODIS (Solar water Disinfection) technology, which uses sun radiation and can disinfect rainwater, groundwater or surface water, that has been filtered or flocculated (HELVETAS and NCERWASS, 2010). Sand-filter constructions have been designed by the same NGO, to be used in combination with SODIS in an integrated system for adequate treatment of river or well water. Using plastic containers and sand of a certain diameter, these filters are able to yield up to 100 litres of water per day and per household; a volume significantly higher than what a rural mini-supply station in Can Tho can provide in the same period of time (CERWASS, 2011a). Even though it requires the use of empty plastic bottles, the SODIS method was positively embraced by 40% of the households where it was introduced and it was considered to be a cheaper and more convenient treatment method than boiling or buying bottled water[76]. A water and sanitation expert discussed another similar technology of community-based water treatment through UV disinfection, trying to explain why these solutions are not up-scaled:

> "Each installation costs only 500.00 VND and yields up to 0.6 litres of treated water per minute. It works well but the government did not want to continue its expansion, although it proved beneficial for the poor of the rural areas. I don't know why. Things are complicated with the authorities, the law is strange […] the standards are very strict for water quality and the government keeps them high so they can keep receiving money from violations. Even if the water is proven to be good enough -for people that do not have another

[75] These are the provinces of Ninh Thuan, Dong Thap, Tay Ninh and Long An.
[76] Source: NGO representative/ WSS expert, 15.12.11; personal interview.

> better option- the government refuses to drop the standards or to somehow 'bend' the legislation around it" (NGO expert in Water Supply and Sanitation, 18.06.11; personal interview).

Another water treatment alternative to boiling, which can be used in the household-level, is the disinfection through the use of chemical purifying tablets. In Can Tho City, these tablets were found under the commercial name 'Aquatab' and were only popular in the districts of Vinh Than and Co Do which are prone to flooding[77]. The positive impact of Aquatab is depicted in the words of a local health representative, who believes that "the promoted disinfecting tablets are an excellent solution for poor households, as their use is easy, fast, affordable and is creating safe drinking water" (Director of medical centre Co Do district 18.07.11, personal interview). However, secondary results (Abt Associates Inc., 2011) show that this type of treatment was not a widespread known practice in the above districts (Table 4 in the Annex), due mostly to the limited outspread and the poor quality of the promotion activities that health workers employ (Abt Associates Inc., 2011). A similar case of a rather silenced alternative, is that of chloramine-b; a disinfectant which is only distributed in flooding areas or during cholera epidemics (MoH, 2009a).[78]. When asked to answer why these solutions are not promoted, a top official from the PHC in Can Tho claimed that "people often mistakenly use it in water that has not been before treated (filtered)" and that "it is a rather expensive solution" (12.12.11, group interview).

These claims, however, do not clearly reflect the reality and do not explain why the preventive mechanism does not recommend chemical disinfection. Firstly, the possibility of people not filtering the water before using disinfecting tablets is equally likely to occur before the practice of boiling water and with equally risky outcomes. Secondly, when the director talks about the cost of the tablets, he is referring to a price of 0.15 USD for 10 units, which could treat 200 litres of water[79]. Based on Gleick (1996 cited in Inocencio et al., 1999), a maximum consumption per day and per individual is five litres of water and thus, for a household of four members, the monthly cost for treating the drinking water with Aquatab would not be higher than 50 cents of a dollar. If this family chooses instead to treat drinking water through boiling it and through using wood to do so, the monthly cost could reach 1.6 USD (Clasen et al., 2008). The use of Aquatab comparing to boiling is therefore, fairly competitive both financially and practically. The hesitance of local governments to embrace and promote alternative water treatments has been described as a result of the adherence to central guidelines, which only prescribe rural CERWASS-connections and boiling water. The potential of local governments to make independent decisions and to affect policy was seen as weak by one informant, who claimed that the communication or the feedback from bottom to top is governed by fear:

> "In water supply and sanitation, there is not a lot of communication and collaboration between the authorities in the provincial and the local levels and there is no feedback from bottom to top. In the district and the commune level, there isn't much capacity for making innovative decisions; they just implement the guidelines. People are afraid to try something new because they don't know if it would be approved or not by the higher levels; they are afraid of being judged for not controlling things well enough or for taking too much initiative" (NGO representative/ WSS expert, 15.12.11; personal interview).

Reis (2012) however, maintains that policy and implementation is a double-sided coin and that it is often the interests of local cadres that are being secured through policy-making and implementation around rural water supply (Ibid. 2012: 199). CERWASS water-schemes are administered by state-designated cadres, while the above described water alternatives (SODIS filters and UV-disinfection or chemical disinfection) provide for household-based water treatment, without the need for state-administration. Officials might claim that most people today are well-served by CERWASS, that they follow treatment

[77] The PATH project, in collaboration with the Bill Gates Foundation and Zuellig Pharma Co Ltd (the official exporter of Aquatab), have launched and have been promoting the product in these districts since 2010. According to the project's report the tablets were available in Can Tho also before the initiation of the program, but were only sold by some limited number of pharmacies, mostly in the center of the City (ABT Associates Inc. 2011).

[78] Sources: Top official in PHC of Can Tho (12.12.11), Official in CERWASS Can Tho (12.12.11); group interviews.

[79] Source: Top official in district Medical Center, Co Do, 18.07.11; personal interview.

practices that ensure water safety and therefore, there is no need to complicate things by offering more alternatives. The next section demonstrates that, despite these claims, the waterborne health risks seem to be actually quite high for a large part of the population. The question then of why sanitation is prioritized over water supply solutions, will be taken up in the following sections.

5.2.2 Reporting water supply: "hygienic" labels and data discrepancies

Many of the reports on water supply coverage, produced by different authorities in Vietnam, were often found to contradict each other. The terminology and the definitions differ and can easily create confusion. The terms "safe" (AN TOÀN), "clean" (NƯỚC SẠCH) and "hygienic" (NƯỚC HỢP VỆ SINH) have been interchangeably used in many official written documents and during discussions with state cadres of the water sector. A state representative claimed for example, that 63% of the total population in Can Tho City use "clean" water, but only 38% in the rural areas[80]. The latter figure coincides, more or less, with what CERWASS reports as the percentage of people with access to CERWASS-water (CERWASS, 2011a), but according to the definitions provided by MARD (2008a), tap water is not the only source that is considered as "clean" or "hygienic". One could assume that the state representative did not consider the other sources as clean, or that "clean" is defined differently for him and his organization. The above terms appear also to be used differently, depending on location:

> "Clean water is water appropriate for everyday household activities and 95% of the population in the district has access to it. It can include tap water from the water supply network [...], drilled water from the wells and river water that has been treated. Safe water is the water one can drink without adverse health effects and for clean water to become safe, it has to be treated with a chemical like Aquatab" (top official in district Medical Center, Co Do, 18.07.11; personal interview).

> "The central part of the district gets piped water from the water company, but the rural areas either get served by CERWASS or people dig their own well. The percentage of people that have access to such clean water reaches 93.5% but that is not safe water, it does not comply with the 22 criteria that the regulation sets for water to be safe to drink" (Top official in Office of Economy, Cai Rang district, 20.09.11; personal interview).

The above intuitive definitions of clean and safe seem to follow the different realities of water use in each of the localities. In the district of Co Do, where many people use the chemical treatment locally promoted (Aquatab), the director does not mention boiling as a disinfection method. In Cai Rang district, where piped supply and well-water coverage prevails (see Table 4 in the Annex), the interviewee does not mention any other water sources as potentially clean. This also reflects in the words of a citizen from the central ward of Le Binh in Cai Rang, who claimed: "I don't know what people who live near the river do, but here we have tap water" (representative of household classified as poor, Yen Hoa area 17.10.11, personal interview).

Discrepancies of water quality definitions and categorizations are not only verbal, but appear also when comparing the reports of district and provincial authorities. The district-level reports usually show higher coverage than what is reported for the same districts by CERWASS (Table 5.1). When this issue was brought forth during an interview with CERWASS cadres, the answers were as conflicting as the data:

> "Respondent: The Preventive Health Centres in the districts report on the total population of the district, including the central towns. But we don't report on that, we only report the rural areas. That's why their numbers are higher.

> PK: Looking at the datasets, I see that CERWASS also reports on the towns of each district. The data should coincide.

[80] Source: Top official in the DPI of Can Tho, 14.12.11; group interview.

> Respondent: The data produced by CERWASS is more accurate, because we conduct surveys with questionnaires and we know exactly what the situation is." (Official in CERWASS Can Tho, 12.12.11; personal interview)

The problem of conflicting data is best demonstrated by the case of Phong Dien district. The figures provided by the PHC of the district for "hygienic" water access, exceed what is reported by CERWASS for the same district, by 10% (Table 5.1).

Table 5.1: Reported access to tap and "hygienic" water in rural parts of Can Tho City

District	Population reported by CERWASS[81]	Reported by CERWASS		Reported by other agencies
		with access to "hygienic" water	with access to tap (CERWASS) water	with access to "hygienic" or "clean" water
Vinh Thanh	104.867	59,15 %	29,8 %	-
Co Do	114.138	82,23 %	41,8 %	82.18% [82] , 90% [83]
Thoi Lai	116.909	72,67 %	28,0 %	-
Binh Thuy	40.380	68,02 %	44,0 %	90.40% [84]
Thot Not	126.828	68,33 %	54,2 %	-
Phong Dien	98.450	68,75 %	34,9 %	79.52% [85]
O Mon	100.269	73,84 %	33,3 %	85,72% [86]
Cai Rang	76.711	77,76 %	50,2 %	91.04% [87]
Total (2011)	778.552	71,46 %	39,1 %	
Total (2010)	778.552	69,21 %	36,9 %	

Date based on CERWASS (2011a) and local authorities (as indicated). Design by author.

Additionally, the head of a local office claimed that "80.6% of the population has access to piped-water schemes" (top official in district Office of Health, Phong Dien, 12.09.11; personal interview), contradicting the CERWASS reports by 45%. The vice-head of another office in the same district spoke of 75% of households being provided with piped water and also claimed that "the rest 30% harvest rainwater or river water, but they treat it with alum and filters; thus, altogether 90% of the district's

[81] As mentioned, CERWASS reports as "total", the population of the people living in those parts of districts (either urban or rural) that fall under their jurisdiction (Look also the note in chapter 3.3.2).
[82] Medical Centre of Co Do 2011. Water Supply, Sanitation and Hygiene Statistics. *In:* Department of Health (ed.). Can Tho.
[83] Medical centre Co Do 18.07.11, oral communication.
[84] OoH Binh Thuy 08.07.11, oral communication.
[85] PHC Phong Dien 2011. Summary of the Preventive Health Activities for 2009 and 2010. Can Tho..
[86] PHC O Mon 2011b. Report of Preventive Health Activities for 2011 and Future Plans *In:* Department of Health (ed.). Can Tho.
[87] PHC Cai Rang 2011a. Annual General Reports of Preventive Health Programs for 2008 - 2011. *In:* Department of Health (ed.). Can Tho .

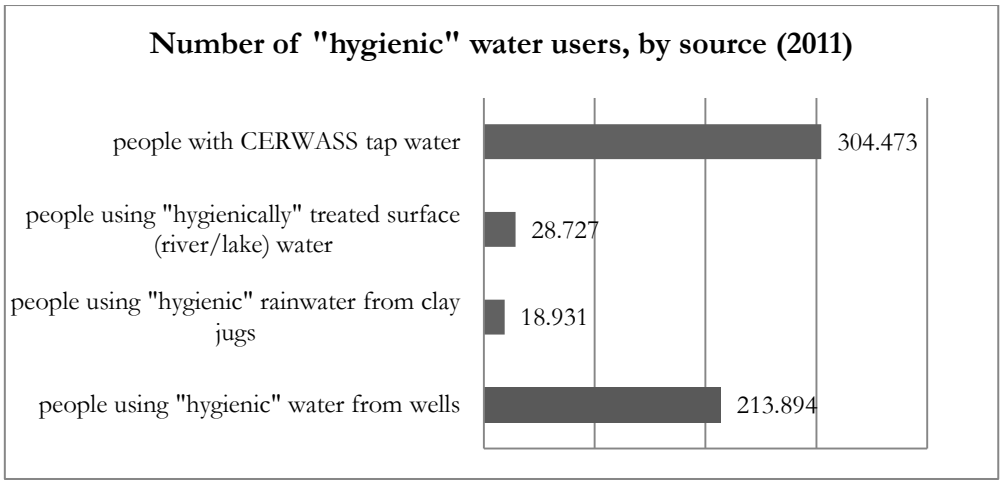
population has access to hygienic water" (top official in the OARD of Cai Rang district, 06.09.11; personal interview). To confuse things even more, the head of a third district office referred to 70% of people having access to "clean" water and more than 80% having "hygienic" water from either CERWASS stations or own-drilled wells (Top official in the district branch of the YU, Phong Dien, 13.09.11; group interview). The phenomenon of arbitrary reporting in the sector of water supply is not newly noticed (Reis, 2012: 129). One interviewee from the district level admitted that "the latest collected data are from the national survey of 2002 and the recently used data are extrapolations of the old, thus they might not be really representative" (Top official in district PHC, Binh Thuy, 12.07.11; personal interview). Whether a matter of having different information at hand, or of interpreting the same information differently, reporting water supply types and coverage is characterized by perplexity and confusion, even though (or perhaps, exactly because) it has been emphasized as a sector of national priority (GoV, 2006a, MARD and MoC, 2000).

The portrayed access to clean water in Can Tho City

Statistics from the provincial level (CERWASS) present a somewhat more realistic picture, with usually lower rates of access, considering both improved water supply and hygienic sanitation. In the upwards direction of aggregating statistics, from the local to the higher levels, one might argue that the stricter reporting of CERWASS is balancing the eagerness of the district authorities to report better coverage. Nevertheless, a simply more conservative reporting does not guarantee of its trustworthiness. The surveys conducted by CERWASS follow specific guidelines and definitions (Box 2 in Annex), but the actual data collection rests in the hands of health staff and local cadres (described earlier in chapter 4.1.3). When asked about their sources of information, CERWASS officials confirmed that data is produced "by the health staff in the local levels", but they also claimed that additional independent surveys are conducted from time to time.

Based on CERWASS reports, more than 70% of the rural residents in Can Tho City have access to "hygienic" water (Table 5.1). CERWASS-supplied water is the dominant source of "hygienic" supply in the rural areas and is followed by groundwater (Fig 5.3).

Figure 5.3: Number of people using different water sources in the areas without access to central water supply in Can Tho City, for the year 2011



Source: CERWASS Can Tho City (2011a). Design by author.

This data, however, only captures the main water source that is used in each household and fails to inform on the parallel use of other sources. Even so, it appears that nearly 19.000 individuals seem to be dependent on rain water and 29.000 on river water, accounting together for a significant percent of the

rural population (6%) without access to a piped network and without an own drilled well. The reports also note a 2.25% increase of the number of "hygienic" water users for the period between 2010 and 2011 (Table 4 in Annex). This increase corresponds exactly to the number of new CERWASS users during that period (17.507 people). It seems that the increase in CERWASS-users came solely from those who previously had no access to "hygienic" water whatsoever and thus, that no household switched from another type of "hygienic" water source to piped water. According to the official classifications, water can be unhygienic due to a polluted water source or due to the conditions of water collection and water storage in every household (Box 2 in Annex). The CERWASS reports show that only 10% of water collected from deep-drilled wells and only 9% of rainwater collected in jugs did not classify as "hygienic". Therefore, it results that most of the 222.221 individuals without access to "hygienic" water were river-water users[88].

Combining the above, CERWASS statistics basically indicate that none of the families with problematic (unhygienic) water access decided to alter some aspects of their existing strategies (i.e. to improve their wells, to store rainwater in cleaner jugs or to improve their water treatment methods), but instead all of them chose to connect to the CERWASS water network; even though the latter was probably the most costly of options. If some of these newly hygienic – and the remaining 222.221 unhygienic – water users would improve their household practices of water storage and treatment, access to water of a better quality would not only depend on how far CERWASS can expand its networks. Just as discussed before for water treatment alternatives, hygienic behaviours and household strategies can be very significant determinants of water quality for those with no access to piped water, but the public awareness around these issues seems to be limited.

The fact that CERWASS does not report for areas covered by water companies (Table 5 in Annex), does not mean that these areas are free of water access problems. Water supply was not reported by CERWASS for Ninh Kieu district, because the central water network covers all its territory. However, not every household in Ninh Kieu has access to tap water. The reports from the PHC of the district, speak of almost universal coverage (96.28%), but 572 households are still using an own drilled-well as a primary source and 371 more households are depending on river water for their "hygienic" water supply (PHC Ninh Kieu, 2011). This number of river-water users is comparable with the corresponding numbers reported for rural districts[89]; where the problem of surface water usage is usually exclusively assigned to. The fact that an almost equal number of people face water access problems in Ninh Kieu, as in other districts, is known to local cadres, but it is not mentioned as a particular problem since the majority of people have access to piped-supply:

> "The numbers [of piped supply access] are high on the reports; this shows we are doing well. This is a place where the 'social' aspect is very developed. Almost 80% are connected to central water supply in this district and the rest 20% are still getting water from the river [...]. Such are the areas along the river like Cai Khe and An Lac ward, where people get water from the river for washing clothes and bathing themselves. The people there will use chemical treatment, will buy bottled water for drinking, or if they are poor, they will boil the river water before drinking it." (Official in PHC Ninh Kieu district, 23.06.2011; group interview)

The phenomenon of small "pockets" of population that are living in an urban context and are facing complex problems of poverty, has often been detected in Vietnam (Harms, 2011), as well as elsewhere in Asia and the world (Allen et al., 2006, Simon, 2008). In relation to water supply, this comes into view through the urban minorities with no access to "improved" water sources. These people also rarely benefit from supportive programs that exist for the development of WSS (subsidies or microcredit); because such programs are strictly designed for rural areas (see also chapter 5.3.2). The reported majorities of WSS

[88] Unlike in other categories, CERWASS does not report on the total number of surface water users, but only the number using "hygienic" surface water (Table 3 in Annex).

[89] Such are the districts of Thoi Lai and Co Do, with about 452 and 868 people accordingly depending on surface water for their water needs (for details see Table 4 in the Annex)

create a picture of disease-invulnerable modern urban communities, which is causing the escape of urban areas from being targets of health education activities. Thus, the urban poor, who mostly need to improve their hygienic practices, are often excluded from useful preventive health information. The presented success of urban areas with regards to WSS might be supported by crescent statistics of piped-supply coverage, but it tends to overlook the reality of a considerable number of people, who either lack access to safe water provision, or whose practices vary a lot more than what single-answer surveys can capture. The complexity and the inequality of access that characterizes water access needs to be emphasized more.

5.2.3 Water quality fluctuations from source to consumption

So far, the issue of water quality was talked about in rather loose terms, basically assuming that harmful chemicals and pathogens exist in untreated water of all types of sources. Regarding intestinal disease, the plethora of moments when -and the ways through which- water can be infected, makes the monitoring of its quality a hard task. Combined to the lack of sufficient laboratory technology that is able to detect all the possible diarrheal pathogens, an accurate estimation of microbial concentrations in water is not always feasible. Despite the difficulties, a good description of the health risks entailed in water consumption and use can be achieved by defining the quality of water at certain crucial points (at source, post-treatment and shortly before consumption).

Water quality of urban piped supply

The water factories in Can Tho City, use river water and are expected to follow specific water treatment steps, as instructed by the MoC (Fig 2 in Annex). However, as a top official of the water company's branch in Cai Rang informed, "Some water factories might change parts of the proposed process; according to their capacities [...], but these changes will not affect the basic principles of functioning nor the water quality" (19.12.11, personal interview). In order to control the safety of the delivered water, national regulations foresee the testing of water quality parameters at least once a week by the water factory (MoH, 2009b) and the additional independent testing at least once a month, by state authorities. The quality of the delivered tap water is also supposed to be checked at the point-of-use (in randomly selected households)[90]. The water quality standards for water companies are stricter than those for CERWASS stations (MoH, 2009b). Moreover, if found non-complying with water quality standards, water companies are more likely to be sanctioned than rural stations, which are usually just given advice on how to improve their treatment practices (Reis, 2012: 75). Nevertheless, problems seem to exist in many of the water companies around the Delta, as reported by the Institute of Health and Hygiene:

> "The Preventive Health Centre of Tien Giang reports that most water supply stations in the province do not have well-equipped water treatment systems. The number of water supply station facilities that serve more than 500 people is high in the province; therefore the task of water quality monitoring is becoming really difficult. Knowing how to apply the regulation on water quality monitoring has not been satisfactory from the water factories. Provision of water that meets the standards has not been given enough attention by the facilities. There has not been detailed sanction for the facilities which have not been executing the regulations" (IHPH, 2011b).

The detailed results from testing water and inspecting the factories, showed that the overall quality of the produced water is good, with up to 80% of the samples complying with national standards (IHPH, 2011a, IHPH, 2011b). Of those failing, a significant 28% was due to microbial pollution (Table 6 in the Annex). The provided water testing results from the water company of Can Tho (CTCWSC) showed absolute zero microbial concentrations at the source of production, after treatment (PHC Can Tho City, 2011d). The same results were obtained by the company's branch in Cai Rang, for water that was collected both at

[90] Source: Top official in the Cai Rang branch of the CTCWSC, 19.12.11; personal interview.

source and at point of use from a random selection of households in the district (Ibid. , 2011e). Independent research from Wilbers (2012) also showed that water provided by water companies was free of microbial pollutants at the point of use, in the areas of Ninh Kieu, O Mon and Co Do districts (Ibid. 2012).

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Water quality of CERWASS rural supply

Unlike the director of the water company in Cai Rang, who supported that the produced water is of good quality[92], the representatives from CERWASS-served areas CERWASS openly admitted that "there is no guarantee for the provided water's safety, unless it is boiled" (top official of district PHC, Binh Thuy district 12.07.11; personal interview). The results provided by the IHPH (2011a, 2011b) from ten provinces in the Delta showed indeed that the quality of tap water provided by CERWASS-stations is not good enough (Table 5.2).

[91] Source: Top official in the Cai Rang branch of the CTCWSC, 19.12.11; personal interview.
[92] Source: Top official in the Cai Rang branch of the CTCWSC, 19.12.11; personal interview.

The official results from testing water that is produced in CERWASS-stations in Can Tho City, indicated a good quality in terms of microbial indicators, at the source of production (water tank), with concentrations (n/100ml) lower than 48.0 for total coliform and below 3.0 for *E.coli* (PHC Can Tho City, 2011c). This is complying with the national standards for domestic use water quality for rural stations. However, the practice of testing water at the point of use (household tap) is not necessary by law, unless there is some declared complaint about its quality[93]. Wilbers (2012) finds that tap-water from rural households has 5% occurrence of microbial indicators, in concentrations that exceed the national standards by a lot[94]. Considering the findings of laboratory results from the PHC (2011c) and from Wilbers (2012), it seems that microbial pollution mainly occurs during the distribution of water through the CERWASS-network of pipes.

Table 5.2: Water quality of CERWASS water-stations from ten provinces of the Mekong Delta

Number of water samples found not complying with national standards:		
Total	from CERWASS rural water supply stations:	
2010: 931/2497 (37.28%)	Physical, chemical pollution	452
	Microbial pollution	38
2011: 1.105/5447 (20.29%)	Physical, chemical pollution	427
	Microbial pollution	72

Data provided by IHPH (2011a, 2011b). Design by author.

The process of water treatment that takes place in CERWASS water stations was described to be similar to that in water companies[95]. Representatives from CERWASS added that "this is the exemplary procedure, but it depends on each station and the capacities to do all this; maybe the methods change among different water stations" (official in CERWASS Can Tho, 12.12.11; personal interview). Indeed, as the manager of a rural CERWASS-station in Phong Dien describes, the treatment practices follow rough estimations and rely on each station manager's capacities and decisions:

> "The amount of chlorine will be adjusted mainly according to the color of the water afterwards; just as I was instructed in the training classes: if the water turns out yellow, I will add more chlorine." (Water station manager in rural hamlet of Phong Dien district, 19.12.11; personal interview)

Apart from applying water treatments, the local manager is also responsible for the maintenance of the pipes, for the hygiene of the water tanks and for administrative tasks such as collecting fees and accounting bills. This person is not exactly a volunteer, but an appointed[96] local worker -usually a man- who is offering part of his private land and his services, in return of a monthly salary that is not higher

[93] Source: Top official in district Medical Center, Co Do, 18.07.11; personal interview.
[94] Concentrations of 75 (n/100ml) *E.coli* and 100 - 10^3 (n/100ml) for total coliform.
[95] The manager of a water-supply station described how the process includes: oxygenation, treatment with Fe_2 to get rid of alum residues, filtering through rocks, sand of various sizes and micro-filters, and treatment with chlorine.
[96] The key informant in Phong Dien district, a local cadre in the commune level, claimed that water station managers "are selected by the local government for being trustworthy, for participating in the community activities, and in overall for being renowned as good citizens".

than 1.5 million VND[97]. As Reis (2012: 91) supports, people in these posts are usually overburdened with duties related to the station, while they are also engaging in other breadwinning activities. Similar to water companies, water quality tests have to happen frequently in CERWASS stations (MoH, 2009b). However, such controls are said to be rather rare[98].

Quality of water privately harvested, extracted or collected

As mentioned before, the water sources, apart from piped supply, that are being commonly used in the region, consist of harvested rainwater, well water and surface river/canal water. The IHPH finds great variations regarding the hygienic status of these water sources (Table 5.3). The number of households that were reported was similar for both years and reach 2.5 millions. The only noted difference between the samples of the two years was the highest presence of CERWASS water stations in the areas reported during 2010, in comparison to those of 2011. It is interesting that this reflects on a significantly lower number of rainwater storage tanks and "other"[99] utilized sources of water in the 2010-reported areas.

Table 5.3: Hygienic status of water sources from the provinces of the Mekong Delta, for 2010 and 2011

	CERWASS connections	Dug-wells	Drilled - wells	Rainwater tanks	Other	Total
Data collected in 2010:						
Total in the area	114.767	564.918	1.297.913	205.902	378.779	2.667.912
Total tested	113.981	343.743	630.204	64.741	242.784	1.395.726
Percentage (of tested) reaching the standard	99,94%	85,28%	78,29%	97,59%	90,88%	80,87%
Data collected in 2011:						
Total in the area	1.531	97.401	1.301.517	515.384	650.918	2.570.870
Total tested	714	49.670	968.708	430.697	563.150	2.106.217
Percentage (of tested) reaching the standard	82,21%	80,24%	52,71%	9,79%	39,63%	40,65%

Data provided from the IHPH (2011a, 2011b). Design by author, 2012.

A striking observations of these results, is not simply that people "balance" their water strategies and tend to use more rainwater and river water to compensate for the lack of piped-water connections, but that the hygienic status of rainwater and river water drops dramatically in the areas with less access to piped-water (Table 5.3). It is worth underlining that the above results do not refer to water quality, but to the hygienic conditions that characterize water extraction, harvesting and storage. Similar observations come from another study which also found that provinces in the region that had better coverage of piped water connections, also had better water quality results in sources that included well water, rainwater and river

[97]Sources: Official in CERWASS (Can Tho, 12.12.11), Water station manager in rural hamlet (Phong Dien district, 19.12.11); personal interviews. This amount equals to about 52 Euros.

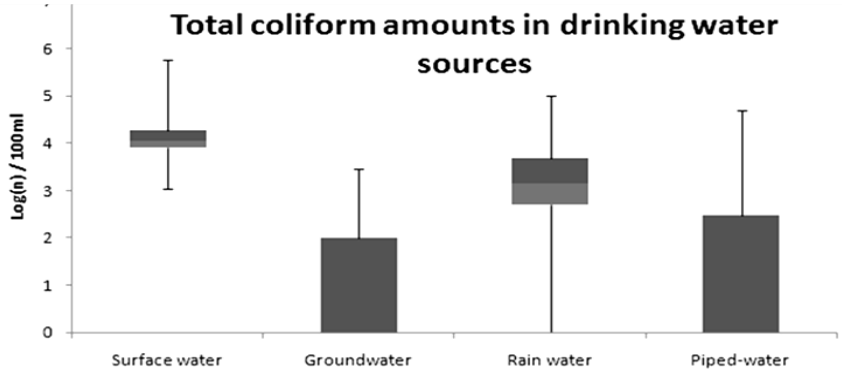
[98] Source: Official in CERWASS (Can Tho, 12.12.11); personal interview.

[99] This category is most likely referring to surface water, since all the other known sources are already captured by the rest categories.

water[100] (Dang Ngoc Chanh and Nguyen Ngo Thiep, 2010). Although it is not clear if the results concern different water sources from the same households, or if each household was only reporting the main water source, both these studies point to a correlation between community access to tap water and water-related household hygiene.

Among the water sources other than piped supply, rainwater seems to be the one in need of more attention, in terms of perceived versus actual water quality. Interviews and informal conversations revealed that rainwater is considered the tastier and most preferred water for drinking consumption (look also in chapter 7.2). The findings by Wilbers (2012) however, show that rainwater stored in clay jugs has the second worst quality, after river water. In 35% of the analyzed samples, Wilbers (2012) found that the average concentrations in stored rainwater were in the scale of 10^3 - 10^4 (n/100ml) for coliform (Fig 5.4) and 800 (n/100ml) for *E.coli* (Table 5.4).

Figure 5.4: Microbial contamination (total coliform) found in four different drinking water sources of households in Can Tho City



*The surface water samples have been collected from the canals directly. Groundwater, rainwater and tap water samplings occurred at household level.

**The box-plots show minimum, 25 percentile, median, 75 percentile and maximum concentrations. Concentrations are log-transformed to reduce the effects of outliers

Results and figure adopted from (Wilbers, 2012).

[100] The prominent pollution factors found to affect the quality of the water were accordingly for well-water: a nearby latrine (65%) and the lack of barriers to protect the well from the reach of animals (78%); for surface water: unprotected/uncovered storage (97%) and the presence of cattle and ducks near it (24%); for rainwater: unprotected/uncovered storage (83%) and using water scoops which were located near polluted sources (20%).

Table 5.4: Average concentrations (rounded values) of *E.coli* in four different drinking water sources of households in Can Tho City

Water Quality results	Surface water (from the canal)	Groundwater (from the well)	Rainwater (from storage tanks)	Rural piped-water (from the tap)
% occurrence	100	5	35	5
Average *E.Coli* (n/100ml)	6800	175	800	75

* Bottled water did not test positive for *E.coli*.

Results adopted from Wilbers (2012)

According to a local NGO worker, rainwater can stay safe in sealed jugs for up to one year[101]. However, research by Wilbers (2012) indicates that when the jug is actually in use, the quality of water deteriorates significantly, as it becomes vulnerable to external sources of pollution. Groundwater and tap water that were sampled at source, gave better results than rainwater that was stored in a jug, even if rainwater is expected to be free of microbial pollution before its collection (aka when it drops from the sky). Further findings from Can Tho (Tran Hong Phuoc Tai, 2009) showed total coliform concentrations ranging in rainwater, from 17 (n/100ml) when vessels were tightly covered and cleaned at least every week, to even over 300 (n/100ml) for vessels that were left uncovered and were not cleaned more than once a week. Similar findings from Bangladesh (Hoque et al., 2006) support how crucial the intra-house practices and habits can be in changing the quality of water.

Regarding surface water, which is still today being consumed by a significant number of people in Can Tho and the wider region of the Delta, Wilbers (2012) finds that microbial pollution can significantly decrease if surface water is treated adequately. Namely, highly contaminated canal water (6800 n/100ml for *E.coli* and 10^4 n/100 ml for coliform) was found to be significantly cleaner after it was treated with alum (Table 5.5). In fact, the resulting treated water was found to be of quality comparable to that of stored rainwater. These findings are in accordance with what Wrigley (2007) and Vo Thi Yen Phi (2010) conclude: when surface water is properly treated with alum and followed by boiling or chemical purification, it can achieve microbial quality levels of zero to intermediate risk - corresponding to WHO guidelines (WHO, 1997).

Table 5.5: Differences in average microbial pollution of canal water in Hau Giang province, before and after treatment with alum

(n/100ml)	Canal water	Jug water (canal water treated with alum)
E.Coli	2500	150
Total coliform	21500	10300

Results adopted from Wilbers (2012)

Finally, the water extracted from private wells (boreholes, deep-drilled or dug-wells) is not suitable for direct consumption, according to results provided by CERWASS (2011a), with only 23% of the 309 analyzed samples reaching national drinking water standards at source. Considering the numerous factors that can affect the quality of well-water (depth, years of usage, nearby polluting sources, construction and

[101] Source: NGO representative/ WSS expert, 15.12.11; personal interview.

maintenance etc), the representativeness of these results is generally highly questionable. The overall picture of groundwater quality at source remains very patchy (Vo Thanh Danh, 2008). With more than 50.000 private wells drilled in Can Tho City already by 2002 (DARD cited in Vo Thanh Danh, 2008), it is understood why "checking the water quality of privately drilled wells by governmental authorities is impossible, due to their uncontrollably high number" (top official in YU district branch of Cai Rang, 23.09.11; group interview).

The quality of water has been in this chapter mainly discussed for water that hasn't yet undergone the final treatment of boiling, which is the most commonly used disinfection method. This, however, is not to say that the so far conclusions have little importance when discussing the risk of diarrheal disease, seeing how water is often consumed raw and is rarely ever boiled when used for purposes other than drinking (see also chapter 7). Furthermore, literature has suggested that the likelihood of contamination is quite high (60.5%) even for water that has been boiled and subsequently stored before consumption (Clasen et al., 2008). It is, therefore, important to know which types of water are more prone to pathogenic pollution under the current habits and practices in the region, even before disinfection, which might or might not take place effectively.

The collected evidence strongly point to the fluidity of water's quality, depending on the practices people follow, on an institutional and personal level. While centrally supplied water seems to be of the best quality, its access is highly restricted to the urban residents that can afford its price. The quality of CERWASS-water can vary a lot, depending on the condition of the network in each locality, as well as on the precision and dedication of the station manager who applies the treatments. Most importantly, literature and secondary results show clearly that water from any source, carries the potential of turning unhygienic when it is not handled or stored properly. Rainwater is more prone to external pollution due to its long-term storage, but other sources (like well water and river water) have higher concentrations of pollutants at-source. Intra-household decisions and habits can dramatically alter the quality of water, to better or worse. It is, thus, not enough to ensure an "improved" water supply source for each household, as this may become irrelevant in terms of waterborne disease risks. Due to the complex combination of water sourcing and usage, that each household chooses to follow for different uses and in different seasons, the public needs to be explicitly informed of the treatment and storage practices that need to be followed for each water source, in order to avoid health risks.

5.3 Cultural and structural constraints in sanitation

The national targets of increased water supply coverage are accompanied by the challenge of raising the number of people with access to improved sanitation facilities (GoV, 2006a). The focus on sanitation has been placed side by side with concerns of environmental pollution and health (Rheinländer et al., 2010). As such, the sector has been regulated, defined and promoted majorly during the last 20 years in Vietnam. The positive impact this has had on the number of improved facilities has been evident; yet challenges persist. Many people continue to use facilities that are posing health risks to themselves and their surrounding community, for reasons that are mostly said to be cultural. As this section discusses, the constraints in achieving the expansion of safe sanitation systems, do not only owe to people's "bad habits", but also to the malfunctioning of the mechanism that is promoting, supervising and managing the sector of sanitation.

5.3.1 Sanitation types and blaming the "other" latrine

The Mekong Delta presents a mixture of cultural and environmental features that create a unique landscape for policy formulation and implementation success in the sector of sanitation. Having no sewage system developed for the management of faeces and with persistent perceptual barriers that do not accept the biological treatment and re-use of human excreta in agriculture, environmental sanitation and hygiene are facing serious constraints. At the same time, great parts of the population are still exercising open defecation, mostly through the use of the so-called 'fishpond toilet' (Picture 5.1).

Picture 5.1: Typical "fishpond toilet" construction from Dong Thap Province of the Mekong Delta

Photo by Dunja Krause, 2011

There are four types of toilets that qualify as hygienic in Vietnam (MoH, 2005): the septic tank latrine, the pour flush latrine, the pit latrine with aeration and the double-vault composting toilet[102]. The first is the type mostly promoted by state authorities in Can Tho City and in the wider region of the Delta[103]. This model consists of a toilet with a flush and of a three-chamber septic tank for the collection and processing of faeces (CERWASS, 2011d). The construction costs for a septic tank latrine are, according to local cadres, slightly exceeding the amount of 5 million VND (176 Euros)[104]. However, according to local residents, the costs can be as high as 8 million VND[105]. This cost is often prohibitive for many of the families in the Delta. However, the septic tank toilet is regarded as the best, most hygienic and most "beautiful" latrine (Reis and Mollinga, 2012). The promotion of this type has prevailed as a sanitation solution and has monopolized the allocation of microcredit funds (look also chapter 5.2.1 above).

The second sanitation model, the pour-flush latrine, comprises of a single-chamber collection tank, with a perforated wall on the sides and without a built floor. Previous research indicated that the poorer families in the North of Vietnam prefer this model (Rheinländer et al., 2010) and the same tendency was indicated from informants in the South[106]. This type was not discussed much by health and WSS representatives in Can Tho and was only brought forth promoted sanitation solution during a public health activity that was held in a rural commune (O Mon district 05.08.11; participants' observation). Only one of the 69 interviewed cadres within the province described this model as suitable and affordable for the poorer:

> "It is a kind of an absorb toilet, where the walls [of the tank] are built of bricks but the middle part is with holes, so that the liquid phase can infiltrate the ground. It costs around 1.2 – 1.5 million VND and thus much

[102] The official instructions on what should characterize these two prominent sanitation facilities (hygienic septic tank and hygienic pour flush latrine) are summarized in Box 3 of the Annex.
[103] Source: NGO expert in Water Supply and Sanitation, 11.12.11; personal interview.
[104] Sources: Top official in IHPH of Ho Chi Minh City (28.07.11), Official in CERWASS (Can Tho, 12.12.11); personal interviews.
[105] Source: Household representative HH2 in Phong Dien district, 21.12.2011; in-depth interview.
[106] Source: Top official in PHC of Cai Rang district, 16.12.11; personal interview.

> cheaper than a 3-chamber septic tank, so the poor follow this model. Only if families have money, then they will build a septic tank type." (Top official in PHC of Cai Rang district, 16.12.11; personal interview)

During semi-structured interviews with urban and rural residents, respondents would not refer to either of the above specific models, but to the "hygienic" or the "flush" latrine as their preferred sanitation model (see also chapter 7.2.2). Only when asked to describe exactly what the term "hygienic" means to them, most people would give descriptions that fit to the septic tank latrine. Nevertheless, the statistics produced by CERWASS for Can Tho (2010, 2011a) clearly indicate that people construct more pour-flush toilets than septic tanks when they decide to make an improvement. Between the years 2010 and 2011 the number of "hygienic" toilets was an increase of 1% (equal to 1.280 toilets). This includes septic tank latrines, pour-flush, two-vault compost and pit latrines (Table 8 in the Annex). However, one notices that this increase derives solely from the category of pour-flush latrines and that no septic tanks were constructed in Can Tho, during that year. Moreover, it is clear that the users who constructed "hygienic" sanitation were some of those who before used "other" [107] types (2010, 2011a). In other words, according to CERWASS, no faulty facility was improved into hygienic and instead, people who invested in sanitation decided to construct pour-flush toilets.

The remaining two alternatives for "hygienic" sanitation, are not considered fitting for the region of the Delta. On the one hand, the ventilated pit latrine cannot function hygienically in the wet grounds of the Delta. Its construction consists of a simple dug hole in the ground, thus during the flooding season it is not possible to contain the waste. On the other hand, the composting double-vault latrine is incompatible with the mentality of people in the South, who do not accept the use of human excreta as fertilizer in agriculture. However, regardless this perceptual barrier being against the use of human waste compost, the idea of raising fish that feed from human waste, through the use of the fishpond toilet, is very familiar to the people of the Delta. In the rural commune of Giai Xuan, many interviewees openly described that "everyone has a fishpond toilet" (household interview P13) or that "normally people like to use the fishpond toilet, even if the state guidelines say not to" (household representative P23; personal interview). The local officer in the urbanized ward of Le Binh however, was assertive that "no one uses fishpond toilets here anymore" (household representative P53; personal interview). Even though the use of fishponds has been nationally banned in fear of spreading fish-borne diseases (Rheinländer et al., 2010), both previous literature (Herbst et al., 2009) and empirical results from this study, are strongly indicating that open defecation in fishponds still comprises a widely exercised practice, which only recently is becoming less frequent in the urban areas[108].

Sanitation coverage and the sources of pollution

A general picture from 5 million households across the Mekong Delta (IHPH, 2011b, IHPH, 2011a) shows that a slight majority of the population has access to a septic tank latrine (51.26%), with the rest being almost equally divided into pour-flush latrine owners and those using sanitation of "other" types (Table 8 in the Annex). As earlier stated, wastewater treatment systems are widely absent from most provinces in the Delta, as well as in Can Tho City. Therefore, it is the technical characteristics of the collection tanks which will determine the environmental hygiene of the facilities. This basically is depending on whether or not sewage is safely stored and does thus not constitute a threat for public health.

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[107] Despite their dominant presence across districts and Provinces, fishpond toilets are not officially recognized as a sanitation reality on paper, being commonly referred to as the "other" type of toilet in the produced reports. Explicit explanations of what the "other" type of latrine refers to, were only found in one document produced by CERWASS (CERWASS 2011d. Instructions on How to Complete Data for the Survey on Sanitation. Can Tho: CERWASS.), where it is advised for local enumerators to report as "other", the types of "improved septic fish latrine" and the un-ventilated pit latrine.

[108] Source: UNICEF representative (29.07.11), NGO water expert (11.12.11); personal interviews.

The Ministry procures for the annual surveying of the number and the quality of latrines in the commune and hamlet level, by "appointed staff" (MARD, 2008b). Interviewees from the district offices claimed that it is the clinic's health workers who are frequently checking and reporting on the sanitary situation of every household in their vicinity, including "the toilet maintenance, the existence of bathrooms, the use and treatment of water, etc" (official in PHC of Cai Rang district, 23.09.11; group interview). Representatives from provincial-level offices however contradicted this, saying that the maintenance of sanitation facilities is not monitored as it would be very costly[109]. Reports from across the Delta confirm rather the latter, assigning the lack of post-construction inspection to shortcomings of funding and manpower (IHPH, 2011b, IHPH, 2011a). What results from the interviews with representatives of health and sanitation authorities, is that local health workers and PHC staff are only inspecting constructions that are built on microcredit financing and thus, the construction and hygienic status of other facilities are not necessarily examined by them. Despite the haziness of who, when and what to report, sanitation-related reports are continually produced and circulated among health clinics, district PHCs and CERWASS offices (Table 5.6).

Table 5.6: Reported numbers and percentages of households with sanitation facilities in Can Tho City (excluding Ninh Kieu district)

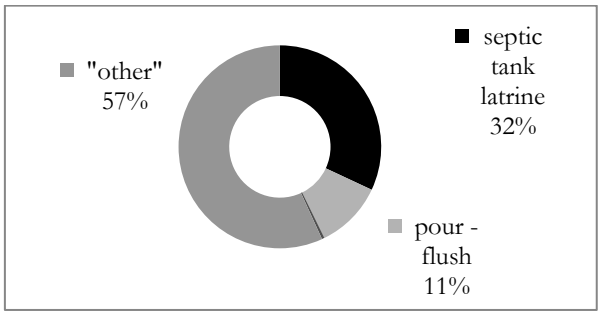
District	**CERWASS** data		**Data from other offices**
	Households with hygienic toilet	Percentage of total (%)	Percentage of total (%)
Vinh Thanh	11.385	49.33	-
Thot Not	14.211	49.80	-
Co Do	10.144	39.31	45.88 (2011)[110] / 70-80 (2011)[111]
Thoi Lai	7.364	27.05	-
O Mon	7.845	35.14	66.09 (2011)[112]
Binh Thuy	4.240	42.92	81.86 (2011)[113]
Phong Dien	7.834	34.06	52.58 (2010)[114] / 90.00 (2011)[115]
Cai Rang	12.064	65.28	89.88 (2010)[116] / 82.95 (2008)[117]
Total (2011)	75.087	42.11	
Total (2010)	73.807	41.39	

Data provided by CERWASS (2011a, 2010) and other local authorities as indicated.

[109] Sources: Official in PHC of Can Tho (12.12.11), official in CERWASS Can Tho (12.12.11); personal interviews.
[110] Medical Centre of Co Do 2011. Water Supply, Sanitation and Hygiene Statistics. *In:* Department of Health (ed.). Can Tho.
[111] Source: Head of Medical Centre in Co Do district; oral communication.
[112] PHC O Mon 2011c. Water Supply and Sanitation Reporting for 2011. Can Tho.
[113] Source: Head of Office of Health in Binh Thuy, 08.07.11; personal communication.
[114] PHC Phong Dien 2011. Summary of the Preventive Health Activities for 2009 and 2010. Can Tho.
[115] Source: Head of district office of the Red Cross; oral communication.
[116] PHC Cai Rang 2011c. Water Supply and Sanitation Reporting for 2011. Can Tho.
[117] PHC Cai Rang 2011a. Annual General Reports of Preventive Health Programs for 2008 - 2011. *In:* Department of Health (ed.). Can Tho .

The contradictions that arise when comparing provincial and district reports, are not surprising; even when they reach the extent of local offices reporting double sanitation coverage than CERWASS. In Le Binh ward of Cai Rang district, it was reported by the PHC that 100% of households had hygienic toilets (2011c). This was proved false, not only by the witnessed "floating houses" in the area , but also from the health clinic director himself, who recognized there are at least 63 of the 4.219 households in Le Binh that are lacking any kind of sanitation facility[118]. Official statistics that are generated for Can Tho City clearly show that sanitation remains a problematic issue, with less than 50% of rural inhabitants having access to "hygienic" sanitation. This is much lower than the average rate (70.58%) of the ten provinces in the South (IHPH, 2011b). The vast majority of the people without access to a hygienic facility in Can Tho are open defecation practitioners (Fig 5.5).

Figure 5.5: Reported distribution of the household latrine types in Can Tho City by CERWASS



Design by author; data provided by CERWASS (2011).

Guided by targets set in global health and development goals, the central state in Vietnam identifies open defecation as the main enemy in the establishment of hygienic sanitation. The abolishment of open defecation habits seems to be a central target for public health and environmental sanitation in the country (MoH, 2007b: 118). Nevertheless, the problem in the region is much more complicated than the practice of open defecation and roots also in constructed facilities, which seemingly comply with the standards but are actually "hybrids" of the officially proposed models and a source of contamination:

> "It is a real need for people to have hygienic toilets. The reality is only 10-15% has one; most people have no other choice but to have a fishpond toilet. Some poor people have other kinds of toilets, but they will discharge straight into the canals and the river anyway." (Official in district branch of the FF, Phong Dien, 13.09.11; personal interview)

However, assigning problems of sanitation strictly to the presence of fishpond toilets is a prevailing argument of many local cadres, as in the case of the Women's Union head officer in Cai Rang:

> "There are not many fishpond or river toilets. They will still use them only in some 'deep' rural areas where people might raise fish Most of the wards in the district [Cai Rang] have been characterized as 'cultural wards' which means, among other things, that the sanitary situation is good." (Top official in WU district branch, Cai Rang, 22.09.11; personal interview)

According to information on the status of more than 4 million inspected facilities, provided by the IHPH (2011a, 2011b), around 20% of the septic-tank, pour flush, two-vault and pit latrines around the Delta are non-hygienic; proving that the *type* of facility is not ipso facto a guarantee of its sanitary state (Table 8 in the Annex). Due to the ease of maintaining a fishpond in the rural areas, where land is not so expensive and water is abundant, it is an easy and costless sanitation option. Having this option has been blamed as the reason why people resist adopting better sanitary solutions[119]. Some interviewees from within the communes and hamlets believe that the use of the fishpond toilet is a tradition and a cultural practice that people don't really want to abolish:

[118] Source: Top official in central ward clinic, Cai Rang, 13.12.11; personal interview.
[119] Source: Top official in district Office of Health, Binh Thuy, 08.07.11; personal interview.

> "People here have fishpond toilets, they like it very much. They feel they are free, airy, and comfortable, whereas in the built toilets the people think the air is suffocating, they don't enjoy it." (Top official of a Health Clinic in rural commune, Phong Dien district, 15.09.11; personal interview)

Local experts on sanitation opine that the use of space and the nature in the surrounding environment have also been shaping people's opinions on sanitation. In some areas, local perceptions on hygiene have adapted to the changing environmental conditions of urbanization and water pollution congestion:

> "In Long An Province, that the fields are empty and people have large spaces, they feel pollution from a fishpond toilet will not reach them; so the young and healthy[120] use the outside [fishpond] toilet. Only the old or the sick will use the latrine. In An Giang Province, where the houses are closer to each other, the people appreciate having a [hygienic] toilet and they like using it." (NGO representative/ WSS expert, 15.12.11; personal interview)

But, according to some, this adaptation is not happening as strongly, or as fast, as to overcome traditional habits:

> "People have the custom of not using a [hygienic] toilet. They don't like it and they don't see the reason why. Especially people that live in the countryside and work in the fields all day, they will just defecate out there. Of course when the space is open and the people are few, it is not a major environmental sanitation problem. But the habit remains engrained in their behaviours and in the more populated or urbanized environments it becomes a problem." (Professor in the Institute of Epidemiology in Hanoi, 08.02.2012; personal interview)

A study by Herbst et al (2009) in Can Tho found that most people were satisfied with their sanitation situation (77%), at the same time when the majority were fishpond toilet users (74%). Nevertheless, according to the authors (Ibid. 2009), people were positive towards the idea of having a modern hygienic toilet and many expressed their desire for it. It thus seems that the use of the fishpond toilet does not always take place out of preference, but rather as a consequence of financial hardship. As the following section will further discuss, however, the expressed desire for a "hygienic" toilet might simply hide a desire for getting access to a microcredit loan. In that case, the financial hardship is still the underlying reason for expressing any interest in sanitation improvements. But if this interest is not guided by an acknowledgment of the benefits of sanitation nor accompanied by a willingness to invest in it, the microcredit funds might or might not be invested in a hygienic facility.

Based on the above, the question of what would be more effective in helping people improve their sanitation situation, could be answered by looking at what constrains them from doing so. Firstly, the single focus of abolishing fishpond toilets without a concurrent emphasis on upgrading and monitoring the maintenance of existing facilities might overlook significant sources of pollution, especially in urban environments. Secondly, the main promotion of the septic tank latrine might not see much success among the region's poorer population, especially when the policies in place to support it are excluding the most vulnerable. The next section interrogates why, after the fuelling of so much of central and international capital to support the rural and the poor, the coverage of hygienic sanitary facilities is still in low levels.

5.3.2 Implementing pro-poor programs for sanitation

The Vietnamese government, with the support of international donors[121] has tried to facilitate the expansion of improved WSS through the provision of subsidies and beneficial loans which, as mentioned

[120] The use of a fishpond toilet requires walking on a bamboo or wooden bridge to reach the cubicle which offers some visual "privacy". One has to balance while squatting and this is not always easy when one is weak, sick or old.

[121] According to interviewees, the 'East Mets West Foundation' provided funding for the construction of 600 toilets in the Mekong Delta, offering a subsidy of 300.000 VND (10 Euros) for each toilet built and a free-of-charge connection to the local water supply network, for 400 households. UNICEF and HELVETAS-WATSAN also support the sector, providing funds to the government, which then through a regulated process of selection distributes these funds to selected Provinces. Usually the users get a return of about 1/5 the cost of a septic tank

before, are largely directed towards the sanitation sector. Subsidy funds are administered centrally and are distributed to the localities, primarily through a selection of provinces[122]. The provinces more likely to be selected are those who have implemented such programs well in the past. As informants further explained, in order for a province to receive NGO support there has to be proof of demand, of people that are "ready to implement". In numeric terms, this means that only provinces which present at least 40 households that are willing to build a hygienic toilet, will receive subsidy funds. The successful spending of the subsidies is also likely to also attract more funds in the future:

> "If the number of people who ask for hygienic toilets, is higher than the subsidized offer from the government (40 toilets), then the Province will most likely be chosen for the NGO funding. If there is no demand, there is no funding [...]. It depends on the abilities of the staff to attract the funds, to convince the people. If they can prove that they will materialize the goals that they set, that they will pull through the implementation [...]. Every year they have a meeting where the People's Committee comes together with the NGO and the MoH introduces them. Then they talk about the actions for the year to come. For the Provinces that implement well the tasks the government will give more money. The government evaluates this through the reports that the provinces produce and through their own observations." (Top official in PHC Can Tho City, 14.07.11; personal interview)

According to the descriptions of informants, once the funds are acquired by a province, the decision-making power on their distribution lies within the localities and is under the guidance and supervision of CERWASS and PHC of the city. However, the responsibilities of these two provincial authorities are recently undergoing change:

> "We give the subsidies to the communes in need. We know them from the activities that we conduct there, through the hygienic inspection visits, during which we observe and we know." (Top official in PHC Can Tho City, 14.07.11; personal interview)

> "CERWASS receives 2 billion VND[123] each year for the sanitation support, including subsidies and the organization of information and education activities. We collaborate with the PHC about how we will distribute the funds for toilets to the people. In the following year though, for the NTP III budget, the government will give the funds directly to the PHC and CERWASS will only be responsible for the water supply in the rural areas." (Top official in PHC of Can Tho, 12.12.11; group interview)

Distributing the subsidies for sanitation (up to 500.000 VND[124] per household) was claimed to prioritize beneficiaries according to criteria of poverty, ethnic minority and other socially sensitive criteria for unprivileged groups. However, there was no regulation provided or found, with regards to the specifics of this distribution. According to informants from within the districts, all the residents are informed of the subsidy and the can apply by putting their names down on a list. Prior to being approved by the commune's PC, this list will be checked by the head of the clinic, to make sure that the applicants are indeed in need of a sanitation facility. After the applicants are shortlisted, the names are announced and the beneficiaries are expected to construct the facilities. The local health staffs, together with representatives from the PHC, make sure that the constructed facilities meet the national sanitation standards. Only then can the reimbursements be distributed to the benefitted families[125].

The criteria according to which the beneficiaries get shortlisted were not clearly specified, apart from the claim that subsidization is chiefly, a pro-poor policy. However, as described above, the support only reaches people after the construction is finished and it only covers part of the expenses in the case of a

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latrine (Top official in PHC Can Tho City (14.07.11), UNICEF representative (Ho Chi Minh City 29.07.11), NGO representative/ WSS expert (15.12.11); personal interviews).

[122] Source: Top official in PHC Can Tho City, 14.07.11; personal interview.

[123] An amount that is equal to about 70440 Euros.

[124] Equal to about 18 Euros

[125] Sources: Top official in PHC of Can Tho (12.12.11), top official in CERWASS (Can Tho, 12.12.11), top official in rural commune health clinic (Phong Dien district, 15.12.11); personal interviews. The process described was cross-checked with representatives from commune, district and provincial authorities.

septic tank latrine (total cost of 5-8 million VND) or a pour-flush latrine (total cost of 1-2 million VND). This is partly the reason why the subsidy is mostly given to people who have already taken up a microcredit loan and therefore can pay for the rest:

> "The subsidy will go to the people who got the loan and built a toilet according to the [hygienic] criteria. The representatives from the Preventive Health Centre will come to check and if they approve the construction, according to the regulations, they will give the [subsidy] money to the people as a reward.
>
> [PK: Do people build hygienic toilets with their own money; without a loan?]
>
> Yes, some people do. Some of them will build unhygienic toilets and others that have the money will build proper ones. But the subsidy is for the normal people who get a loan and not for the rich" (Household representative, Phong Dien district 21.12.2011, personal interview).

The head of a commune clinic in Phong Dien district, reported that the number of households receiving the subsidy has grown from ten in 2009 to forty in 2011, but "of course it was always for people who can afford to pay the rest of the cost" (Top official in rural commune health clinic, Phong Dien district, 15.12.11; personal interview). Evidently, poor households still face huge difficulties in being able to construct a proper toilet; firstly because the subsidy is not enough and secondly because, according to the above, they are not likely to receive it if they don't already have secured a microcredit loan. The poor are often untrustworthy of re-paying loans or are not even qualified to apply, due to old unpaid debts[126]. They are therefore in a deadlock situation where their low financial credibility does not allow them get access to loans and for this reason they are less likely to receive a subsidy:

> "Sanitation facilities are subsidized but the very poor cannot pay the rest 3.5 million needed. Also, they cannot get a loan because they are not credible." (Official of the WHO in IHPH, Ho Chi Minh City, 29.07.11; personal interview)
>
> "Everybody that wants to get a loan can get it, but some people don't want to enter that process. They think a toilet is not necessary [...], of course poverty is also an issue; because they are afraid they won't be able to pay it back." (Household representative HH2, Phong Dien 21.12.11; in-depth interview)

As a result, loans and subsidies are mostly undertaken by middle-income and better-off households and as Reis (2012:102) also finds, they do not really benefit the poor.

Sometimes, access to beneficial policies is not only an issue of credibility but also of location. Poor families that live in the urban centres and towns never get the chance to access subsidy programs, as those are not directed to districts with already high coverage of WSS and low number of demands:

> "Here, in this district, 99% of the households have a decent sanitation facility, so there is no policy for subsidies or loans. However, there are people that have no money to repair or upgrade their toilets, which have turned unhygienic, and this is a problem." (Top official of Area branch of PC, Cai Rang, 15.10.11; personal interview)

Moreover, it is specifically mentioned in the accounting report of the Vietnam's Social Policy Bank (VSPB) for 2010 that funds are only directed to rural districts (Table 11 in the Annex) and thus, seemingly, urban areas fall completely out of the microcredit policy's scope. A woman resident of central Le Binh ward describes how urbanization and the lack of state support have left her with no options in WSS:

> "We don't have access to a canal or any other surface water, so we get water from the neighbours' hose and we go to the toilet of the factory nearby, when it opens up in the morning" (Household representative P40 of classified near-poor household, Cai Rang; personal interview).

Data from the urban Ninh Kieu district showed 95.34% coverage of "hygienic" sanitation facilities, with a striking percentage of 99% of those toilets being septic tank latrines (PHC Ninh Kieu, 2011). Similar to piped water supply (chapter 5.2.2), Ninh Kieu is presented as the 'epitome' of successfully promoted sanitation policy. Nevertheless, there are 238 households in the district with no access to sanitation at all

[126] Sources: Household representatives HH1 and HH4 in urban district, 22.12.11; in-depth interviews.

and 246 households with sanitation facilities of unspecified type which discharge directly into the river (Ibid. 2011). These numbers roughly coincide with the 371 households of Ninh Kieu that are reported to use river water as a primary water source. These closer observations of the produced statistics clearly speak of existing pockets of urban population without access to improved WSS. Despite their significant numbers, comparable to what one finds in rural districts, this part of urban reality is usually lost in the statistical majority of successful implementation (Picture 5.4).

Picture 5.4: "Floating houses" constructed at the edge of canals in urban Ninh Kieu district

Picture by author, 2011

The "game" of microcredit financing for sanitation

The process of accessing microcredit loans is similar to that of accessing subsidies for sanitation (SNV, 2010), as it firstly includes the compilation of a list with the names of those interested and intending to build a new toilet. The number of people who will eventually receive the loan is fixed and it depends on the available budget. The Women's Union is the main organization that facilitates the microcredit distribution processes (Sakata, 2006). The Union's management will advocate, inform and guarantee financially for union members who uptake these loans. The Union thus, plays the role of the "middleman" in the lending process, applying and receiving the loans from the Social Policy Bank (VBSP)[127] and then distributing those to the interested public. According to the head of a WU's group in the commune level, the organization keeps a percentage of these funds (up to 1 million VND per month), in order to cover for the administrational expenses in facilitating the whole process. Literature explains that the administration of the loans is through the formation of Credit Groups (Cuong 2008 cited in Reis and Mollinga, 2009), but it seems that these groups consist mainly of union members. The head of the Farmers' Union in the commune level particularly described how being a member of a union is the only way for someone to get easy access to microcredit:

> "Everyone belongs to a group [Farmer's Union or Women's Union], or else it means they have their own money to build toilets. As for the poor, some of them build toilets but they are not hygienic ones." (Household representative HH4 and member of the FU; in-depth interview)

Even though the overall activity and the role of the WU in the microcredit lending process was presented by their members as uncomplicated, transparent and inclusive, a woman resident from Cai Rang district did not describe this process as so favourable. The interviewee indicated that in order to be a WU's member -and thus being able to "play the Union's game" for securing a loan- demands a weekly

[127] Source: NGO representative/ WSS expert, 15.12.11; personal interview.

contribution to the Union's common funds which she could not afford[128]. Literature has also suggested that being a member of the WU requires frequent participation in meetings, which is anything but trivial for women who need to work long hours during the day (Schuler et al., 2006). This prerequisite of being a member of a microcredit administering group (Credit Group), in order to get access to sanitation loans, is thus in a way contributing to a further exclusion of the poor as the latter face difficulties in fulfilling the monetary, timely and dedication requirements in being a union member.

Apart from a limited inclusiveness in this sense, there is also little transparency in how funds are distributed and used. It is explicitly stated in the Law that each microcredit loan for WSS amounts to 4 million VND per work and per household, meaning that each household receives 8 million VND to be equally distributed in water supply and sanitation improvements (Prime Minister of Vietnam, 2004). Differing from the above, a CERWASS officer (12.12.11, group interview) claimed that the maximum amount for a toilet loan is 4.5 millions. District representatives in the office of Labour, war Invalids and Social Affairs (Cai Rang 29.09.11; personal interview), said that the microcredit loan is only up to 3 million VND. A local chief of the FU in the commune level, somehow confirmed the Law, saying that "the amount of the loan comes up to 8 million VND, which two years ago was enough to build a toilet that fulfils all the hygienic criteria, but now is no longer enough" (Household representative HH4 and member of the FU; in-depth interview).

According to information that was acquired directly from the VBSP, the loans that were given out during the year 2011 for water supply and sanitation in Can Tho City, came up to the amount of 27 billion VND[129] (VBSP, 2011). This was distributed among 4.719 households and thus, each of them must have received up to 5.7 million VND (Table 11 in Annex):

Total loan money for WSS (**27 billion VND**) / total number of households benefitted (**4719**) = amount of loan for each household (**5.7 million VND**)

As it was noted before (chapter 5.3.1), all the new sanitation facilities built between the years 2010 and 2011 in Can Tho were pour-flush latrines (2.745 facilities). The construction-cost of this type of sanitation facilities does not exceed the amount of 1.5 million VND each. Assuming that all the beneficiaries used at least part of the loan for a latrine construction, there must have been a leftover amount of 4 million VND, for each of those 2.745 households who got a loan and built a latrine (not taking into account that they also possibly received a subsidy of 500.000 VND):

Amount of loan for each household (**5.7 million VND**) - maximum cost of construction of latrine (**1.5 million VND**) = leftover funds for each household after constructing the latrine (**4.2 million VND**)

Moreover, there are 1.974 households who appear to have gotten a loan, but do not appear to have used it in any kind of sanitation facility (Table 8 in Annex). For those households, the whole amount of the 5.7 million VND must have remained for uses other than sanitation improvements:

Total number of households benefitted (**4719**) – total number of constructed latrines (**2745**) = total number of households which received a loan but did not build a latrine (**1974**)

Since the microcredit loans that were mentioned in the VBSP reports are strictly for WSS improvements(VBSP, 2011), then the remaining amounts must have been spent for water supply connections. CERWASS (2010, 2011a) reports only 4.015 newly established water connections during the same period (see chapter 5.2.2) and no other type of improvement regarding water supply. This leaves 704 households in hold of a microcredit loan, but without any use of it in the two sectors it was intended for:

Total number of households benefitted (**4719**) – total number of water connections (**4015**) = number of households benefitted who did no improvement in WSS (**704**)

[128] Source: Household representative HH4 in urban Le Binh, 20.12.11; in-depth interview.
[129] Equal to 950.938 Euros

A water connection to the piped network does not cost more than 2 million VND[130] and thus, even if all of the 4.015 new water connections were paid through microcredit loans, there are plenty of leftover funds in each household. Therefore, even with the most generous calculations and under the assumption that every new WSS improvement between 2010 and 2011 was assisted by a loan, the numbers provided by CERWASS and those by the VSPB simply do not match. In numerical terms, the fate of nearly half the WSS microcredit budget for that year in Can Tho (15 billion VND, equal to about 900.000 Euros) remains completely unknown and unjustified (Table 5.7).

Table 5.7: Calculation of the amounts of money spent to WSS improvements comparing to the microcredit loans given by the VBSP for the sector in Can Tho, during the years 2010 - 2011

2010 - 2011	Number of new latrines constructed	Cost of each latrine constructed (VND)	Number of new water connections	Cost of each water connection (VND)
	2745	1.5 million	4015	2 million
Total cost for each type of improvement (VND)	4117.5 million (sanitation)		8030 million (water supply)	
Total cost for both types of improvements (VND)	12147.5 million ~ 12 billion (sanitation and water supply)			
Total amount provided for WSS by the VSPB (VND)	27 billion			
Leftover amount (VND)	**15 billion**			

* The calculations are based on the WSS statistics provided by CERWASS (2011a, 2010), the data from the VSPB (2011) in Can Tho for the year 2010 and the prices of WSS constructions as claimed by local informants (see text).

The above figures and calculations reveal that either the implementing machinery is allowing for WSS funds to be distributed to people who do not actually invest in WSS improvements and thus 15 billion VND is spent for other purposes, or that these amounts never actually reach any beneficiaries. Decision-making responsibilities on the distribution of these loans are dispersed in authorities along the administrational pyramid of the sector in Vietnam and between different ministries. This makes it hard to trace and clarify exactly loopholes in the implementation of microcredit programs for WSS. Many of the decisions in selecting and monitoring the beneficiaries come down to the health workers and their collaboration with the PHC and CERWASS. The rules around the functions of a health worker are however not clear in the legislation and even differ in each locality (look at chapter 4). As a result, their reporting on which facility is "hygienic", which household needs financial support and who is entitled to microcredit loans, can be largely unreliable. As a result, while the poor continue to be widely under-privileged in their access to WSS facilities mostly due to financial constraints, much the allocated budget apparently disappears, without any clear accountability for its disappearance.

5.4 Conclusions

Following global health-related targets and guidelines, the Vietnamese government emphasizes on the development of WSS as the central answer to water-related health problems and especially to the problem

[130] This amount is for a connection fee and a calculation of 1.2 million VND (42 Euros) for pipe extension that might have been needed (see section 5.2.1).

of diarrheal disease. This chapter described how this emphasis is placed particularly on aspects of household-based improved constructions. Policy and implementation in the sector of WSS, is based on the assumption that the statistical coverage of 'improved' facilities is a strong indicator of environmental sanitation and public health. The method of implementation is thus based on a top-down exercise of pressure to local authorities, in order for the latter to achieve statistical outcomes that will satisfy the centrally-defined targets of the sector. These outcomes are therefore statistics regarding the presence of household-based WSS developments. The validity of the produced statistics and the health benefits that they are supposed to reflect proved highly questionable in the case study areas.

Firstly, significant contradictions came into light, with relation to the process and the outcomes of producing statistics in WSS, pointing to a pattern of arbitrary reporting. Personal interviews with staff and experts made it possible to understand that this cannot be simply assigned to a lack of capacity in the sector and that the problem of misreporting has deeper roots. The central government sets highly demanding targets, focusing on technical indicators which subsume many characteristics of construction, maintenance and usage (GoV et al., 2006). In their efforts to satisfy these targets, local governments in the communes and districts were often seen to report more "hygienic" constructions than what exists in reality, apparently overlooking details of construction, or simply wanting to present better implementation achievements. This system of reporting statistics is also connected to the allocation of funds, through the programs of microcredit loans and WSS subsidies. Thus, the unreliability of the former reflects on a fuzzy implementation in the latter. Microcredit and subsidy funds are distributed in a number of selected provinces, according to each province's implementation during the previous years. In other words, the reported statistics are supposed to represent the capability of the province's implementing machine to convince people to effectively invest in WSS constructions. Increased statistics of WSS coverage increase thus the possibility of the province receiving supportive funds in the future. It is then clearer that, apart from satisfying the pressuring demands of the higher levels for implementation, the arbitrary reporting in WSS also serves as a means to attract capital. Further findings on the distribution of this type of capital within each Province showed that the development of WSS is actually a highly political issue.

Firstly, though the programs of microcredit and subsidization in WSS are supposed to be targeting poverty and assisting those who are mostly in need, it seems that the poor remain widely excluded from such programs. This mainly owes to their unreliability for returning credit and their difficulties in joining local groups and thus be part of the "Union's game" in accessing such programs. As a result of the above, minorities of poor people without access to WSS remain trapped in an unhealthy situation and are essentially ignored by the current policy and its implementation. Secondly, subsidies and microcredit are connected to each other and are nowadays mainly directed to sanitation, as water supply is considered to be a resolved problem for the majority of people. Even though water practices in the household-level appear to massively affect the quality of consumed water, this issue is widely downgraded by the implementing authorities, which emphasize on piped-water connections and the construction of hygienic toilets. Health education activities were rarely taking place in the study areas and the preventive messages communicated to the public were weak in content. The reasons behind this kind of prioritization of "hardware" versus "software" measures seem to be partly due to the previously discussed fixation to statistical indicators. "Hardware" improvements are easier to quantify than health education outcomes. It is also true however, that "hardware" WSS constructions necessitate capital investments and thus comprise of a sector more likely to attract support in the form of external funding.

Research indicated huge discrepancies between the amounts of microcredit assigned for WSS and the actual constructions costs of the facilities that were constructed during the same year in Can Tho, with more than half of the budget being unknowingly spent within the province. Thus, despite the narrative produced collectively from local and national institutions in the sector, which assigns any existing problems to a lack of funds, it appears that it is actually the management of those funds that is problematic. Despite officials claiming that "water supply and sanitation is continuously improving for the benefit of human health", research showed that much of the practice in WSS is actually underpinned by

the interests of those managing and distributing the sector's funds and is not always serving the purpose of safeguarding people's health or supporting the poor. Satisfied with increasing statistics, the central state turns a blind eye to this inefficiency and mismanagement that the implementing mechanism presents. Overall, what seems to be lacking from the sector is not money, but a system that will be characterized by meritocracy, inclusion and transparency.

CHAPTER 6

PREVENTING DIARRHOEA: FRAGMENTED POLICY AND THE LACK OF EMPOWERING HEALTH EDUCATION

The previous chapter showed why the preventive sector of water supply and sanitation is still facing a lot of challenges, both in achieving universal coverage and in reaching the health goals related to the prevention of diarrheal disease. The crux in successfully implementing preventive WSS was a matter of policy design, institutional deficiencies and an overall distorted concept of managing and reporting within the implementing system. This resulted in perpetuated inequalities of access to clean water and sanitation and in turn, is expected to play a significant role in the distribution of diarrheal disease risks. The preventive success of the promoted programs in WSS, proved to depend on their acceptance and their embracement by the public. People have often evaluated and implemented WSS solutions differently than what the state had prescribed and was expecting. The preventive impacts have therefore remained ambiguous as infrastructural changes have not always been accompanied by informed practices of hygiene. Advancing the analysis, this chapter will focus on the strategies that the Vietnamese state follows in order to promote diarrheal disease prevention, in ways beyond the expansion of WSS infrastructure. The chapter will particularly look at the communication methods that are used to raise public awareness against the spread of the disease, critically examining the empowering potential of health education, as this was witnessed in the study area of Can Tho City.

6.1 Merging the gap between local and global approaches to diarrheal disease

As presented in the introduction of this thesis, there are a number of measures capable of preventing the spread of diarrhoea that are known to the international health community (UNICEF and WHO, 2009). These internationally proposed measures accentuate, for example, the need for vaccinations, the assurance of food safety and the need to fight children's malnutrition in order to control diarrheal disease. Despite the available knowledge on disease prevention and the legal adoption of many globally suggested measures, diarrhoea persists in many countries of the world, including Vietnam. As this chapter will discuss, the reasons behind the difficulty of incorporating preventive health principles in different societies are to be found in institutional, social and cultural spheres, which are often disregarded by both the global advocates and the local implementers of such principles and measures.

6.1.1 Vietnamese perceptions around health

In Vietnam, the ideas around health and disease are heterogeneous, as they include both western and traditional medicine approaches. The field of Traditional Medicine[131] has a long history and a strong presence until today in Vietnam. It has been shaped through the combination of the northern "vietnamized" Chinese medicine and southern Vietnamese herbal remedies (Ladinsky et al 1987 and Marr 1987 cited in Gammeltoft, 1999). Traditional Vietnamese medicine considers the healthy body as a dynamic system in balance, which is characterized by strength and stability. Some of the recognized interrelations between symptoms, conditions and cures in traditional medicine, do not agree with western principles of biomedicine and vice versa. Gammeltoft (1999) finds that some important determinants of

[131] In Vietnamese, traditional medicine is *thuoc Y*, Chinese medicine of Vietnam is *thuoc Bac,* and herbal medicine is *thuoc Nam.*

health in traditional Vietnamese medicine, include for example the consumption of certain foods, the amount of rest and sleep, the exposure to wind or other types of weather, as well as personal stressful thoughts or evil spirits (Gammeltoft, 1999 :128).

After decades of interaction between traditional and western medical ideas and principles in the country, the two fields have met, mixed and shaped each other. The medical studies Vietnam are mostly based on biomedical principles, but they include entire semesters of traditional medicine theory and practice of methods such as acupuncture, the use of herbal remedies and physiotherapy. The principles of traditional medicine are thus widespread, both in the medical profession and in the existent tacit knowledge around health. The coexistence of the two fields is noteworthy seeing how, for example, many people consume antibiotics carelessly (see chapter 4) but many also maintain a strong preference for traditional curative means, especially in the case of chronic diseases (Ladinsky et al., 1987). It became evident through the everyday discussions with people in Can Tho, that the field of traditional medicine is highly appreciated by most Vietnamese, with this appreciation not excluding an equally strong trust in western biomedical explanations of health and sickness.

Diarrhoea is one of those conditions that are often treated by individuals with traditional medicine at home. Its treatment usually follows the consumption of certain foods, herbs or concoctions, while its causes are also usually assigned to aspects of nutrition. In the herbal garden of the Traditional Medicine Hospital of Can Tho, there are four plants that are considered effective for the treatment of diarrhoea (Picture 6.1).

Picture 6.1: One of the four plants for the cure of diarrhoea, in the herbal garden of the Traditional Medicine Hospital in Can Tho City and the preparation of dried herb mixtures

Left: Andrographis paniculata: 4-12 grams of the plant is used in the preparation of a concoction against diarrhoea. Right: preparing herbal mixtures and selling them in the traditional medicine "pharmacy"

Picture by author, 2011

Many people also believe that the disease is a reaction of the body to cold drinks, to alcohol in general, to psychological angst or to weather changes that affect the cold/hot balance of the body (see also chapter 7). However useful and accurate it might, people's traditional knowledge might conflict with the advice provided by the public health mechanism which focuses on western explanations and medication. Even more, knowledge from the two fields mixes in an ad-hoc way, not always providing the best of health decisions. It is often the case, for example, that indigestions or brief gastrointestinal disorders would be

placed on the same scale and category with an episode of acute diarrhoea, because the symptoms are of the same kind (diarrhoea and intestinal cramps). As a result, a mild episode might be unnecessarily treated with antibiotics and on the other hand, a serious episode of diarrhoea might simply be administered coconut juice.

Maintaining a strong dividing line between these two fields of medicine, in terms of their value and usefulness for dealing with disease can, understandably, confuse the health behaviours of the public. A holistic approach which will consider the history of health understandings, at the same time integrating global knowledge on disease mitigation, seems to be imperative, especially for issues of public health where people are called to recognize risks and adopt preventive and curative measures. Thompson (2003) observes that during the French colonising era in Vietnam, the balance between which preventive health messages are embraced by the public and which not, was very much shaped by the health communication methods used in the local level and by the amount of respect paid to the already established cultural values and traditional health conventions:

> "...the Vietnamese quickly lost their initial enthusiasm for western medical techniques due to the forcible imposition of those treatments by the French colonial government. For example, the Vietnamese strongly resisted the French vaccination campaigns (for smallpox) in the 1870s and 1880s. This resistance was due, at least in part, to the exclusion of traditional practitioners from participation in vaccination work. Vietnamese were only allowed to participate in the vaccination campaigns after they had been formally trained in western medicine. Not until after the first class had graduated from the École de Médecine de Hanoi (founded in 1902) were Vietnamese allowed to vaccinate." (Thompson 2003: 117)

While the two fields appeared to be in a sense conflicting and antagonistic in their acceptance by the people, the situation now has changed. A later investigation by Jenkins et.al (1996) showed that especially after the 1990s' wider opening to western influences and the rapid modernization processes that have been taking place since, there is a balance in people's perceptions. The authors particularly underline that despite the still strong presence of traditional medicine, "the data do not support the hypothesis that these traditional beliefs and practices act as barriers to access to Western medical care or to utilization of preventive services" (Ibid. 1996). In other words, the Vietnamese are open to biomedical approaches to health, without losing their faith in traditional explanations of bodily functions. The challenge lying ahead, therefore, is to be able to include and use both these forms of knowledge in the fight against disease and in the overall benefit of people's health in the country. As Nichter and Nichter (1996) note, doing otherwise and neglecting aspects of what communities believe in, what they are accustomed to and what they see as useful, is often the reason of preventive health failures:

> "In the field of health education far more time, energy, and resources have been expended identifying what a population does not know or do, than in assessing what a population does know and the way in which it is known. What is often neglected is a consideration of those concepts of health and images of body processes which underlie the layperson's health practices. Due to this lack of appreciation of tacit knowledge and the cultural common sense (and empirical observations) upon which it is based, cultural resources are often underutilized by health educators" (Nichter and Nichter, 1996a: 408ff)

6.1.2 The international "toolkit" against diarrhoea

In the face of a relatively inert health policy towards the prevention and control of diarrheal disease in Vietnam and the disease's widespread presence, many international NGOs have tried to propose solutions, focusing on vaccinations, sanitation solutions and hand-washing promotion (UNICEF, 2008a, UNICEF, 2012a). One of the most impactful interventions that focused on the legal provisions around the control of diarrheal disease was a project by PATH, with the aim to "re-prioritize the disease within the Vietnamese government" (Center for Health Market Innovators, 2012). This resulted in a formulation of new diarrheal disease management guidelines which were then adopted by the Ministry of Health in the country. Nevertheless, notwithstanding the benefit of establishing new and more informed high-level

documents, their existence on paper by no means guarantees their successful rooting in local practices across the country.

It is not rare that international organizations will produce policy recommendations, taking a rather pragmatic stance that is based on western science and on the belief that their previous application in a number of cases is proof of the adequacy for a number of others. These recommendations often fail to incorporate aspects of local culture (like traditional health understandings) and they rarely ever address the institutional context which will define their implementation. In the guidelines for the prevention and control of diarrheal disease, for example, some of the emphasized aspects are of clearly medical nature and refer to western pharmaceuticals, while others generally mention entire sectors of health prevention (food safety, safe disposal of faeces) without getting into the details of the existing problems within or the institutional structures around these sectors. Both the incorporation of local cultural aspects and the exact manner of implementing what is proposed in the guidelines is left to the judgment and the abilities of the local authorities.

Box 6.1: Summary of the main points in the 'New guidelines for the management of diarrhoea in children':

Identified risk factors include: food contamination, unclean water, bad kitchen hygiene translated in to dirty appliances, not washing hands in critical times and not disposing children's faeces properly. The recognized pathogens that can cause diarrhoea are listed in categories of parasites (amoeba, Giardia, Cryptosporidium), bacteria (E.coli, Shigella) and viruses (Rotavirus, adenovirus, enterovirus, Norovirus).

Novelties of treatment approaches:

Emphasis is placed on the usefulness of combining zinc supplements with low osmolarity oral rehydration solution (ORS), on the use of Ciprofloxacin for treatment of Shigella dysentery and on the use of Rotavirus vaccination as a preventive measure. Emphasis is also placed on the measures of proper nutrition, proper hygiene and breastfeeding, not only as part of prevention, but also as assisting the treatment and recovery.

Seven key points are listed in order to facilitate a concise communication approach, focusing on the crucial role of the caretakers and the parents. These points are: (i) breast-feeding, (ii) proper nutrition, (iii) the use of clean water, (iv) the frequent practice of hand-washing, (v) food safety, (vi) the use of hygienic latrines and a safe disposal of faeces, and (vii) vaccination.

Source: (MoH, 2009c)

It is certainly not the position of international NGOs to define the detailed function of a country's institutions. However, it is here worth underlining that a policy alone can clearly not procure for the motivation and the tools needed for its realization. The potential of policy guidelines, such as the above (MoH, 2009c) to bring positive outcomes, is therefore a question of how much political will exists to transform these guidelines into implementable plans. A pilot implementation of the above guidelines started with the guidance of the NGO in one province, with the objective for these practices to spread around the country (PATH, 2012). Nevertheless, one year later, none of the interviewed health officers or medical practitioners in Can Tho had ever heard of these new guidelines. Despite being aware of some of the measures proposed in the guidelines, most of the medical staff interviewed was using much older material for the case-management of diarrhoea.

To abridge with the above, health policy needs to take into account the cultural characteristics of the public whose reciprocate cooperation it aspires to, but it also needs to account for the social and institutional background against which a block of knowledge is looking to find a way in. Accordingly, a failure of incorporating new and useful information in local systems of health might not only be due to the information's disregard of local culture, but also due to the local institutional system's unwillingness to change, transforming this new information into practice. Examining both these issues with regards to the prevention of diarrheal disease requires a look into the current public health sector and a questioning of its ability to bridge preventive health knowledge(s) and policy implementation.

6.2 Derelictions of prevention: fragmented measures and weak implementation

This section draws from secondary literature and from empirical evidence collected in Can Tho City to delineate how the proposed measures on the prevention of diarrheal disease are being followed through in the country. By comparing internationally advocated guidelines that are reflected in national policy, with what is actually taking place in the local level, this section seeks to elucidate whether or not the above mentioned guidelines (MoH, 2009c) have found their place in the hands of local implementers.

6.2.1 The "old story" of diarrhoea: de-prioritizing and underestimating a widespread disease

One of the national preventive programs in Vietnam is dedicated to the "Control of Diarrheal Disease" (CDD) and follows the guidelines that had been proposed by the WHO, several years ago (WHO, 1987). The main objective of the program had been to educate mothers with children under five years old, on how to readily identify, treat and control diarrheal disease, emphasizing on the preparation of Oral Rehydration Solutions (ORS). In order to achieve the objectives of raising such understandings, the program has relied hugely on the health system's communication methods and tools, which, as discussed before (chapter 4), lie mainly in the hands of local health workers[132]. Part of the work that health workers do, in relation to the program, is to approach mothers individually in the clinics and to provide them with necessary information. Moreover, health workers are said to be frequent attendants of gatherings held under the umbrella of the Women's Union, where they "give some education classes on various issues, including diarrheal disease" (Top official in rural commune health clinic, Phong Dien district, 15.12.11; personal interview).

The collected policy documents and reports from various-level health organizations indicate strongly that the program is nowadays near its closure. Principally, there is no mention of this program in the National Preventive Health Strategy (MoH, 2007b), even though the prevention of diarrheal disease is referred to under the program of environmental sanitation (Ibid. 2007). The CDD program was reported in 2009 by the provincial department of Health in Can Tho (2009), but two years later it was referred to as "an old story which is now successfully concluded" (Top official in PHC of Can Tho, 12.12.11; group interview). On the district level, however, the program features in the annual reports until today (PHC Phong Dien, 2011, PHC Cai Rang, 2011b). These reports include mainly the disease's morbidity and mortality levels for children, but also the type of treatments administered for diarrhoea patients (ORS, intra-venous rehydration or antibiotics) and the number of mothers that were given advice. There was a prominent resemblance between the reported numbers of children patients and of the mothers that have received advice in the reports from the wards of Cai Rang district. In other words, the wards most hit by the disease were also the ones where most information-spread activities took place[133] (PHC Cai Rang, 2011b), while the same was observed in the scale of the province, for the whole of Can Tho City[134] (Department of Health, 2009). Though one of the main objectives of the program is the promotion of a correct and timely diagnosis, in order to prevent the disease's worst stages, its current implementation seems to make this type of knowledge available to parents only after a child is already seriously ill and admitted (thus reported). This demonstrates how the CDD program is actually reactive -rather than proactive- towards the disease's occurrence.

It was not made clear whether the one-on-one communication in the premises of the clinic and after a diarrhoea episode has occurred to a child, is the only way that the health system reaches the public with

[132] Source: Top official in rural commune health clinic, Phong Dien district, 15.12.11; personal interview.

[133] These wards were: Truong Thanh, Phu Thu and Tan Phu. They also comprise the poorer and most rural parts of the district, with the lowest rates of access to improved water sources.

[134] In the annual report of Can Tho City, for example, there were 5382 children patients reported under the CDD program and similarly, 5172 mothers who were given CDD-related advice.

information specifically against the spread of diarrhoea under the CDD program. Interviewed young mothers in urban and rural settings of Can Tho said they had never received any related information from health workers or from Women's Union representatives. However, they did mention the communicative efforts of local cadres for the prevention of dengue fever and malaria[135], as well as for the promotion of water supply connections in the rural areas[136]. As one representative of a commune clinic informed, another aspect of the CDD program was the free distribution of oral rehydration packs, but this is no longer taking place:

> "The Preventive Health Center will assign communication activities to the commune clinic under the CDD program. We used to give ORESON [a type of oral rehydration solution] for free, but since 2006 we just talk to mothers, instructing on how to treat their kids when they suffer from diarrhoea, advice them to give ORESON, salt and porridge." (Top official in rural commune health clinic, Phong Dien district, 15.12.11; personal interview)

The limited outspread of the communication activities and the withdrawal of free ORS distribution, both vouch for the limited financial support that is nowadays provided to the CDD program by the central government. This also shows in the funding reports from the district levels that do not include CDD in their list of preventive health programs, indicating its low prioritization in the county (Table 6.1).

Table 6.1: Budget allocation for preventive health programs in the district of Phong Dien

Content	Allocating budget (in VND)
Food safety and hygiene program	40.000.000
Reproductive health care program	42.000.000
HIV/AIDS program	84.213.000
Dengue fever program	50.000.000
Expanded vaccination program	40.000.000
Vitamin A program	8.000.000
Malaria program	9.000.000

Adopted from the report provided by the PHC of Phong Dien (2011)

It is obvious also in the central guidelines on national preventive health priorities (MoH, 2007b) that the focus lies on lowering the mortality levels of potentially lethal versions of diarrheal diseases, like cholera and typhoid and that diarrhoea (not necessarily classified as cholera or typhoid) is only given attention as a children's disease (see Box 4.1 in chapter 4.1.3). This is also obvious in the protocol followed in the local clinics, which is strictly reporting diarrhoea episodes of children under five years old:

> "We only report on children for this program. They don't require us to report anything other than the kids under five years old for diarrhoea. The same is true for the hamlet clinics [...]. For the adults we don't write down diarrhoea. It will either be 'infective diarrhoea' or 'digestive problem'. The levels of de-hydration in adults are not easy to differentiate; therefore we will just report the incident as 'diarrhoea – de hydration'. But we only report the kids to the higher levels." (Top official in rural commune health clinic, Phong Dien district, 15.12.11; personal interview)

Altogether, the implementation and the impact of the CDD program on local communities seems largely weakened. The followed methods fail to capture the total burden of the disease in the population, as they ignore the cases of adult patients with milder symptoms and the large number of those who never even

[135] These activities would basically be check-visits to make sure people are complying with mosquito-control practices (no stagnant water in and around the house, the existence of bed-nets, etc.).

[136] Sources: Mothers of young children in Phong Dien (21.12.11) and Cai Rang (22.12.11) districts; in-depth interviews.

turn to public health centres for treatment. Therefore, the final picture regarding the gravity and persistence of the disease is only partly being represented in the reporting of this program. Moreover, the CDD program has become nowadays rather obsolescent, seeing how its content is not updated with all the encompassing and necessary preventive measures proposed globally, such as water access, food safety and vaccinations (UNICEF and WHO, 2009).

6.2.2 Streets to industries: the multilevel challenge of food safety

It was often the case that interviewees would assign the episode of diarrhoea to the consumption of food that has been contaminated, has gone bad or has been produced under unhygienic circumstances. In their effort to explain the high incidence of the disease, even in areas of widespread water supply and sanitation coverage (mostly urban areas), health cadres would often discuss the problem of food safety as an urban phenomenon, as "these [urban] are places where there are more street vendors and more food stores" and "that's why they are more dangerous for someone to get diarrhoea" (Official in Office of Education, Cai Rang district, 22.09.11; personal interview). Food safety has in this way been used as the scapegoat for existing loopholes in the implementation of WSS policy, so to maintain the preventive success-story that is discursively connected to the latter:

> "The problem of waterborne diarrheal disease is intensified in the rural areas, because of the lack of water access and sanitation and because of the poor hygienic behaviour.
>
> [PK: How about the health statistics that show high incidence of diarrhoea also in the urban areas, where water supply and sanitation is mostly improved?]
>
> A lot of people eat out in the cities, street food is not controlled and might be dirty; or the conditions under which it is prepared are non-hygienic. Personal hygienic standards of people that are handling food might be still low; not using soap and not washing their hands. It is very hard to control food manufacture in Vietnam and food safety is now a big problem. Many small factories, and especially those making ice, just use un-treated water and just throw in chemicals to make it look good." (Top official in IHPH of Ho Chi Minh City, 28.07.11; group interview)

Even though the above officials describe indeed many of the leading problems in food safety, they indirectly detach those from the rural context. However, food-borne risks are not confined to urban areas. While the variety of food products might be less vast in rural and remote areas, there is no proof that rural food products are of better quality. Looking into Can Tho as a province with young urban centres and a traditionally rural character, one can witness how the diversity of food products spreads in its entire territory. Food can be bought fresh or processed, raw or cooked, in rural and urban open markets, small grocery stores and big super-markets and in a number of eateries, restaurants and street corners (Picture 6.2). Rural areas might lack centralized multi-stores with imported products, but there are always a variety of open food markets, local cafes or push-cart vendors of food products in immediate access. Moreover, foods, as well as people, travel daily across rural and urban areas, allowing complex food networks to develop and expand beyond administrational borders.

The media are discussing the issue of food safety as one of increasing concern for the country (Kieu Minh, 2009) and particularly the province of Can Tho, where it was reported that 14% of its food-selling facilities were not complying with hygienic standards and were using false expiring dates on their products (Hue Hoa, 2011). The quality of street food is extremely hard to monitor and control, as the vendors are usually poor individuals who the local authorities do not want to fine (Tung and Chau, 2013). In a larger scale, there are very frequent cases of food poisoning and acute diarrhoea across the province in groups of people who attend weddings and other catering events. The lack of regulation and control in the mass production of food and beverages is a burning topic nowadays in the country (Vietnam News, 2007). Food-borne risks are therefore infiltrating multiple scales of production and retail, requiring attention in their multiple forms and expressions.

Picture 6.2: Example of a street food push-cart in the outskirts of Cai Rang district

Photo by author, 2011

The Vietnamese government recently took measures to address this problem, establishing the Law on Food Safety (National Assembly of the Socialist Republic of Vietnam, 2010). The provisions call for risk assessment of food products, as well as for the forecast and communication of these risks to the public (Ibid. 2010:31). However, the legal framework on the responsibilities for checking and sanctioning food industries scatters jurisdictions along five different ministries[137], local governments and local health units; incommoding coordination and efficient implementation (Vietnam News, 2007, Kieu Minh, 2009). The only traced body that was found to be actively enforcing food safety regulations was the Food Safety Unit in the province level (MoH, 2008). However, the activities of this body are limited to high-level businesses and companies that are registered under the province; thus, its jurisdiction does not include the numerous smaller food-selling units, which therefore, escape the control of any authority[138].

One of the business sectors that often fall under the control of the provincial Food Safety Unit is the production of bottled-water and ice. This sector has been looked at with much concern and suspicion in Vietnam, regarding its production quality standards[139] and safety, with many companies having been accused for evading regulation (Duong et al., 2009, Thanh, 2009). Nevertheless, the current legal framework around the sector's control and the imposition of sanctions in case of non-compliance appears rather weak (Box 4 in Annex). Escaping sanctions has also been witnessed in smaller scale food businesses, as local authorities are intentionally sympathetic to their owners, for reasons of interpersonal familiarity and acquaintance (Hue Hoa, 2011). Similar practices of turning a blind eye to food safety violations of local businesses "because it would seriously endanger their livelihoods" and of higher-level businesses in order "to maintain good relationships", have been particularly noticed regarding water polluting activities of the fish-sector in the Delta (Waibel et al., 2012). Therefore, even though the ineffectiveness of the sector is usually assigned to shortages of personnel, with "only 127 specialized people being employed in the sector for the year 2011" (Nguyen Qui Don, deputy director of education and training in Can Tho City, cited in Hue Hoa, 2011), it is also a matter of elastic implementation from the side of the authorities already in charge.

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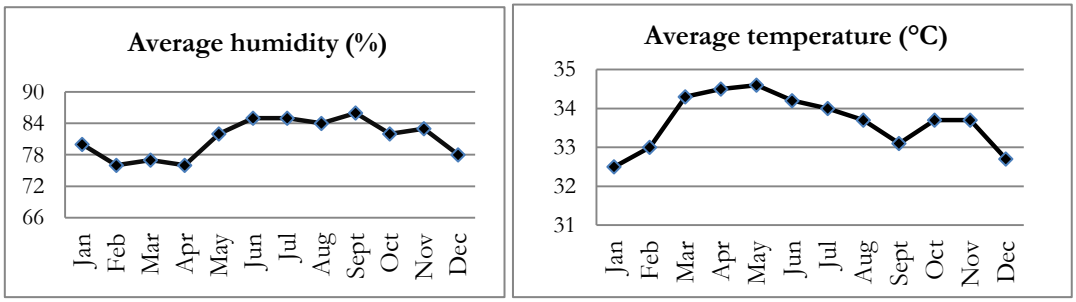
[137] These are the MARD, the MoH, the MIT, the MoNRE and the MoST.

[138] The representative from the Food Safety Unit in Can Tho (16.12.11, personal interview) claimed that it is the health clinic's responsibility to inspect these small food vendors, but this was not verified by any clinic worker within Phong Dien or Cai Rang districts.

[139] Sources: Top official in district PHC (Binh Thuy, 12.07.11) and top official in IHPH of Ho Chi Minh City (28.07.11); group interviews.

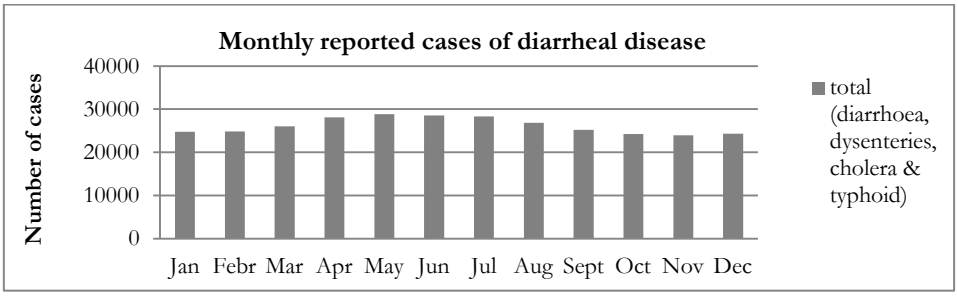
In an attempt to address food safety risks in a preventive manner at the maximum of their appearance, the government recently established three periods of the year, as the peaks of food safety control[140] (Central Interdisciplinary Committee for Food Safety and Hygiene, 2011). One of these is the period of four weeks between mid-April to mid-May, which are considered as "hot" for food poisonings because of the high temperatures and humidity levels that are experienced in this period. The consumption of beverages -with ice of not good quality- is expected to increase during hot days and the food-spoiling rate is accelerated, especially in lack of proper refrigeration (Thanh Nien online, 2010). Both these factors are considered to contribute to the high number of children with diarrheal disease observed in the paediatric Hospital of Ho Chi Minh City during such hot periods of the year (Ibid. 2010). Indeed, this period is the hottest and most humid also in Can Tho (Fig 6.1), accompanied by the highest reported incidence of disease (PHC Can Tho City, 2011b). The average monthly cases of diarrheal disease in all the southern provinces of the Delta tell the same story (Fig 6.2), with their maximum numbers being noted for May.

Figure 6.1: Average temperature and humidity per month in Can Tho City for 2011



Data from the Statistical Office of Can Tho (2011)

Figure 6.2: Monthly cases of diarrheal diseases in the southern provinces, averagely for the period from 2005 to 2010



Source: Institute of Hygiene and Public Health (HCMC), 2011

The other two periods targeted for food safety are the days of the Moon celebration (October) and the period around Tet holiday (February). This is because the consumption of food that has not been prepared in the household increases during these times[141]. However accurate this periodical preventive action might be, it remains restricted in scope and duration as it leaves much of the food sector uncontrolled for long periods during the rest of the year. As briefly discussed above, the effectiveness of the checking and sanctioning mechanism is also highly questionable, with legal gaps which are leaving a large fraction of the food retailing business under "everyone's and nobody's" responsibility. Apart from

[140] These are (i) the 'Month of Action' (Tet celebrations in February), (ii) the four weeks period of mid-April to mid-May and (iii) the autumn period of lunar celebrations, usually in October. During these times, appointed teams from the districts are assigned to run snap-checks in food establishments and to intensify the dissemination of food safety information to producers and consumers.

[141] During these periods of celebration, people attend social events and are likely to drink and dine outside. Cultural habits also include a zenith consumption of traditional confections and pastries which are sold in stores and stalls along the streets.

controlling and sanctioning, the focus of the food safety campaigns is also said to be informative for the consumers.

As this chapter will later discuss in detail (see section 6.3), the content of the communicative material consists largely of a list of prohibitions. In terms of food behaviours, these instructions of what *not* to do do not leave people with many options, nor are they fully informative of what people *can* do, in order to ensure food safety in the household level. Frewer et al. (1994) found that especially in the field of food safety, people tend to overestimate their knowledge on the potential hazards and thus fail to assess the risk they are exposed to. As a result of this "optimistic bias" people take as granted that information from preventive health campaigns is not directed to them, but to those who do not already know (Ibid. 1994).

6.2.3 Anti-diarrheal vaccination: an inaccessible and unknown solution

One type of diarrheal disease that can be prevented through vaccinations is the type caused by the Rotavirus (Glass et al., 2006). Rotavirus diarrhoea lists among the eight most lethal vaccine-preventable diseases in the world (Dittmann, 2001). The Rotavirus type is also the most prevalent cause of diarrhoea in Vietnam (Van Man et al., 2005). Experts confirm that Rotavirus diarrhoea outgrows the types caused by *E.coli*, *Salmonella*, *Campylobacter* and other tested pathogens[142] particularly in the South of the country, where up to 40% of children under the age of two have suffered from it at least once.

According to the vice-director of the PHC in Can Tho, the vaccine protecting against the Rotavirus became available for purchase in the province during the year 2010. Since then, attention has been called to its usefulness via the local media. However, anti-diarrheal vaccination was not mentioned as a preventive measure by any of the health cadres in the district and was even confronted with complete ignorance by representatives in the PHC of Ninh Kieu district (23.06.11, personal interview). Moreover, as a reflection of the above, none of the 140 interviewees from rural and urban households recognized Rotavirus vaccination as a preventive measure against diarrhoea.

Rotavirus vaccines are being locally produced in Vietnam[143] but they are not included in the national vaccination program that offers free vaccinations to children. The commercial price of the vaccine makes it hardly accessible for the masses, with the required double dose costing 700.000 VND (25 Euros)[144]; an amount close to the average monthly income of a rural inhabitant (GSO, 2011b: 249). It is actually said that in Vietnam the vaccine costs five to seven times more than its average international price (Kuanpoth 2007 cited in Anh Tuan Nguyen et al., 2009). Even though it has been distributed for free in some pilot project areas (PATH, 2012), these areas have never included the Mekong Delta. Literature on the issue indicates that a free Rotavirus vaccination policy would bring benefits to the overall economy of the country, significantly reducing the plethora of inpatient and outpatient cases of diarrhoea and thus, would financially relieve the healthcare system of its treatment (Fischer et al., 2005, Kim et al., 2009). However, the Vietnamese government is still reluctant in taking a step towards making the Rotavirus vaccination free for all:

> "Whoever wants to get them [Rotavirus vaccines], has to pay for them and they are not cheap; only middle class people can get them. The government at the moment doesn't have enough money to provide for nation-wide vaccination. Maybe in 5-10 years we will be able to do that." (Top official in the Medical and Pharmaceutical University in Ho Chi Minh City, 28.07.11; personal interview)

[142] Source: Top official in the Pasteur Institute, Ho Chi Minh City, 06.02.11; personal interview.
[143] The vaccines are found under the commercial name of Rotatex and Rotarex.
[144] Source: Top official of PHC of Can Tho City 12.12.11, group interview.

The case is similar for the killed oral cholera vaccine[145], which is also locally produced and has been successfully used during the cholera epidemic of 2007 – 2008 in Hanoi (Trach et al., 1997, Anh et al., 2011). However, it is not a widely known to the local residents of Can Tho and was brought up as a preventive measure by only one interviewed medical professional:

> "The Preventive Health Centre manages the vaccination program. Here in the hospital we only provide treatment. Vaccination is not for free, but vaccines exist for cholera and for typhoid but not for diarrhoea. I don't know how much these vaccines cost, but one has to pay for everything in Vietnam; no medicine is for free." (Top official in the Central General Hospital of Can Tho, 20.06.11; group interview)

The promotion of Rotavirus or cholera vaccinations seems not to be considered a realistic preventive measure for the masses, thus it is not widely promoted by the public health mechanism. As a result, there is overall very little awareness around this measure amongst local level health professionals and citizens, making them only an option for those who are well-informed and financially better-off.

6.2.4 Diarrhoea and malnutrition: the disregarded links

The links between insufficient breast-feeding, children's malnutrition and an increased vulnerability towards diseases such as diarrhoea, have long been studied and established (see chapter 1). A person's nutritional status is strongly shaping the perpetuation or the fatal ending of a diarrheal disease episode, while this is especially evident in children. It has been acknowledged that well-nourished kids are less likely to fall sick, and if they do, they are physically more apt to recover (WHO, 2001b). Likewise, diarrheal disease can lead to a rapid loss of nonreplaced nutrients and eventually to a malnourished stage, especially when a wholesome eating regime is not followed during the illness. In either way, malnutrition and diarrhoea can form part of the same vicious circle, if not prevented in an integrated manner.

In Vietnam, food supplementation and promoted breast-feeding are measures that figure in the national health strategy plans for strengthening children's health and preventing malnutrition (Department of Health, 2009). However, those aspects have not been explicitly linked to diarrhoea. This lack of connectedness is also evident in the communicative approach, where messages focus on the importance of nutritional food and water provision when children are suffering from diarrhoea but not on how a good nutritional status enhances also the disease's prevention[146]. The concept of proper nutrition seems to generally be confused with food abundance, as malnutrition was often mistakenly understood as under-nutrition and famine. Some interviewed young mothers in Can Tho often reacted with expressions of horror when asked if their kids suffered from malnutrition and attached the disease to countries where children suffer from extreme poverty, but not to Vietnam.

Contradicting public perceptions, the rates of malnourished five-year-olds in Vietnam were found to be significantly high in 1998, with 39% of children being underweight, 34% stunted and 11% wasted[147] (Dearden et al., 2002). However, the WHO (2012c) finds that stunting has indeed nowadays decreased in the country, while UNICEF reports 31,9% stunting and 18,9% under-weight nationwide in the year 2011 (HEMA and UNICEF, 2011). Nevertheless, the disease not only still exists, but it also reflects significant

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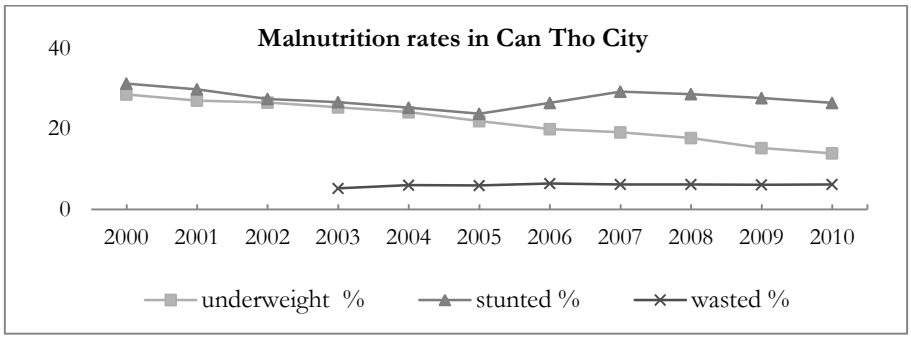
[145] Killed oral vaccines are called so because they contain killed whole cells of the *V.cholerae* organism, in order to induce the process of immunization. The commercial name of the vaccine produced and locally available in Vietnam is mORCVAX but it is yet to be pre-qualified by the WHO (Ryan, E. T. 2011. The Cholera Pandemic, Still with Us after Half a Century: Time to Rethink. *PLoS Negl Trop Dis,* 5**,** e1003.).

[146] Some representatives of the Women's Union referred to the 'Nutritious Porridge' program that teaches mothers what ingredients to use and how to properly cook rice for their kids (Top official in WU's commune branch, Phong Dien district, 19.12.11; personal interview) and other interviewees mentioned the efforts of commune clinic workers on advising them to breast-feed their newborns for at least six months after birth (Representatives of households HH3 (Phong Dien, 21.12.11), HH1 (Cai Rang, 22.12.11); in-depth interviews). However, the benefits of these practices in the prevention of diarrhoea were never mentioned.

[147] underweight=low weight-for-age ratio, stunted= low height-for-age ratio , wasted=low weight-for-height ratio

inequalities in the population. The poorest are the mostly hit and the gap of malnutrition rates between rich and poor has been widening from double in 1993 to over 3.5 times in 2006 (GSO 2008 cited in WHO, 2012c). Similar disparities are noticed in the malnutrition rates that are higher for kids living in rural areas, kids of ethnic minorities and kids whose mother's education level is low (GSO, 2011a). The current malnutrition rates reported for Can Tho City are much lower than those of the whole country and the rate of underweight children has been continuously decreasing over the last ten reported years (Fig. 6.3). However, the rate of stunted children is maintained high in the last five years, indicating that a higher calorie intake (increase of weight) is not necessarily equal to a better nutrition and body development (increase of height). While more studies are needed to substantiate the connection between weight, height, nutrition and poverty, the above already indicate that, in Vietnam, though food is generally not hard to access, nutritional food is not equally available to all, with consequences on the poorest and on the minorities.

Figure 6.3: Reported rates (%) of malnourished children in Can Tho City for 2000 - 2010



Data source: PHC of Can Tho City (2011a). Design by author.

The observed disparities between urban and rural areas, but also between the rich and the poor, that were noticed in malnutrition are strikingly similar with those noticed in the sector of water supply and sanitation (chapter 5.1.2). Literature on the Vietnamese case, has before accentuated linkages between malnutrition and low rates of breast-feeding, lack of proper feeding practices and poor hygiene (Dearden et al., 2002), in this way drawing connections also between malnutrition and diarrhoea. A recent study examined exactly how malnutrition relates to hygiene in Vietnam (HEMA and UNICEF, 2011). The study found correlations between malnutrition and factors such as having latrines and maintaining them properly, using a clean water source, exercising hand-washing and maintaining good hygiene practices in the house (i.e. cleaning feeding objects, cleaning breast before feeding, feeding freshly cooked food), concluding with 95% confidence in that:

> "(i) the rates of underweight and stunting among children under five years old could be reduced by 0-23% and 0-33% respectively if all households used hygienic water sources; (ii) [...] by 1-10% and 4-16% respectively if all households used hygienic latrines; and (iii) the rate of underweight among children under five years old could be reduced by 1-10% if all mothers/caregivers practiced hand-washing with soap before and after preparing food for children" (HEMA and UNICEF, 2011).

Addressing the problem of malnutrition by recognizing its connectedness with issues such as hygiene and diarrhoea seems not to be yet part of the national policy or of the local discourse in Vietnam. The same lack of integration is also noted for the case of breast-feeding; a key practice in the battle of the vicious malnutrition-diarrhoea circle (Dearden et al., 2002). Namely, only two out of five children in Vietnam are being breastfed within one hour after birth and less than 17% until the recommended age of six months (GSO, 2011a). The number of infants younger than four months old that are exclusively breastfed is actually seen to decrease in recent years, from 31.1% in 2000 to 28.8% in 2010, still failing to reach the national targets (National Institute of Nutrition and UNICEF, 2011). This choice of mothers not to continue breastfeeding for the recommended period of months, was examined by Dat Duong et al. (2004). The authors found that mothers were influenced by family members and healthcare providers in

hospitals and clinics, with the latter generally emphasizing the benefits of breastfeeding (Ibid. 2004). However, the benefits of maintaining breast-feeding have not yet managed to be merged into a common discourse that will also address malnutrition, hygiene and their connections with diarrhoea.

6.2.5 Polluted hydro-environments and weaknesses in advocating personal hygiene

Sanitation is one of the main recognized areas able to bring down the prevalence of diarrheal disease (UNICEF and WHO, 2009). Sanitation refers to household-level facilities but also to the sanitary management of surrounding environments. In Vietnam however, the term has come to mistakenly be equated to the construction of "hygienic" toilets (see chapter 5.3) that are able to store sewage and does not trouble issues of environmental pollution through the unregulated disposal of untreated sewage into river water networks. As it was before explained, even if toilets are constructed, the issue of integrated water management remains unsolved. Apart from households, water pollution occurs from the activities of farming and agriculture, as well as from urban industrial waste. The section of 'environmental health' in the country's Preventive Health Strategy (MoH, 2007b:118) is rather silencing those aspects of sanitation that depend on services and decisions that need to be state-led.

The only aspects of environmental sanitation that are being reported from local PHCs are concerning the hygienic condition of barns (reported by CERWSS) and the methods of garbage disposal (reported by district PHCs). According to reports, both sectors have a rather weak performance, with most small-scale farming establishments being unsanitary and with a proper garbage collection and treatment systems remaining absent in most areas (PHC Binh Thuy, 2011, PHC Cai Rang, 2011c, PHC Ninh Kieu, 2011, PHC O Mon, 2011c). The lack of waste collection services in many rural communes has been assigned to some areas' remoteness and difficulty in access. The only alternative for the management of household garbage, apart from disposing it in the rivers and canals, is to bury or burn it. These practices are officially recognized as "hygienic" and are found to be exercised by 85% of households in Cai Rang and Phong Dien districts (2011, 2011a). According to a health official in Co Do district the practice of throwing waste in the environment "has become people's everyday habit" (18.07.11, personal interview). A representative from the WU in Phong Dien described, with similar ease that, in lack of better solutions, people are naturally expected to pollute the waters:

> "[Laughs] what can they do? When they are working in the floating market, where are they going to throw the waste? There is no system of collecting rubbish in the river, only inland and only in some areas where the trucks can reach. In the rural areas people might burn or burry." (Top official in the district branch of Women's Union, Phong Dien, 08.09.11; personal interview)

Waste form the households, food residues from the markets, garbage from stores, sewage from toilets and multiple other kinds of waste, are all recognized sources of water pollution by authorities, experts and the public[148]. Numerous media reports have underlined the gravity of this problem, especially in urban areas (Ha Van, 2010a), underlining the negative consequences on the environmental sanitation of households that are agglomerated along the edges of polluted canals (Ha Van, 2010b). Resulting from the above, many people are exposed to water environments that are highly polluted. This has been also well documented and discussed in chapter 5.2, which deals exactly with the water quality of different sources in the region of the Delta. Since the exposure to contaminated environments is high, the prevention of disease necessitates informed behaviours from the side of the exposed public. Apart from practices of water treatment, as those were previously discussed, the adoption of precautionary hygienic habits appears to be imperative in limiting this risk.

One of the main aspects of personal hygiene that relates to the spread of diarrheal disease is the practice of hand-washing with soap. Despite its widely recognized preventive health potential, Vietnam lacked any state-generated initiatives to promote hand-washing with soap until the year 2006, when a pilot project was initiated with the help of international donors (Nga Nguyen et al., 2011). The project included

[148] Source: Representatives from PHC of Can Tho, in IEC activity O Mon, 05.08.2011.

promotion campaigns in 40 selected communes around the country, using the established network of the WUs as the communicative mechanism. The WU used to receive funding to specifically spread this information to mothers and caretakers (Ibid. 2011), mostly aiming to reduce the mortality and morbidity of diarrhoea in children. Research in Can Tho City indicated that the hand-washing initiative is now rather frozen, seeing how there was no active hand-washing campaign and there was no reporting taking place by the PHCs on this issue. Many interviewed representatives of WUs from the district and commune levels claimed that they receive no funding or material for the promotion of hand-washing anymore. Interviewees claimed that they occasionally discuss the importance of keeping good hygiene when talking to their members, without however particularly referring to hand-washing[149].

After what was considered to be a successful first phase of the project, the hand-washing initiative expanded in the content of primary-level education, integrating principles of hand-washing in the children's school curriculum (Dutton et al., 2011a). However, the approach remains solely focused on children, aspiring for a domino-effect of awareness and practice from the children to their parents. Literature has suggested that these effects are strongly inhibited by the contradicting habits and decisions defined by adults, such as the persisting lack of designated hand-washing facilities in the household (MARD, 2003, Dutton et al., 2011b). This absence was highly noticeable in most of the visited homes in Can Tho, but also in many schools, public offices and hospitals. Secondary results from An Giang province of the Mekong Delta (UNICEF, 2008b) showed how low the adoption of the practice is in the region: only 48% of respondents claimed to wash their hands with soap, most of them only doing so when hands were "visibly dirty" (Ibid. 2008b).

6.2.6 The lost chance for an integrated approach: the policy of "healthy and cultural villages"

As the discussion of the findings has so far has shown, despite some targeted efforts to promote preventive behaviours, the spread and adoption of those behaviours by a wider public appears largely hampered. The different fields of preventing diarrheal disease present distinct challenges, which require more support from the central state and more transparent engagement from local authorities. More importantly however, these fields need to be addressed discursively together, for the public to understand their interdependence and essentially, for people to develop a sense of detecting, avoiding and acting against the risk of disease. Interestingly, the policy of the 'healthy and cultural village" includes many of the aspects that relate to the prevention of diarrheal disease (MoH, 2004).

Box 6.2: Selected criteria for being a 'cultural and healthy village' that relate to diarrheal disease

(1) There is no epidemic disease happening in the area.
(2) Reduce the rate of morbidity and mortality from some common infective diseases, at least 10% in the urban, 5% in delta, midland and mountain area, compared to the previous year.
(3) Ensure at least 95% children under one year old get the provisioned vaccinations, according to the regulation.
(4) Do not allow food poisoning cases to surpass 30 people per case.
(5) Decrease the rate of malnutrition in children under 5 years old by 1.5% each year
(6) Number of households that use clean water and have a bathroom to be at least 90% in urban areas, 80% in the Delta and middle regions of the country and 60% in the mountainous area.
(7) Number of households that have a hygienic latrine to be at least 80% in the urban areas, 60% in the Delta and middle regions of the country and 50% in the mountainous areas.

(MoH, 2004)

Despite the apparent potential of framing these issues under one policy umbrella to foster a holistic understanding, there are three major obstacles standing in the way of such progress. Firstly, the interdependence of the various aspects (i.e. sanitation, malnutrition, clean water, food safety), is not

[149]Sources: Top official in the district branch of Women's Union in Phong Dien (08.09.11), top official in WU's commune branch, Phong Dien (19.12.11); group interviews.

explained neither in the policy nor in the public campaigns that are meant to support the policy's implementation. The nature of the targets in this local policy stems from the centrally produced quantifiable indicators of progress in WSS and the control of epidemics (The Prime Minister of Vietnam, 1994, GoV, 2006a). Thus, instead of discursively bridging issues together, the 'healthy village' policy remains simply a desultory accumulation of centrally produced and fragmented pieces of legislation. Secondly, though the 'healthy and cultural village" consists mainly of targets, it does not include any consistent plan of action. While the implementation of these targets is transferred to the local levels of the hamlet and the commune, there is no funding assigned exactly to those levels and no material or methodology tailored to their needs and capacities. The "cultural and healthy village" basically scales down national targets to local ones; handing over responsibilities but not mobilizing any central resources for their execution.

Thirdly, while many of the objectives in the above policy (Box 6.2) depend to a significant extent on people's personal choices (sanitation habits, hygienic practices, nutrition of children), there is no target of widespread health and hygiene education. Although national plans punctuate the importance of awareness-raising for better informed health decisions (MoH, 2007b), this objective is not explicitly mentioned in this policy. Despite its mention, hygienic education is rarely ever given a particular quantifiable target in national policy documents. This might be part of the reason why this –very crucial- aspect of preventing disease is hard to be translated into local targets. Even in the one instance where health education is given a specific target rate (MoH, 2007b:118), there is no description of how to measure "health education". The weakness of defining and assessing communicative activities is reflected also in the reports of local health offices, which cannot provide any substantial information on their awareness-raising impact (see also section 6.3). As a result of all the above, the dispersed and unsupported targets that the 'healthy and cultural village' proposes can hardly be turned into commonly understood health objectives of the wider public.

6.3 Health education and the public communication of disease

It was previously highlighted that health education can give individuals the power to make healthy choices and to sustain them (see chapter 2.3.2). This section examines the manner in which knowledge around diarrheal disease is passed on across experts, the state and the public. Given the problems in the disease's control and the weaknesses in achieving a widespread adoption of preventive measures, the mechanism that provides the related information to the public is here under question. By closely looking at the content and the outspread of the messages produced by that mechanism, the possible reasons behind their low receptiveness and impact are examined.

6.3.1 The Vietnamese approach to health education

Following the specific objective in the National Health Strategy of the country "...to change the awareness and raise the sense of responsibility for disease prevention and health protection in all of Party Committees and administrations at all levels, in mass organizations, in the community and every citizen" (MoH, 2007b :81), most preventive health programs in Vietnam claim to have communication components. Awareness-changing is also portrayed as a central goal in the strategy particularly against the spread of infectious diseases (MoH, 2007b, GoV, 2007). As mentioned above, the necessary methods for achieving this awareness-change are nowhere specified. Instead, legislators and policy-makers seem to leverage notions of ethical obligation, in order to motivate implementers to invent their own means and methods, by pointing to values such as the state, unity, the community and the people's common good

(see Box 5 in Annex). Blending hygiene with social responsibilities is a pattern that seems to have trickled down to the local levels, often also framed in a widely proclaimed vision of modernity:

> "The 'National sanitation and clean water week' policy is organized as a response, to provide extensive propaganda to the masses and gradually raise the awareness of people, in order to improve their living conditions, to create healthy communities in rural areas and to contribute to a more modern and civilized society. This can be achieved if each of us in the social communities, is aware of their hygiene practices" (PHC Binh Thuy, 2011).

The frequent use of ideologically charged words such as 'propaganda', 'socialization' and 'community organization', is a motif that Laverack and Dap (2003) also detected in the communicative material used across Vietnam. Without wanting to demonize the term as such, the use of 'propaganda' when referring to communication activities, is suggesting an understanding of communication as a unidirectional means to persuade, instead of an interactive process to enable discernment and to empower. Whereas the community is presented as having a distinguished role in safeguarding healthy and cultural ideals, the actual participation of local people, both in health education activities and in the formulation of preventive strategies, is nowhere being mentioned.

This noticeable notion of social and moral obligation when framing the preventive health approach is not new in the country. Bloom (1998 :235) notes that public health was literally an obligation and that, ever since the 1980s, local leaders would punish anyone who did not attend the organized health education activities, or who somehow demonstrated individualistic behaviour against public health priorities. Many respondents claimed that due to these feelings of social responsibility and moral obligation of the health workers during the war, the Vietnamese managed to survive many plagues. Marr (1992) also observes that "hygienic education and preventive medicine were woven into the larger revolutionary ethos from 1945, becoming an integral part of both the anti-feudal and anti-imperialist struggles" (Hoang Dinh Cau and Le Anh cited in Marr, 1992). However, this attitude of the Vietnamese, to safeguard their health and help in the survival of others, emerged from the grassroots peasantry and had its roots in feelings of brotherhood and unity. Contrariwise, a responsibility or obligation that is prescribed by central authorities and is coerced by law has little to do with such feelings. As Marr (1992) further notes, "this momentum was lost from the mid-1970s onwards" (Ibid. 1992), when the war was over and people did not feel threatened anymore. Even though messages against disease have been echoing in the country ever since Ho Chi Minh's encouragements to "maintain very good hygiene" (Ho Chi Minh 1961 cited in Rheinländer et al., 2010), the impact that these messages have today on the population is questionable.

As Glasgow et al. (2004 cited in Panter-Brick et al., 2006) recognize, an effective and sustainable behavioural change can be hard to achieve, especially when ideological and moral flags are wafting above messages of health prevention. The actual essence of those messages can be overshadowed, if they are not received by the public as useful instruments, but merely as obligations towards the state. As Curtis et al. (2000) pinpoint: " 'good' hygiene, in the moral sense, is not the same with 'safe' hygiene in the epidemiological sense". Building on better understandings of health risks, such as disease, has the potential of enhancing the sense of self-efficacy and allow for cognizant choices in health (Strecher et al., 1986). However, replacing these choices with simple compliance to rules, is threatening this potential. It has been commented how, in Vietnam today, "Information, Education and Communication (IEC) is a more controlled process of coordinated action toward a national approach within guiding ideological principles" (Laverack and Dap, 2003 :364). As it will be described below, the produced legal texts maintain a top-down character, not allowing the possibility of issues to be discussed and adapted to the capacities and the desires of local communities (GoV, 2007 :60).

6.3.2 Directing funds, expertise and information

In the legal framework, the terms of information, education and communication are interchangeably or collectively used, referred to as the necessary instruments to achieve behavioural change (Box 5 in the

Annex). However, the implementation methods and the allocation of funds are left rather open to the localities. The PHCs of the provincial level decide to allocate certain percentage of their funds for the communicative part of each program, while some of that budget derives from central support. In the sector of rural water supply and sanitation, for example, it was decided to direct 9% of the national funds in the sector to communication activities (GoV et al., 2006). This was aiming to raise the demands and the willingness of the people to invest in such constructions:

> "[…] the main future role for the government is to focus on implementing IEC and management activities rather than be directly involved in the construction of RWSS facilities [...] to create a much higher awareness around hygiene and around the link between sanitation, hygienic practice, water supply and health" (MARD and MoC, 2000:17)

In Can Tho City, the promotion of water supply and sanitation expansion received central funds of 200 million VND[150] for the year 2011; double the amount that was directed to the prevention of malaria[151] and four times the amount that was directed to the communication of food safety and hygiene in the same year (Food Safety and Hygiene Unit, 2011). A top official from the PHC of Can Tho City (14.07.11, personal interview), said that these funds are mostly used for executing public communication activities (conducting training classes, producing radio and television spots and printing brochures). Moreover, he claimed that despite the complete lack of funding for the CDD program, the topic of diarrhoea is being addressed during the promotion of water supply and sanitation.

Despite the funds that the PHC receives for the execution of public communication activities, there is no reporting on exactly how this budget is spent. It was made clear however, that no part of this budget is being transferred down to the district or grassroots authorities[152]. The organization of health education activities in the districts is therefore dependent on their local capacities. As the head of the PHC in Cai Rang district explains, this basically leaves them with limited options:

> "We don't spend any money on information and education activities, we only gather people and talk to them. When the City's Preventive Health Centre organizes activities, they have funds, they offer people water, pay for the rent of a place and also sometimes they give money to the people who do the training, because some programs provide funding for that." (Top official in PHC of Cai Rang district, 16.12.11; personal interview)

The "training-of-trainers" in health education

Although central funding support for preventive health is restricted to the provincial level, there are education and communication activities taking place within the province, which serve the purpose of transferring knowledge and material to the lower administrative levels. These follow a successive process of 'training-of-trainers', according to which information and guidance flows vertically. Targets of this process are the staff of district PHCs and commune health clinics, the members of unions and the wider public (Fig 6.5). Findings indicated that the staff of central health organizations do not actively form part of this 'training-of-trainers'[153]. However, material is centrally produced to guide the content of public

[150] An amount equal to about 7043 Euros.

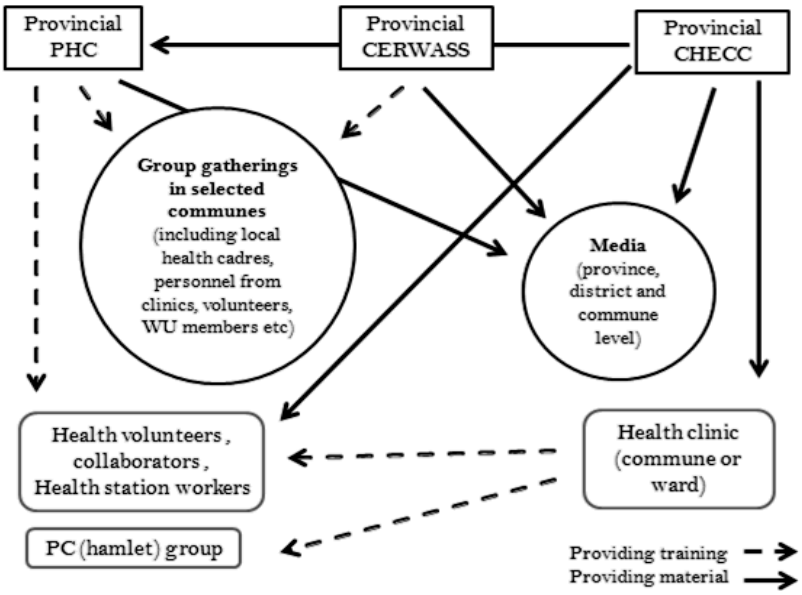
[151] Source: Head Top official in PHC Can Tho City, 14.07.11; personal interview.

[152] Ibid.

[153] Examples of central health entities that do not actively contribute to "training-of-trainers" are the Institute for Hygiene and Public Health (IHPH) and the Pasteur Institute in Ho Chi Minh City. The first has an established department of Health Education that is in charge of designing and planning training activities for the provincial staff under its jurisdiction, but currently this department remains under-staffed and is not functioning (top official in the Pasteur Institute, Ho Chi Minh City, 06.02.11; personal interview). Some interaction between the expert staff of these two institutes and the authorities within the provinces might take place, but only in times of serious epidemic threats. During these times, the experts will investigate whether disease-management protocols have been correctly followed by local authorities and thus the process is one of inspection rather than of knowledge transfer (Top official in the Pasteur Institute (Ho Chi Minh City, 06.02.11) and top official in PHC Can Tho City (14.07.11); personal interviews.

health messages in the provinces and districts. This material is re-produced and circulated mostly through the provincial Centres for Health Education and Communication (CHEC); a centre which is also responsible to guide the public communication activities and to help in the capacity-building in the grassroots.

Figure 6.5: Directions of training and material on health prevention, within the province



The above framework was not found to be part of the legal framework in its entirety, but is a depiction of the research findings (qualitative interviews conducted with preventive health staff, civil society representatives and health workers from the Ministry to the commune level). Design by author, 2011.

According to the representative from the regional Institute of Hygiene and Public Health, however, the CHECs have not effectively taken up their responsibilities:

> "At the moment the task of guidance in information and education activities has been assigned to the CHECC, but because of limited funding and their lack of capacities, they do not execute anything else other than some administrative tasks. They give out brochures to the communes and the districts, where it remains in their shelves and does not get distributed. The process is not educative; it is rather a box to be ticked, a process of handing out pieces of paper." (Top official in the Pasteur Institute, Ho Chi Minh City, 06.02.11; personal interview)

The topics addressed in the material that the centre distributes, follow the apropos priorities set by the Ministry of Health. Information regarding the prevention of diarrheal disease was found sporadically in some of the material produced during the last five years. However, the exact content and the followed quality of the information were found to significantly differ (see section 6.3.3). One of the most impactful examples of informative material on health issues was claimed to be a monthly published magazine of the MoH, named 'Health for a Cultural Village'. Some of the articles in this magazine were found to cover topics around diarrheal disease, including the use of chloramine-b for water treatment (Tran Giuu DS, 2007), the correct steps for treating and curing diarrhoea (National Center of Preventive Health, 2007), the control of flies as a transmitting agent (Hanh Nguyen, 2007), advice regarding food-borne diarrhoea (Pham Kim, 2007) and other preventive measures against the disease's spread (Tran Vu, 2007). However, all of these articles were in issues published during 2007; a year when a cholera epidemic broke out in the country (MoH, 2011). It is therefore possible that this thematic plurality on the prevention of diarrheal disease was affected by a general alarm against cholera. Unfortunately however, these were the only issues made available to the researcher and thus, comparisons with other years were not possible.

According to the director of the CHEC in Can Tho, 100 copies of this magazine are distributed every month around the province (CHECC, 2011), reaching every health unit, commune clinic, district hospital and PHC[154]. Observations from the province revealed, however, quite a different picture. Only two district PHCs (of the five visited) were found to have a copy of this magazine and both of them were in urban districts. Moreover, the utility of this material was diminished to decorative, as they were placed in a showcase behind glass doors and were thus not available to the visiting public. Contradicting the director's claims, none of the representatives in the visited clinics or health stations had ever received any kind of public health communication material at all. Indeed these magazines are well-written and thematically rich, printed in high-quality paper quality and with a careful layout. However, their limited spread and use make their impact rather weak. Other types of material[155] was also claimed to be distributed by the CHECC (2011), but was similarly found to be absent from all the (five) visited clinics and (six) district hospitals. Contrariwise, the staff of the provincial PHC in Can Tho appeared to have a variety of materials in their disposition, although not in large quantities. This made clear that public health communication faces problems of widespread distribution, particularly in the levels of the district-and-below.

Beyond issues of quantity, the usage and the impact of visually communicative material (posters, leaflets and brochures) is also dependant on its appearance. Whereas illustrated posters were available in the provincial level, the local health units presented mostly photocopied reproductions of the original material. This was usually of smaller size, lower printing quality and harder to read, thus the strength of the preventive messages that they contained was diminished (see Pictures 3 -5 in the Annex). The MARD has also noted how, for one thing, the sector of WSS needs more attractive IEC material and larger availability of this material for the intended audience in the local levels (MARD, 2003).

Gaps seem to exist and to escalate, not only in the amounts and the quality of the available material, but also in the existing capacities of the local health staff that are supposed to use it. Seeing how the education requirements for grassroots health posts are not demanding[156], the low expertise in specific issues of disease and health prevention is rather understandable:

> "Preventive health sector staff is trained in the University (college level) to serve for the district and the provincial level. These people need to have a University degree. For the commune level and below, a vocational training is enough - for the pharmacists as well - and there is one such school in each province. In the South however, there is only one in Ho Chi Minh and one in Can Tho City." (Top official in the Medical and Pharmaceutical University in Ho Chi Minh City, 28.07.11; personal interview)

> "Many of the people in the local levels are not capable of answering or explaining things on the topic. They just pass on some printed information to the public." (Top official in the IHPH, Ho Chi Minh City, 06.02.11; personal interview)

The elastic requirements and the lack of medical professionals especially in the rural areas (see chapter 4.1.2), exacerbate the phenomenon of limited health capacities in the grassroots. This reflects on the capacity to perform impactful preventive health communication, as it has been before emphasized for Vietnam (Laverack and Dap, 2003, MARD, 2003). Nevertheless, the main actors for the spread of public health messages are claimed to be exactly the health workers of the grassroots (volunteers, collaborators, health station workers). As interviewees from within these posts described, they learn how to perform such tasks through their involvement in preventive health programs and through their occasional attendance to monthly meetings in the commune health clinic. This involvement only takes place in

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[154] Source: Top official in the IHPH, Ho Chi Minh City, 06.02.11; personal interview.

[155] This included 3000 posters promoting hand-washing and 130 CDs with information on food-safety and hygiene, distributed monthly within Can Tho (according to the reports provided by the CHECC in 2011).

[156] In the legislation, the minimal educational requirements for health workers in the hamlet demand no more than three months of vocational training (MoH 2010b. On Pescribed Standards, Functions and Duties of Village Workers. *39/2010/TT-BYT*).

particular times of the year and mostly during periods of elevated risk of disease spread[157]. As mentioned before, despite their duties of approaching the population and raising awareness on public health issues (GoV, 2010b), health communicators do not receive any of the funds that are available for preventive activities in the provincial level. The lack of expertise and guidance from higher levels on the one hand, and the imbalance between their available resources and their responsibilities on the other, can easily result in a sacrifice of the quality that the health workers can offer (look also in chapter 4.1.3).

Another strong player in disseminating information to the local level is the network of the Women's Unions (WU), which was repeatedly mentioned as being paradigmatic in communicating health-related information to their members. The government used to provide funds in order to induce this kind of training within the organization, but this policy has now concluded[158]. Representatives from the local branches of the WU said that diarrheal disease is now being addressed through the focus on household hygiene:

> "We assign women working in each ward as volunteers for fulfilling prevention tasks and promoting health via the 3-clean model: clean house, clean kitchen, and clean surrounding environment." (Top official in WU district branch, Cai Rang, 22.09.11; personal interview)

> "Indeed, we promote the 3-clean model to our members, who are obliged to follow it in their homes and are being checked on it... we also advice people to follow this model through our IEC activities." (Top official in WU's commune branch, Phong Dien district, 19.12.11; personal interview)

Apparently, there is not much printed material or other supportive information which will frame this focus on household hygiene and thus, the WUs basically act as "loudspeakers" of some core messages for the female community that is under their umbrella. However, the members of the unions are also not expert in medical issues and their ability to provide substantial health education in a complex topic like diarrheal disease is rather doubtful.

If the capacities in the local levels are low and the material is in shortage, how are people to exercise their right of "access to information, education and communication for disease prevention and control" (GoV, 2007)? Representatives from the PHC of Can Tho often referred to education classes that take place in the commune level (Fig 6.5), through which information is provided to the participating public. The participants of these classes have then the responsibility to spread around this information to their communities. As it was made clear from informants, these classes only invite a certain number of people, who are usually members of unions, health workers and local government officials. After many interviews and observations, it was understood that apart from their confined audience, the frequency of these classes is also very limited. There are 30 to 40 such classes that are organized by the PHC of the province each year, but the location is different every time. There are about 50 attendants in each class[159] and as the vice-director of the PHC claimed:

> "We cannot afford for more. The refreshments offered cost money. The number of the people is pre-decided, or else we wouldn't be able to afford it. The people that come are people from offices or somehow that hold a position in their localities" (Top official in PHC of Can Tho, 12.12.11, group interview).

The structure of these classes includes a long lecture, which is given by designated experts of the provincial PHC, followed by a short session of discussion with the public. The whole process is accompanied by the handing of some material (media articles, audio-texts, brochures and booklets), which are produced and provided by the CHECC. Many different topics are covered during each of these classes, ranging from the proper construction of water supply and sanitation facilities to various types of waterborne diseases, household hygiene, food safety and healthcare seeking advice. In this way, a number

[157] Source: Top official in health station of a rural hamlet (Phong Dien district, 15.12.11), top official in rural commune health clinic (Phong Dien district, 15.12.11) and top official in PHC of Cai Rang district (16.12.11); personal interviews.
[158] Source: Top official in PHC Can Tho City, 14.07.11; personal interview.
[159] Ibid.

of boxes are ticked for many different preventive health programs, saving time and expenses for the executing body (aka the PHC of the provincial level). However, the whole event is dominated by the expert talk, which last for over 1.5 hours maintaining a character of a lecture. Observations from one of such classes (in O Mon district 05.08.11), indicated that the audience is rarely ever given the opportunity to participate[160]. When the floor opened for the audience to ask questions, people were very hesitant. The only comment arising after some moments of silence was from a lady that made her concern waveringly known:

> "My family has two disabled people and we got the subsidy five years ago. Now the toilet is full and we need to build another one, can I get the subsidy again?" (Woman participant in group gathering, O Mon district 05.08.11, personal observation).

After the end of the training, local informants assigned this lack of participation to people's shyness; not wanting to seem ignorant by posing questions or show a lack of paying attention. But why would the presence of a health educator cause feelings of hesitance or fear, instead of familiarity and interest? The answer can be found in the inherent notions of superiority that the provincial PHC carries, solely by being an institution ranked in a higher administrative level. Hierarchy plays an important role in the Vietnamese state and in social interactions. This is also reflected in the didactic way in which the above activity was carried through. Namely, the speaker stands in a pedestal, distant from the audience who is seated aligned in school desks. The speaker is not interrupted, as interaction is not encouraged. The unbiased opinions of the audience on the topic are not given the opportunity to be heard, as there is not enough space for feedback on the established structure of the training class. The lack of people's active inclusion in the design and the planning of preventive activities and practices was also in the past observed by MONRE and the UNDP (2008: 41). In the example of hand-washing promotion, Dutton et al (2011a) have also noted how the so-called "consumer-research stage"[161] is being left out when designing campaigns, despite this stage proving to be the most important for the success of the project, particularly in the Vietnamese context (Ibid. 2011a).

After the above described processes of 'training-of-trainers' and through the activities of union members and health workers, the flow of preventive health information is supposed to be eventually channelled to the wider public. As it was briefly mentioned for the topics surrounding diarrhoea, the spread of preventive health messages to the public is based on face-to-face communication through household visits. The frequency of these visits is vaguely described by health officers and local cadres to take place "with every given opportunity". However, interviewees from rural and urban communities in Phong Dien and Cai Rang districts described this interaction with "health communicators", as small interventions performed by local cadres, who drop by their households to inspect how well they comply with certain practical public health instructions[162], but rarely ever discussing more on the risk and the prevention of disease. As a result, in best case, the public will receive unconnected information on practices that should be followed, without having much explanation on why that is the case. It is, thus, questionable whether the understandings and behaviours that people end up shaping around a disease, like diarrhoea, have much in common with the central guidelines that frame its prevention.

6.3.3 Content and quality of the produced messages

[160] The presenter asked if there are fishpond toilets in the community. Upon the audience's confirmation, the point made by the presenter would be on the need for more "hygienic" sanitation facilities and the stronger implementation of the subsidization and microcredit policy.

[161] The consumer-research stage in a hand-washing promotion project for example, refers to the research work done before designing the material and executing the campaigns. Such research is trying to identify and assess existing motivations, restrictions and preferences of the targeted audience.

[162] The points mostly mentioned were concerning the existence of bed-nets for the prevention of malaria, the avoidance of stagnant water spots and open water containers, the connection to the piped-water network and the existence of a toilet.

There are different levels of accuracy, simplicity and simplification in the content of communication material used in health prevention. A number of published samples of this material concerning diarrheal disease were collected during fieldwork in Can Tho. An exercise of rating each sample was conducted for three types of organizations. These included district PHCs, the PHC of the City and the CHECC. After the selection and listing of 15 preventive messages around diarrheal disease that are circulated by the public health communication mechanism (drawn from exemplary CHECC-produced material), each sample was analysed and rated based on these messages (Table 6.2).

Table 6.2: Selected messages related to the prevention of diarrheal disease, in documents circulated by the preventive health mechanism of Can Tho

1.	Use cooked food and boiled water
2.	Wash hands before having meals and when preparing food
3.	Wash hands after going to the toilet
4.	Do not eat fish and seafood, especially not raw
5.	Use a hygienic toilet
6.	Do not exercise open defecation
7.	Use clean water for cooking
8.	Use chloramine B or alum to disinfect water
9.	When someone in the family gets acute diarrhoea, inform the nearest healthcare centre
10.	Do not eat raw vegetables
11.	Avoid eating out in mass servings like weddings, funerals etc.
12.	Keep your latrines clean, have enough water and soap
13.	When getting diarrhoea, use the toilet and apply powdered lime or chloramine-b and flush with water
14.	Don't throw garbage or dead animals into the rivers, lakes and ponds
15.	Control the spread of flies

Based on material collected during fieldwork in Can Tho City, 2011

The rating was done with regards to whether samples included each of the messages and to how much explanation was provided around it[163]. The purpose of the exercise was to show what kind of preventive advice exists around diarrhoea and how this information varies according to the organization where it is produced or encountered in. One of the difficulties in this attempt was that different organizations in different administrative levels often recycle and use the same material. Thus, what was found in a district PHC, had usually originated in a higher-level organization. Nevertheless, duplications could be traced by revisiting offices and collecting material in three research phases and most of the material could be traced back to its institutional origin within the province. Although not all of the examined sample documents were of the same kind, they are seen as synergistically contributing to the figuration of messages that stem out of each type of organization (Table 6.3).

[163] Details of the rating scores can be found in the Annex (Table 3).

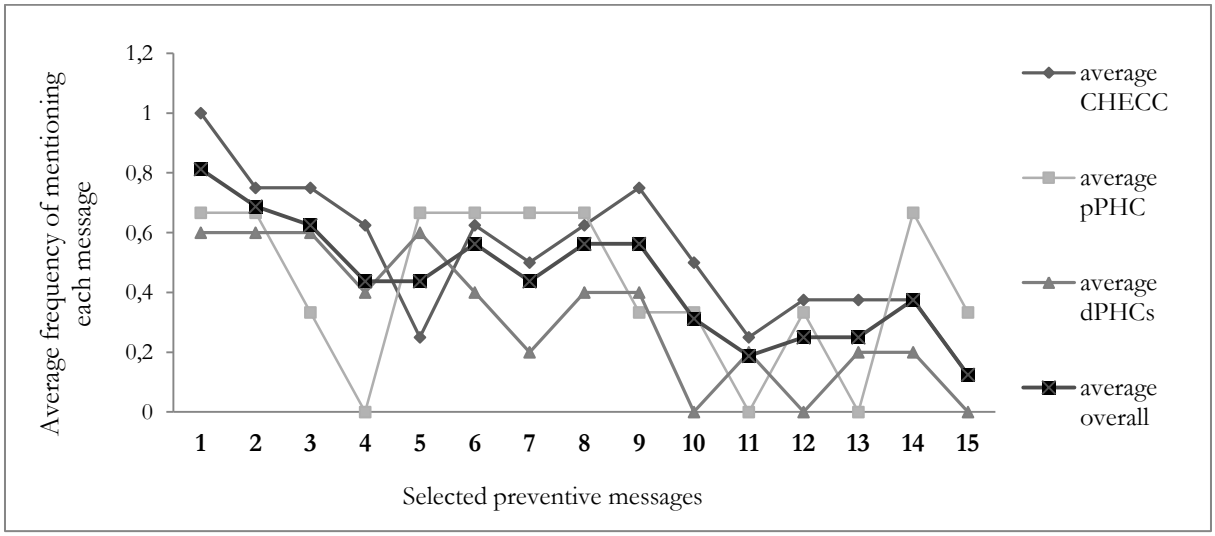
Table 6.3: Information on the examined material from the different organization types

Source	Total	Type of material (number of each)
District PHC (Cai Rang, Binh Thuy, Ninh Kieu)	5	○ Training material on WSS for staff in the district (2) ○ Radio station article on public health (1) ○ Recommendations for the prevention of diarrhoea (1) ○ Food safety instructions for staff and the public (1)
PHC Can Tho City	3	○ Booklets for training on water and hygiene related issues (2) ○ Plan and instructions for the 'food safety action month' (1)
CHECC	8	○ Leaflet on diarrheal disease (1) ○ Articles from 'Health for a cultural village' magazine (5) ○ Food safety leaflets (2)

Material collected and analyzed by the author, 2011.

Overall, the results showed that the message of '*eat cooked food and drink boiled water*' prevails amongst the preventive messages (Fig 6.6). Regarding the topic of hygiene, the practice of hand-washing is generally being emphasized, but the need to use soap when washing hands is not punctuated and only implicitly present (point 12). Regarding sanitation, the preventive messages seem to focus on the need to abolish open defecation (point 6) and to have hygienic toilets in the households (point 5). The promoted use of chloramine-b for disinfecting water and the advice of seeking medical care in case of diarrheal disease were also quite prominently present in the overall content of the material. However, much of the food-related measures and other detailed habits of hygiene, were less prioritized (points 10 – 15).

Figure 6.6: Frequencies of messages mentioned in the material from the three organization types



y = number of documents with a mention/total number of documents collected in each level.

x= reference to the selected preventive messages, as listed in table 6.2.

(pPHC= provincial PHC, dPHC= district PHC)

In addition to the interesting overall trends, differences came into view regarding the prominence of messages in the three distinct types of organizations. Material coming from the CHECC was seen to guide the overall distribution; an expected result, as the list of messages was formulated based on this centre's material. This was particularly noticeable regarding information on what to do when the disease occurs (points 13) and on the importance of hand-washing after defecation (point 3). The messages coming from the provincial PHC, on the other hand, draws attention mostly on sanitation and the use of clean water (points 5-8 and 14). Considering the emphasis on sanitation (chapter 5) and the particularly high budget that the WSS sector receives in comparison to other preventive health priorities (chapter 6.3.1), this

finding is not surprising. It is expected that the topic of WSS development would be even more represented if material coming from CERWASS was also taken into account. However, since CERWASS is mostly responsible for the technical side of solutions, rather than for 'software' hygienic behavior measures (Rheinländer et al., 2010), material from CERWASS was not included in this analysis. The promotion of hygienic toilets (point 5) was seen to also by overly emphasized in the district level, where there was generally a similar prioritization of topics with the overall trend, but in a much lower frequency. In other words, the district level material was found to be inclusive but more fragmented, in relation to the messages it produces around diarrheal disease.

The institutional origin of the material was distinctive not only in the diversity of topics (decreases successively from CHECC to dPHC), but also in the extent of explanation that it involves. The majority of the messages were poorly framed as bullet-point instructions of 'does and don'ts'. The exceptions to this were the well-written and informed articles of the 'Health for a Cultural Village' magazine and some training booklets provided by UNICEF[164]. The latter however were only found within the PHCs of the provincial level, as the cost of their reproduction and wider distribution was claimed to be too high for the preventive mechanism to afford. Curtis et al. (2000) explain why it is wise to be frugal with preventive health resources, saving them for transmitting the most receptive messages in the most impactful areas of health. Nevertheless, what is witnessed in Can Tho is an oversimplification of diarrhoea-related messages during their journey from experts to trainers and to the public, resulting in merely a set of instructions with low educative quality, which can hardly be well received and impactful.

Apart from the poor explanation and the imperative tone that prevails in many of the communicated health messages, many of them also majorly contradict aspects of the Vietnamese culture. Such is, for example, the advice of not eating fish and raw vegetables (point 4 and 10), which is main part of the Vietnamese diet and not dining outside in social events and celebrations (point 11), which very common in the Vietnamese society). Facing difficulties in addressing the multiple challenges of food safety (see chapter 6.2.1), the state seems to resort in a prohibitive approach, which however goes against its declared commitment to execute for preventive activities that are "suitable for the target groups and their cultural and national traditions" (GoV, 2007:59). Banning anything that the state cannot control is destined to face implementation obstacles, when it goes against people's rooted habits and cultural practices. Another way in which the state ignores strong aspects of the Vietnamese culture is the complete exclusion of Traditional Medicine from the approach against diarrheal disease. Despite the strong respect and the trust of many Vietnamese in eastern and herbal medicine, its principles, methods and remedies are not included in the official policy of preventing and curing diarrhoea and is of course absent also from the content of the communication material.

Awareness on diarrheal disease within health organizations

Semi-structured interviews with staff from different health organizations indicated that there are significant differences in the level of institutional knowledge that those organizations carry, concerning the risk of diarrheal disease and its prevention. A systematic analysis was undertaken to reveal how this knowledge is "travelling" in the different types of organizations, comparing the responses from five administrative levels (Table 6.4). The assessment of the responses was based on whether or not certain key aspects (Table 6.5) were mentioned, discussed and further elaborated by the respondents, during the course of each interview. The selection of the nine key aspects was based on literature, with the pre-

[164] Two such booklets were collected, titled: 'Clean water: Personal hygiene, Family hygiene and Community hygiene' and 'Safe Water supply and Sanitation for the Community'. Their focus is on guiding community-level education on water, health, hygiene, environmental sanitation and linked behaviours through the interactive use of illustrations and discussion–opening questions. However, such interactive usage was not reported and the representative of the PHC unit in Can Tho said that the booklets are used simply as a manual in training-of-trainers activities (14.07.11, group interview).

condition that each aspect was mentioned at least once by at least one of the interviewees. During the analysis of the transcripts, one point would be assigned to each interview, if an aspect was mentioned at least once by the informant, either after small prompts by the researcher or spontaneously. After this was done for all the interviews, the rate of mention was calculated for each administrative level, in relation to the total number of interviews that took place within this level[165]. An important factor of bias exists when comparing the different levels, due to their very different numerical representation (Table 6.4). However, the qualitative analysis that complements this exercise provides more proof and a better explanation of how meaningful and representative the resulting scores really are.

Table 6.4: Distribution of interviewees from health organizations and offices in Can Tho

Administrative level (under the jurisdiction of)	Number interviewed	Percentage of total interviewed	Types of institutions
the hamlet	2	4%	Health stations
the commune	4	8%	Health clinics, group gathering activity
the district	20	43%	PHCs, offices of Health, Hospitals, Red Cross offices
the province	5	11%	PHCs, Hospitals, CHECC
the MoH	10	34%	IHPHs, DoPM, Pasteur Institutes, VIHEMA, HSPI, Medical Universities

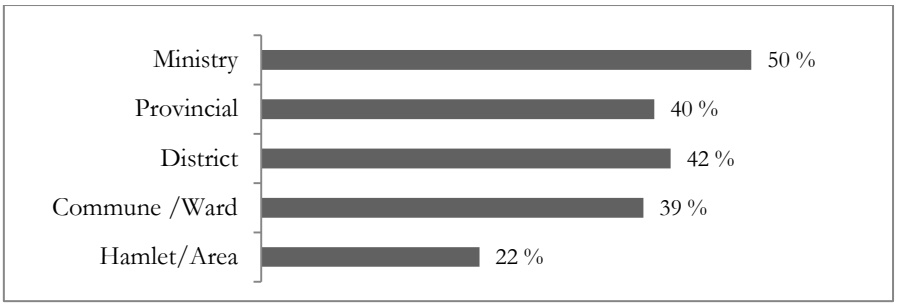
Table 6.5: Selected key-aspects describing a good level of awareness on the risk and the prevention of diarrheal disease

1. There is a high rate of diarrhoea cases in the region
2. There are different epidemiological causes and –accordingly- different symptoms
3. The dehydration stages and the recommended treatments steps
4. The possible means of spread (faeces-fingers–water-food-digestive system)
5. There exist connections between water safety, sanitation and diarrhoea
6. Intra-household hygiene is an important preventive measure
7. Promoting hand-washing is an important preventive measure
8. There exist connections between diarrhoea and malnutrition
9. Communication and education activities are crucial for building understandings and fostering behavioural change (not only promoting WSS constructions)

The results provide an idea of how far are these key aspects mentioned and discussed by expert authorities in Can Tho (Fig 6.7). Despite its limitations, the analysis indicates indeed that higher-level institutions are relatively better informed on the topic than lower-level ones, but this difference is not of great magnitude. The difference between the scores of interviewees from ministerial posts and those from provincial, district or commune offices was barely over 10%. Overall, staff from organizations directly under the jurisdiction of the MoH did not overcome a 50% score of mentioning the selected key-aspects. Nevertheless, this proximity of the results from the different respondents would have been significantly reduced, if the ability to elaborate on these key-aspects was also included in the analysis.

[165] See Table 2 in the Annex for the detailed results of this analysis.

Figure 6.7: Scores of mentioning the key-aspects of diarrheal disease risk, by administrative level



Design by author, based on 41 semi-structured interviews with health authorities, 2011-2012.

Qualitative analysis of the interviews transcripts showed that almost all interviewees in district-and-below offices and organizations (80%) avoided discussing further on the significance and the interconnectedness of the above issues. Even though awareness-raising activities were constantly mentioned as tokens of well-implemented health policy, particularly from representatives of district-level offices, when they were asked to elaborate on the content of these activities, their answers were often reduced to catch-phrases, such as "boil the water and cook the food". When interviewees were encouraged to provide more explanations on the necessary preventive measures against diarrheal disease, their answers were usually uncompleted and limited:

> "Diarrhoea comes mostly from water, but also from food. Clean water is a key issue to prevent it [...] Household behaviours are also important because the water is severely polluted nowadays. It is a serious matter." (Top official in district Hospital, Cai Rang, 06.07.11; personal interview)

> "Yes, there is a relationship between the water supply situation and the waterborne diseases. Water supply alone though cannot solve the problem. The authorities have to control and guarantee for the food safety of the products and goods that people consume. [After my prompt]... sanitation is also related. There aren't many people now using the fishpond toilets; the number is very small." (Top official in district PHC, Phong Dien, 21.07.11; personal interview)

In the grassroots level of the commune and the hamlet, respondents seemed more talkative and more aware of the problems that encompass the spread of diarrhoea, speaking more by experience than of expertise, using descriptions from the everyday life to explain the disease's spread. Nevertheless, knowledge on the complexity by which many aspects contribute to the prevention of diarrhoea was largely absent:

> "Mostly kids get diarrhoea. I think is because of the behaviour of kids: not washing their hands, eating everything with their hands, touching the ground and everything they have around. Also because they eat everything, they don't follow any rules. Their parents have to work to make a living so they leave them at home alone and uncontrolled. [After my prompt]… water is polluted nowadays, especially due to the untreated waste going into the river from the animal barns of the households. A large number of people don't have access to water supply and have to use river water which is polluted. They live in the rural parts which are not near the main road. They use alum to treat the water but they do not do it always properly. Some families don't have the time to boil the water and they just drink it like that. In the past, we used to have cases of cholera and typhoid but now not anymore." (Top official of a Health Clinic in rural commune, Phong Dien district, 15.09.11; personal interview)

In the provincial level, the amount of elaboration by the respondents varied significantly among the respondents, including both extended explanatory descriptions and more answers restricted to the description of official regulations and guidelines, such as the following:

> "Diarrhoea is always happening, the frequency is always high and especially during the flooding and the dry season. We write and inform about it frequently." *Top official in the CHECC of Can Tho, 14.12.11; personal interview)

> "We report on malnutrition following the national regulation on malnutrition indicators, issued by the Institute of Malnutrition, in Hanoi. For the relationship between malnutrition and diarrhoea, we are not sure; we don't have any data or proof about that." (Top official in PHC of Can Tho, 12.12.11; group interview)

In contrast, most of the interviewees from institutes directly under the jurisdiction of the MoH, were willingly discussing many of the aspects that frame diarrheal disease in its complexity, being also able to trace the drawbacks and the necessities in the policies of its prevention:

> "The clinical signs between the different types of diarrhoea are very different. Diarrhoea is characterized by watery stools, at least 3 times a day. Dysentery is up to 20-30 times defecation, but different morphology of stool: small, with blood and mucus [...] Food poisoning is not a disease; it describes where one got the pathogenic agent from. Usually it appears with severe abdominal pain, vomiting and maybe some diarrhoea. Usually patients come in groups within a day. When we ask them when and what they had, they say they ate in the factory cantina, in the wedding party, a birthday party etc.
>
> [PK: What do you think are the main causes of diarrheal disease?]
>
> It is caused by the consumption of unclean water or food. When people are not treating food properly, not following necessary hygienic processes like hand-washing, not boiling the water, using untreated water to wash the dishes etc… Also when they are not being careful with what they consume, of how this was prepared, of the hygienic conditions in the places they live, eat, cook, or choose to buy food from. Especially in the rural areas, where sanitation is limited, waterborne diseases really are a serious problem; people are very prone to getting them." (Top official in IHPH of Ho Chi Minh City, 28.07.11; group interview)

The noticeably increased levels of awareness that is demonstrated by the elaboration in answers such as the above, makes the central institutions appear more knowledgeable and expert. However, the issue of hierarchy in the country's administration and the power relations that it entails, need to be again considered. Being a health worker in the district or commune level, one is under the supervision of superiors in the next level of administration and therefore, is also "vulnerable" to their judgment. Contrariwise, ministry-level staff that is abreast the central government, is in disposition of more socio-political capital and is thus more comfortable in tracing the weaknesses of central policy and the problems in its implementation. During every single interview with state representatives, there was an air of discursive caution and hesitation in expressing one's opinion. This was, however, particularly obvious during interviews with representatives of the district and the provincial levels. The amount of explanation that informants were willing to engage into, was possibly not only depending on their awareness levels, but also a function of how much criticism towards the government they feel free to exercise. Overall, it remains a matter of investigation whether the laconic nature of some answers was due to a lack of knowledge, a lack of time, or a sign of personal disinclination to further elaborate. It became clear, however, that awareness concerning the prevention of diarrheal disease is more likely to be found in the high-level organizations (where it is expert), than in the provincial and district authorities (where it is compartmentalized) or in the levels of the commune and hamlet (where it is rather experiential).

6.3.4 The hollow construction of a success story

The term 'awareness-raising' has been used as the target of preventive health campaigns and the means to behavioural change. However, the level of people's awareness is hard to measure, unless with qualitative research and extensive surveys. According to the representative of the Health Strategy and Policy Institute of the MoH, behavioural evaluation studies are mostly carried by donor agencies, but their results are hard to translate into advice useful to the local governments. The informant particularly located such problems of evaluation to the lack of means able to channel such knowledge from experts to policy-makers[166]. Government officials and health representatives from provinces and districts, however, often use statistics on diarrhoea mortality and on water supply and sanitation coverage to discursively "measure" and evaluate

[166] Source: Official in the National HSPI, Hanoi, 09.02.12; personal interview.

awareness-raising campaigns. As it was discussed in previous chapters, this use of statistical indicators hides a lot of assumptions about the trustworthiness and representativeness of the data which often prove mistaken. In other attempts to present some evaluation outcomes, respondents from central offices would equate the execution of communicative activities to their impact and success, presenting for example the amount of flyers distributed, or the number of training classes, as a proof of public awareness-raising.

In the few cases where interviewees did not try to portray a picture of awareness-raising success and recognized the high incidence of diarrheal disease in the country, they would assign the problem to people's unhygienic habits and not to the state's false approach in public health education. Interestingly, however, the respondents recognized that even though some messages reach the intended audience, they have no impact on their actual behaviours.

> "In general most of the people nowadays present a clearer perception and a change in their awareness. When they are asked what they should do, they can give the right answer. When it comes to actual actions though, people seem to still stick to their habits and the results in reality are not satisfactory." (Top official in district PHC, Binh Thuy, 12.07.11; personal interview)

> "I will give you the example of the doctor that smokes... He knows that it is bad for his health, but he does it anyway; it is the power of the habit [referring to people not practicing hand-washing with soap]." (Top official in PHC Can Tho City, 14.07.11; personal interview)

A usual way to escape elaborating on such issues was to assign all related failures to the poor. The poor would be depicted as the only group that is unable to escape bad health, independently of the content or the quality of health communication efforts. Most interviewed officials would recognize that the residents of remote, rural and poor households are more vulnerable to suffer from disease, but this problem tends to be attached to the poor (as a group of people) and not to poverty (as a social phenomenon). Poor people would be described as having low hygienic standards and not willing to prioritize or pay for access to clean water and improved sanitation:

> "Those who don't follow our advice are mostly in the rural areas and it is because sometimes the conditions are unfavourable for them. For example when they don't have clean water access because the piped water system doesn't reach them, how are they going to protect themselves from unclean water? When people are really facing poverty problems, they don't seem to care about their health that much." (Top official in district Office of Health, Binh Thuy, 08.07.11; personal interview)

> "The poor are in a more disadvantaged position and more likely to suffer from diseases. To what concerns diarrheal disease, that is because they cannot afford to preoccupy themselves with hygienic standards and behaviour. They face financial problems and so they don't care about their health. They know what would be better to do, but they cannot afford it, or don't bother thinking about it; they don't have good living conditions or eating and drinking habits." (Top official in district PHC, Cai Rang, 06.07.11; personal interview)

> "The people know that they should use soap for washing hands but in real life, they don't do that because they don't care about their health that much." (Official in PHC Can Tho City, 14.07.11; personal interview)

Firstly, these arguments contain a complete disregard of all the other preventive measures (breast-feeding, vaccinations, better hygienic behaviours in treating and storing water etc) that the poor, just as everyone else, could adopt if they had better health education and if these measures were better supported by the state. Thus, the problem of awareness-raising around diarrhoea is falsely presented as a problem of water supply and sanitation, portraying the poor as a vulnerable group only because they cannot invest in such constructions. Despite the amounts of truth that this claim contains, it implies that the risk of diarrheal disease is avoided by those who have invested in such improvements. As it has been already demonstrated, data on WSS[167] and on the disease's spread[168] do not confirm this argument. Secondly, poor people are not presented as a group that needs more support, but as being insensitive of their own

[167] See Table 5.1 in chapter 5.2.2 and Table 5.6 in chapter 5.3.1
[168] See Figures 4.9 and 4.10 in chapter 4.3.1

health and well-being. This way, a problem of governmental policy turns into a problem of the poor, who are marginalized as dirty and indifferent and are thus the scapegoats of state negligence.

Moreover, the above blaming of the poor is based on the assumption that the public health communication mechanism is clockwork and efficient. The results of in-depth interviews with residents of rural and urban areas, widely contradicted both the availability and the impact of this mechanism, concerning at least the issue of diarrheal disease. The praised roles of the clinic and the health works, as reference points of health education, were widely refuted by interviewees from the rural Phong Dien district:

> "PK: Have you ever taken any advice as a young mother from the local clinic on any issue regarding the health of your child and in relation to diarrheal disease?
>
> "Respondent: Yes, but seldom does this happen. The commune clinic staff came to my house to ask about the baby when it was born. Each month they will come to weigh and measure the height of the kid and they will also talk to me. They ask me about the birthday of the kid, how much the kid weighs, and if there is something wrong with his health. They have never talked about how to treat diarrhoea." (Household representative HH1/mother of three, rural commune, Phong Dien district; in-depth interview)
>
> "No, there hasn't been anything like that ... Some people come here for counting the population, making a survey, and some other people will come to check about baby-mosquitoes in the house and they will show us how to kill them. They do not talk about good or bad drinking or eating habits. There is also a man that goes around the households to ask whether people are connected to the water supply network, and if not he tries to convince them. He is the man who works in the hamlet and collects money from the tap water bills. He will try to convince people to use clean water and keep their environment clean to protect themselves from disease. The commune clinic staff doesn't come here, only the hamlet leader, who is also the one managing the water supply station." (Household representative HH2 /grandmother of one, rural commune in Phong Dien district; in-depth interview)

From the words of the interviewees, it shows that the main interaction taking place between the local communicators and the public boils down to an activity of inspection and persuasion. The fact that health workers are not actually active in discussing preventive measures with the public was not only noticed in the rural context, but also in urban areas. Respondents from Le Binh ward gave answers similar to the above, while only one of the interviewed mothers said to have seen circulated material which included information on measures against the spread of diarrheal disease:

> "The brochures are talking about the killing of mosquitoes, teaching kids to wash their hands and carefully boiling water and cooking food. The television or the radio is a source of information, but I will not remember everything they say. If they came to the house it would be better, because I would remember and I would follow their advice. This has never happened, we only receive some brochures. I do follow the advice of boiling water, and cooking food and I also use salt-water to wash the vegetables." (Household representative HH1 / mother of one, urban ward in Cai Rang district; in-depth interview)

From the words of a WU representative (quoted earlier in section 6.3.1), a change of behaviour with regards to hygiene, is an obligation for members of the union, who are "obliged" to follow the 3-clean model and "are being checked on it" (Top official in WU's commune branch, Phong Dien district, 19.12.11; personal interview). It was generally the case, that people holding public office positions in the district or commune level would project a paradigmatic profile of their household and their family's habits, trying to reflect the requirements set in the "healthy and cultural village" policy[169]. Possibly connected to the notions of social morality, unity and citizenship that the state often attaches to hygienic priorities, local cadres embody these expectations and use "healthy behaviours" as proof of their loyalty to their community and the Party. Despite their efforts to manifest a successful policy implementation and to portray a functional mechanism of health education, however, local cadres and government

[169] Referring to the 'cultural and healthy village' policy, part of which is described in Box 6.2.

representatives cannot hide the reality of what is a weak public health sector which leaves many people vulnerable to disease.

As it became clearer though the systematic analysis and the qualitative synthesis of results, what is being transferred from high-level departments down to the people that are facing health problems, is not knowledge but a feeling of superiority and supervision. The localities struggle to fulfil the prescribed targets of preventive health, charged with duties but given very little support. At the same time, local communities are very hesitant to voice concerns about the challenges that they are facing. Similarly to the sector of water supply and sanitation, local cadres struggle to meet the targets on paper and are often disregarding pivotal aspects in the policy's objectives, such as making health education accessible to all, providing truthful reporting and benefitting the most vulnerable.

6.4 Conclusions

The Vietnamese government has recently aligned parts of its national legislation to world-class guidelines for the integrated prevention of diarrhoea (MoH, 2009c). Drawing evidence from Can Tho City, this chapter described why, despite this positive step, there are still core impediments in the way of a preventive success in the country. The implementing mechanism was found to treat diarrheal disease in a fragmented manner, locating its risks to separate and non-interacting spheres (of water, food, children, poverty or rurality). Failing to recognize the wholeness of the problem, the state fails to approach it in all its gravity. The official discourse around the control of diarrhoea seems to be serving the construction of a success story in public health parallel to that of the water supply and sanitation sector, which in reality is, however, proving hollow.

The main weaknesses of the followed approach are traced in the methods and the content that are being used in health education campaigns. The principal executors of public health communication are supposed to be the health workers and the volunteers in the communes and hamlets. Despite whatever willingness to perform those tasks, the people in these posts are usually in hold of very limited resources and have a weak educational background in medicine. In most cases, the communication approach relies entirely on the training and the printed material that will stem from higher-level health organizations. Regarding the availability of materials, cadres from higher-level administration would claim that they are in shortage of funds and thus cannot provide enough support the public health mechanism in the local levels. As this chapter discussed, central funds do exist but they are received exclusively by the Preventive Health Centres (PHCs) in the provincial level. Results indicated that, in fact, hundreds of millions Vietnamese dong are assigned annually for the sectors of WSS, contra-malaria and food safety in Can Tho City. Based on the claims of PHC's representatives, these funds are exhausted in the annual organization of 40 training gatherings around the province, each of which is inviting a maximum of 50 attendants. It is therefore highly questionable whether and how the provinces actually spend the budget assigned to them for preventive health activities.

As regards the quality of the communicated messages, research indicated that the ability to scale down scientific knowledge, without reducing the essence of its content, is not developed sufficiently in the case study regions. Professionally, the expertise that is needed to address the issue holistically seems to be "evaporating" within the current system of training local trainers. With limited expertise, trainers depend on the printed material that reaches them. Examining the content of this material revealed a pattern of guiding action in a top-down manner, through a bullet-point set of instructions that does not promote understanding, let alone health empowerment. Health communication is in practice a process of convincing, rather than promoting participatory action. In fact, the channels of health-related communication are used to further promote priorities of water and sanitation constructions, paying little

attention to whether and how much does the public understand certain health risks and how much people actually engage in adequate preventive behaviours.

Findings further demonstrate how discourse around the risk of diarrheal disease can be often excluding and disempowering the public. Firstly, in a process of blueprinting western biomedical science, the government's "modern" public health policy has excluded Traditional Vietnamese Medicine approaches, which, nonetheless, many Vietnamese consider valuable and meaningful. Disassociating new approaches from the old engrained systems of understanding might have played a role in why preventive messages are not confronted with the engagement that health educators would wish for. Secondly, research indicated how diarrhoea-related information can actually be a burden, rather than a helping hand for the public. By emphasizing the imperative nature of preventive guidelines and through the use of politically charged language, aspects of health and hygiene are connected to values of socialism and to a sense of responsibility towards the government, the Party and the country. These notions of social morality, that are provided within a top-down paradigm, are not leaving room for health-related information to be questioned or altered on its way to local implementation. Through this moralistic and patriarchal manner of executing public health communication and promotion of healthy practices, the state reinforces the idea that problems are solved solely through its central knowledge and expertise, without needing input and feedback from the population in the grassroots.

Despite the stability in the state's hierarchy, that seems to be attempted and perhaps achieved through implementing health education in this manner, the Vietnamese government risks to perpetuate a nation of people that are vulnerable to preventable disease, confused on it is that makes them sick and how can they best protect themselves from it. By de-prioritizing diseases of low mortality, the country compromises the everyday well-being of its people. Moreover, by not paying much attention to what the public knows, but to what the public does, Vietnam also jeopardizes the future of health literacy and is vulnerable to future emerging epidemics.

CHAPTER 7

PRACTICES, PERCEPTIONS AND BEHAVIORS AROUND DIARRHEAL DISEASE IN URBAN AND RURAL HOUSEHOLDS

One of the main claims that have emerged from the statements of interviewed state representatives, from the sector of water and health, can be summarised in the following assertion: "The high coverage of piped water supply and hygienic sanitation facilities in urban areas, demonstrates that the residents of those areas have higher levels of awareness around the risk of diarrheal disease. The official health statistics further confirm that urban areas do not face problems of diarrhoea disease anymore" (not a direct quote). In previous sections of this thesis, it was explained why this claim is false and how accepting its assumptions affects health policy. Firstly, health statistics that are produced in the region are not showing the actual number of diarrhoea cases and are, thus, a weak basis for drawing conclusions on its spread. Even if health statistics were seen as a valid indicator for comparing how the risk of disease is being distributed to different areas, they do not show a clear differentiation between rural and urban areas (chapter 4.3.1). Secondly, a higher rate of access to "improved" water sources, does not exactly speak of the quality of water people consume, as the latter depends on the water supplier and/or the intra-household practices and the complementary sources of water used by the people in the household (chapter 5.2). Accordingly, the presence of a toilet that is rated as "hygienic", does not exactly guarantee for its proper use or for environmental sanitation in the wider community.

In the light of the so far described institutional set-up and implementation of policy, this chapter looks at how the institutional weaknesses reflect on the population, bringing together empirical material of in-depth and quantitative interviewing from the household level. Focusing on people's practices, behaviours and perceptions, the findings illuminate the problems and the constraints that urban and rural inhabitants face in protecting themselves from disease. The following sections will firstly show how aspects of water access, use and treatment were witnessed in the household level (7.1). The way people access, perceive and exercise "hygienic" sanitation will then also be brought forth and discussed (7.2). Finally, the chapter examines the ideas that people have around the source of diarrheal disease and the strategies that they follow in order to prevent and treat it (7.4).

7.1 The complex diversity of water use and treatment

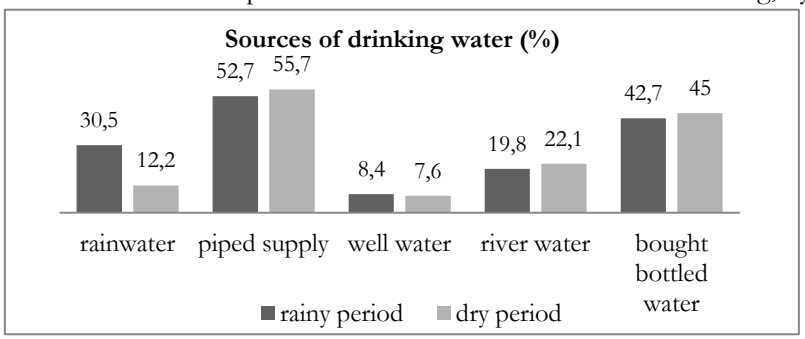
Having previously discussed the spectrum of options that people have in terms of water supply, this section now reviews the situation of 131 households in Can Tho[170]. The collection of data not only documented the primary used water sources, but also drew attention to the various simultaneous water strategies and treatment methods that were followed in each household. Compared to officially generated data and discourse, the results clearly portray how complex and diverse water usage is in the region, underlining the need for more support, in the form of infrastructure and mostly, in the form of information on water treatment and safety.

[170] For more details on the household survey, see the section "Trajectory of Fieldwork Methodology" in the Annex.

7.1.1 Household water sources and water preferences

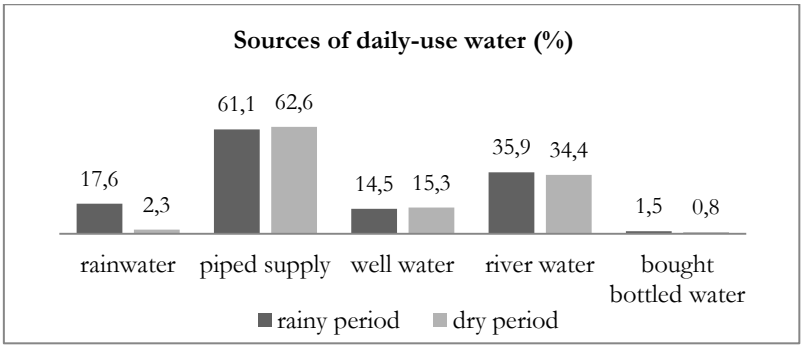
The results of the survey point to a distinct diversity and flexibility that exists among households in both rural and urban areas, concerning people's water use strategies. Most people claim to use more than one source, including rainwater, tap water, groundwater, surface water and bought bottled water. These water strategies were seen to shift slightly between the dry and rainy seasons, but not to an extreme extent. Questions regarding the source of water, as well as regarding its treatment methods and its storage, were asked separately for drinking water for daily-use water. As illustrated below (Fig 7.1 and 7.2), some water sources are used widely for both purposes (noticed for piped supply and well water), while others are mostly designated for drinking (noticed for bottled water and rainwater).

Figure 7.1: Distribution of responses on the water sources used for drinking, by season



Multiple-answer question (N=131). Data from household survey, 2011

Figure 7.2: Distribution of responses on the water sources used for daily-use, by season



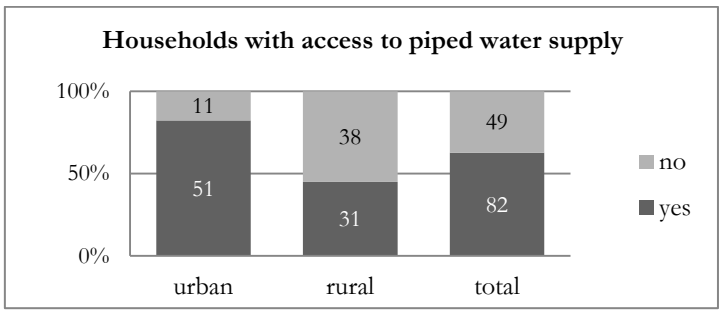
Multiple-answer question (N=131). Data from household survey, 2011

The statistics produced by CERWASS on the rate of piped supply connections in Can Tho (50-60%) and the total percentage of households using river water, whether "hygienic" or not (30%), do not contradict much the results of this household survey (CERWASS, 2011a, CERWASS, 2010). However, there is a significant difference between the presented percentages of rainwater use, and the results of the survey. Namely, according to CERWASS, the rate of rainwater use is in the scale of 3% (Ibid. 2010 & 2011), whereas the survey showed a rate of rainwater use as high as 30.5%, varying with the season and being mostly used for drinking. CERWASS is reporting a very low percentage of rainwater use probably because rainwater collection is a complimentary strategy and thus rarely captured by CERWASS's surveys, that are only reporting on the main water sources (look also in chapter 5.2.2). The rate of households using well water was also found to be quite different from what is captured in the CERWASS reports (15% versus 27.4%). What can explain this difference is the illegal state of many wells, which might make people hesitant to reveal their presence to the researcher. CERWASS enumerators, unlike the researcher, are expected to have the authority to inspect each household's premises and reveal the presence of such wells.

Given the insistence of state representatives to discuss water access and the prevalence of disease on the basis of urban and rural administrative divisions, the above answers were also analyzed by region. Since there were no significant changes observed in the use of water sources between the rainy and dry periods,

except from a decrease in the use of rainwater, the analysis was based on the answers given concerning the rainy season. The results showed that although most households appeared to have increased access to piped water connections (63%), either through a water company (urban) or CERWASS mini-supply stations (rural), this rate was not equally distributed in the two case studies. While most of the urban households were connected to the central water network, less than half of the rural ones had access to CERWASS-provided piped water (Fig 7.3).

Figure 7.3: Distribution of households with piped water supply in the rural and urban study regions



Numbers in the bars are absolute numbers of responses (N=131). Data from household survey, 2011

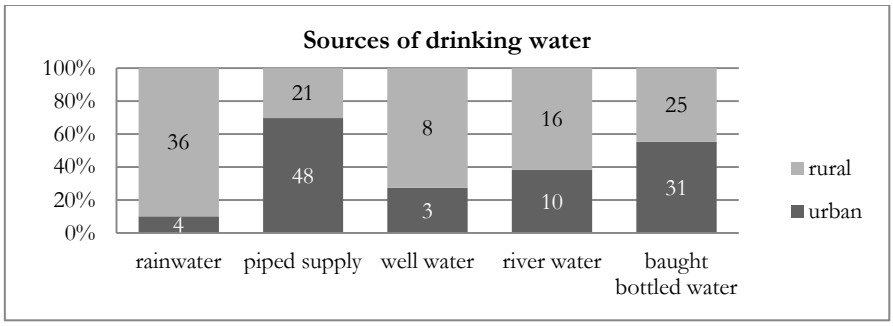
Comparing the two sets of answers concerning the access to piped water and its use particularly for drinking, it appears that while piped water is accessed by 63% of respondents, it is used for drinking only by 55.7% of them (as a primary water source). From the 82 households that claimed to have access to piped water, some stated that they also drink bottled water (34), rainwater (17), well water (5) or even river water (6); indicating that some actually do not prefer to drink piped water. These results can be better explained when looking at each household's location and thus, the type of piped water that they have access to. Most of the households supplied by the Cai Rang water company (98%) are indeed choosing to drink this water. On the other hand, the percentage of people drinking the water provided by CERWASS is only 68%, making it clear that there is a little preference, or little trust, towards the quality of piped water provided in the rural areas. Considering the water quality results that were obtained from secondary literature (chapter 5.2.3), this behaviour is seen as wise and partly be justified.

The interviewed residents from rural areas seem to compensate their lower use of piped water with drinking more of rainwater, well water and river water (Fig 7.4). Urban residents, on the contrary, seem to use these sources significantly less. An exception to this was the poor people living in the "floating houses" in Yen Binh urban area, who do not have access to piped water. Whereas the survey did not capture the exact financial situation of the families interviewed, observations and qualitative material made it clear that the majority of households without access to piped or well water were families belonging to the poorer part of the population (even if they were not always officially classified as poor)[171]. As it was discussed before, people that face financial problems are particularly hesitant to invest in piped water connections, especially when a cheaper solution is available. The shaping of such choices is often depending more on the costs, than on the actual quality of each source's water (chapter 5.2.1). As the collection of rainwater or river water only demands a storage jug for year-long supply, it is of no surprise

[171] It is described in the Annex (Trajectory of Fieldwork – Household Survey - sample selection) that the selection of poor, nearly-poor and 'average' households was not only on the basis of official classifications of poverty, but also on the advice provided by local cadres and on personal observations from the case study areas. This manner of selection owed partly to findings indicating how fuzzy the processes of official poverty classification really are (Box 4.2 in chapter 4.2.2) and how challenging collecting data on people's incomes proved to be (complex ways of distributing income among the members of a household and extended family and various informal and unstable income sources that are hard to define). Overall, the official classification of poor households was often found to contradict the observed reality. For these reasons, unless otherwise specified, the mention of "poor" in this chapter is not only based on official classifications but also on research observations and on interviewees' own attestations.

that people in "floating houses" and in the poorer parts of the rural areas tend to resort more to these practices, than their better-off urban counterparts.

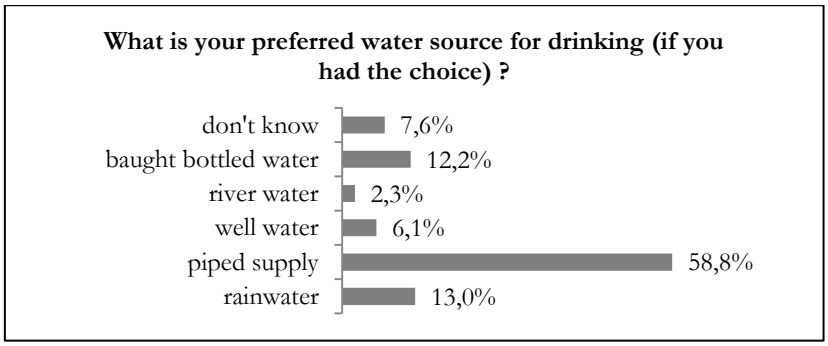
Figure 7.4: Distribution of water sources for drinking in rural and urban households



Numbers in the bars are absolute numbers of responses to a multiple-answer question (N=131).Data from household survey, 2011

The purchase of bottled water was found to be a very common practice (Fig 7.1), despite its high price and its unsafe production standards that is often discussed in the media. Bottled water for drinking was almost equally popular in rural and urban areas (Fig 7.4), but also between households that had access to piped water and those that had not (crosstabs analysis). A detailed look in the results of the household survey showed that actually, many of the rural and urban poor tend to buy bottled water for drinking. According to these respondents, however, bottled water is mostly a complementary source, when river water is too dirty or when rainwater is no longer available. With regard to drinking water preferences, bottled water was third (12.2%), while piped water dominated the answers (Fig 7.5). The question above was intended to capture people's preference and desires, without taking into account whichever constraints of practical nature. This was aiming to understand which water sources people value the most. However, the respondents were rather acquiescent in justifying their answers, claiming for example, that "we have no other choice [other than river water]" or that "this [piped water] is the type of water that we get here, and it is good". There was, therefore, an observed difficulty of people conceptually separating their desired preferences from their realistic expectations.

Figure 7.5: Distribution of given answers regarding the most preferred drinking water source



Data from household survey, 2011

Some would also carry the impression that the researcher is somehow able to materialize their expressed desires on water supply and thus there was a tendency, from those without access to tap water, to eagerly claim their preference towards it and to explain how useful this would be for their daily activities. These attitudes are particularly indicative of the constraints that many people face in accessing a year-long piped supply and of their dependence on external support. Many would also describe their water choices as a matter of habit, convenience, or socially-induced influence ("other people do it"). Altogether, 31% of the respondents did not refer by any way to a source's quality or safety when justifying their water options (look also in chapter 7.3.1).

Apart from its source, drinking water quality is massively shaped by the way it is collected and stored in the households, before it is consumed. Literature has suggested that one of the practices defining the quality of stored water is the coverage of the storage jugs (chapter 5.2.3). Therefore, the habits of where storage vessels are kept and how they are covered were also surveyed. In most of the households, vessels were being kept outside of the main house (67.9%). However, the limits of 'inside' and 'outside' were sometimes hard to position, as the back parts of many households (usually the kitchen) were open to the yard and did not have a built floor. This means that, in some cases, the water vessels were claimed to be "inside" while they were actually in an external environment, exposed to dust, insects, domestic animals and weather conditions such as flooding. Regardless of where they were placed, the majority of the vessels were said to be kept well-covered (84%). However, in the households where direct observations of the vessels were made possible, findings would often contradict the given answers and vessels would be half-covered or completely open. Of all the different types of vessels that were used for storing drinking water, clay jugs were the most likely to be well-covered (with special sealing lids), while other vessels would be more often than not, loosely covered with pieces of plastic, or not covered at all (Picture 7.1).

Picture 7.1: Jugs and containers used to store water for drinking purposes in the rural case study

Pictures by author, 2011

Clay jugs are used for various types of water, but mostly for the long-term storage of rainwater. This explains why clay jugs were also mostly present in rural areas. The study of Özdemir et al. (2011) in the Mekong Delta, showed that the number of clay jugs each family owned was linearly connected to their monthly income levels, showing how they also form a commodity that is not easily accessed by everyone. Despite their relatively high price however, they are -by far- preferred from other vessels, due to the pleasant taste they give to the water (Ibid. 2011). As discussed before (chapter 5.2.3), water that is being stored in clay jugs, proved highly prone to external contamination which abruptly changes its hygienic state (Tran Hong Phuoc Tai, 2009, Wilbers, 2012). With rainwater being very popular water source among rural residents (Fig 7.1) and clay jugs being one of the most preferred storage means, the use and maintenance of the latter, proves of great importance regarding water safety in the rural areas.

7.1.2 Drinking-water treatments

Even though the options regarding home-based water treatments are not many, the manner in which they are applied can differ between households and for each water source. Moreover, not every member of every household seems to apply these methods in the same manner. Considering that most households are also using more than one water sources for drinking, the evaluations on water quality at-point-of-consumption are proving hard to make. The analysis, therefore, focused on the water treatments applied to the primary source of drinking water, excluding bottled water to which treatments are never applied in the household level (Table 7.1).

Table 7.1: Types of water treatment methods applied to the primary drinking source in each household

	Rainwater	Piped supply	Well water	River water
Alum[172]	2.5%	*method not used*	54.5%	92.3%
Cloth filter	57.5%	*method not used*	*method not used*	*method not used*
Purifying machine	10.0%	15.9%	9.1%	*method not used*
Boiling	55.0%	92.8%	54.5%	84.6%
Chemical disinfection	*method not used*	1.4%	*method not used*	3.8%

*The rates (%) are: people using (x) method/people using (y) primary drinking water source * 100.

Data from household survey, 2011

The results show that the interviewed public is rather careful with regards to applying drinking water treatment, as almost all of the respondents claimed to somehow treat the water before drinking it. Most people said that they will boil water that is for drinking (113/131), thus significantly reducing the chance of microbial contamination. Nevertheless, a careful analysis of the results showed that people are indeed fairly careful with boiling the river water (84.6%) and the water from the tap (92.8%), but this is not the case with well-water (54.5%) or rainwater (55%), which the majority would not be filter, flocculate or boil before consumption.

Worryingly, wells are easily exposed to surface pollution that enters the reservoir due to their bad construction or improper maintenance. This is often rendering well-water highly unhygienic at source (Thang, 2002, Nuber and Stolpe 2008 cited in Fortier, 2012); something that has been observed also for the region of the Delta (chapter 5.3.2). Consuming untreated well-water is, therefore, highly risky for this small -but significant- percentage of people who use it for drinking (Fig 7.1). Apart from not applying the recommended treatments, respondents also claimed to intentionally leave well-water in uncovered containers or buckets, in order for it to "air"[173] ; a practice that possibly has further negative effects on its quality. Similar risks of consuming contaminated water seem to encompass rainwater, as only 57.5% of the respondents mentioned the use of a cloth filter during its collection and only 55% considered boiling rainwater to be a necessary treatment before its consumption (Table 7.2). Previous research in Can Tho by Köster (2008), has found even lower percentages of users boiling rainwater before drinking it (46%), confirming the health risks that surround its consumption (Köster, 2008 :52).

When comparing the results concerning rainwater and well-water, it appears that people who apply a primary treatment, like filtering rainwater with a cloth or flocculating well-water with alum, will not necessarily also apply boiling before drinking it. Characteristically, well-.water that has been treated with alum would most likely also be boiled if it is destined for drinking. This, however, was not true for rainwater (crosstabs analysis). Moreover, the number of households that did apply both treatments before drinking was rather small (6-7 for each source) and thus, insufficient for concluding whether there is a behavioural correlation between filtering and boiling water for drinking, or not. Regarding other treatment methods, the survey showed that chemical disinfectants such as chloramine-b or purifying (Aguatab)

[172] The use of alum causes the settlement of impurities in the water. This process of flocculation can significantly reduce the concentrations of pathogenic agents in the water, as they bond to the formed particles (floccules) and settle with them at the bottom of the container.

[173] By "airing" water, respondents meant that water would be left in an open container, so that most of its surface would be exposed to open air and the "bad smell" would disappear. The "bad smell" was referring to the odor of sulfur or aluminum that groundwater often carries. "Airing" would also be applied to tap water, either from CERWASS or from central supply, in order to remove the unpleasant "chemical" smell of chlorine.

tablets are not commonly used. Similarly, purifying appliances with incorporated sand micro-filters were discussed as expensive and thus rather scarce in the interviewed households of Can Tho (Table 7.1).

Surprisingly, although the tap water that is provided through a piped water network has already undergone some disinfecting treatment (chlorination), the vast majority of respondents claimed to boil tap water before drinking it (92.8%). One of the interviewees commented on this practice:

> "When my household was first connected to the water mini-station, the running water was impure and I could see the dirt settling at the bottom of the storage vessel. Then, together with other people, we decided we had to boil the water before drinking it and now most people do. The messages from the television and the radio have enhanced this practice a lot by repeating the motto of 'boil your water before drinking'." (Household representative HH3, Phong Dien district 21.12.11; in-depth interview)

It is important to note how the above respondent evaluates water quality based on visual indicators. After the water's quality is identified as low (due to turbidity), a feeling of necessity to apply the state-promoted advice and treat the water, arises. Similar to tap water, the rates of treatment with alum (92.3%) and boiling (84.6%) were high also for river-water. Microbiological analyses from the region have shown that these methods can significantly reduce the loads of pathogens in river water, if applied correctly (Vo Thi Yen Phi, 2010 :85). However, even though most state officials reassure of a universal application of these practices174, many experts and local health workers share some different opinions:

> "A lot of people, and especially in the Delta, have the traditional habit of using surface water to cover their needs of water consumption and daily activities. Now they still do it, but the water is polluted. Most people just treat the water with alum and do not even boil it before using it." (UNICEF representative, Ho Chi Minh City, 29.07.11; personal interview)

> "A lot of people do not have access to water supply stations and have to use river water, which is polluted. They live in the rural parts and not near a main road where the station can easily deliver water. So, they use alum to treat the water, but they do not always do it properly. Some families do not have the time to boil the water and they just drink it like that." (Top official of a Health Clinic in rural commune, Phong Dien district, 15.09.11; personal interview)

If common assessments of water purity (or impurity) rely on visual indications (like turbidity), then the persisting habits of not boiling rainwater or well-water, can be better understood. Rainwater and well-water are usually not as muddy and turbid as is the water in the canals or the water provided by CERWASS station (that has gone through badly maintained, dirty pipes). The same principles of evaluating water purity might explain why river water is often treated with alum to get rid of visual impurities (particles settle) but is then usually not boiled before consumption. Questions of water quality perception and the kind of health risks that are assigned to water consumption are discussed in following parts of this chapter (6.3). The analysis generally indicates that people's senses (sight, odour and taste) are more determinative of their water treatment practices, than is the circulated information on water's quality and safety.

The results indicate that there is a somewhat confused public awareness, regarding the health risks that certain water choices and practices entail. Some respondents were very strict with the habit of filtering boiling water before drinking. Some others would make tea with unfiltered water or would drink water that has not been boiled. Some of the claimed constrains in applying water treatments were the costs and the time that is needed to do so:

> "When we have the time we will boil the water [tap or rain] but if we are coming back tired from the field, we won't bother." (Household representative P35, Phong Dien district; personal interview)

> "If I don't have wood, I don't boil tap water, I just drink it like that." (Household representative N9, Phong Dien district; personal interview)

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174 Source: Top official in the Red Cross branch of Phong Dien district, 07.09.2011; personal interview.

In other cases, people expressed different sorts of beliefs about making water safe to drink, indicating that there are still many misunderstandings on how and why water treatments improve the quality of water:

> "I will sometimes add some boiled water in the vessel where I keep rainwater to kill the worms." (Household representative A11, Phong Dien district; survey interview)

> "I add some special type of mushrooms in the jug in order to clean the water." (Household representative, T20, Phong Dien district; survey interview)

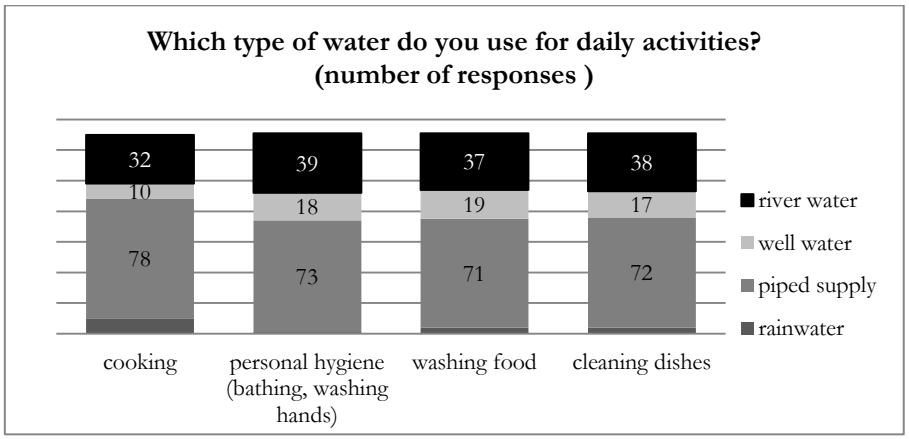
The survey results are based on what the respondents *said* they do. It is probable that this might not have been always truthful or fully accurate[175]. A number of observations showed, for example, that tea is brewed and not boiled; thus the disinfecting impact of it might not be thorough. Moreover, the amounts of alum that are being used to treat water differ widely from one household to the other and are often not enough.

Generally, it can be concluded that urban residents with piped water bare the lowest risk of waterborne diarrhoea, since they mainly use tap water which they tend to boil before consumption. Contrariwise, rural inhabitants often rely on other-than-piped water sources and do not consider the careful application of disinfecting treatments that is equally necessary for all the different water sources. The poor -in either rural or urban areas- are usually not in a position to freely make choices of water access and are usually depending on surface water, with a complementary seasonal consumption of bought bottled water.

7.1.3 Water for daily use

As it was demonstrated before, the sources of water used for daily activities follow roughly the same patterns with drinking water, with a comparatively increased use of river-water and well-water, instead of rainwater and bought bottled water (Fig 7.2). The majority of households that had piped-water supply use this for all the main types of daily activities. The households without this access use mostly water from a well or from the river (Fig 7.6). There was not much differentiation between each of the daily activities and it, therefore, seems that once a source of water is assigned for daily usage, it covers all of the household's needs. There was only a small tendency to especially use rainwater for cooking and cleaning the food/kitchen from a few households, while using another source for showering or washing hands. Moreover, it was made clear that when access to surface water is easy and independently of what type of water people used for other daily activities (Fig 7.6), river water would be the used for cleaning the floor.

Figure 7.6: Usage of different water sources for the various daily-use purposes

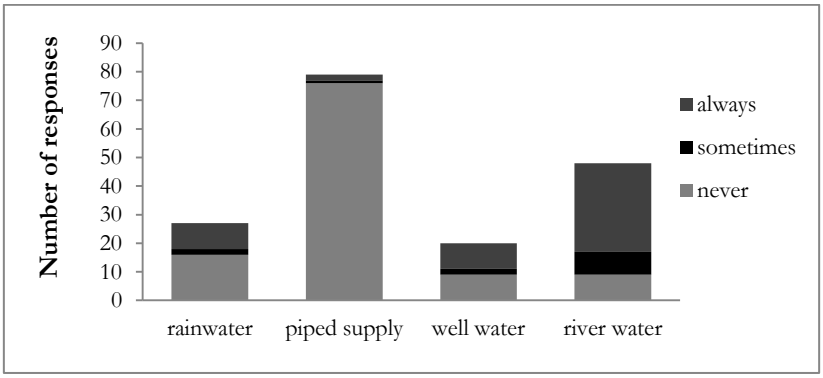


Data from the household survey, 2011

[175] Respondents were often under pressure, when local cadres also attended the interview. The observed tendency was that respondents would try to give the perceived "best" answers and claim "optimal" behaviours.

Regarding the water treatments applied, answers indicate that tap water is generally considered to be safe enough for daily usage and is not treated any further (Fig 7.7). River water, on the contrary, was seen as polluted and thus, always treated with alum by the majority of the respondents. However, there were some people who said they never treat their river water. Similar to what was found for drinking purposes, almost half of those using well-water or rainwater for daily use purposes will not apply any primary treatment to it (alum or cloth accordingly).

Figure 7.7: Frequency of followed treatment practices for daily-use water, by source



Data from the household survey, 2011

When analyzing data comparatively (crosstabs analysis), it became clear that the people who replied positively for applying treatments to well or rainwater for daily usage, are the same who apply these treatments also before using this kind of water for drinking. As observations from the households confirmed, this is explained by the fact that all the collected (rain or well) water, is treated and kept in one container, from where it is used for either daily activities or drinking. As it was discussed earlier, the boiling of water before drinking is more likely to take place in the case of well-water and less likely for rainwater. Overall, it seems that concerning specifically these two water sources, the public awareness is rather mixed and confused regarding their water quality at-source, as well as the risks involved in their consumption and use without prior treatment.

7.1.4 A web of waterborne risks of disease

The region of the Delta presents a great diversity of people's water choices and behaviours, which were only partly visible through the so far presented data. Apart from the different strategies of water access that are followed by each household, there is also quite a variety of water behaviours within each household. Many sources of water can be in use concurrently in a household, changing according to season and the habits of each family member. Taking the case of a rural household that depends on river or well water, for example, it is likely that water will be stored in one vessel, whether for daily uses or for drinking. According to the previously discussed findings, alum will then be most probably used to flocculate the impurities in that vessel. Some of the family members might choose to drink this water without applying any further treatment, because they think it is safe enough, or because they have no time to boil it. Apart from the health risks of directly consuming untreated water, there are significant health concerns arising also when untreated river- or well- water is being used for showering, cleaning fruits and vegetables that are eaten raw and washing kitchen utensils or making tea; all practices that were common among the respondents

However, these types of water behaviours seem to change with the season, following perceptions of water safety. A number of respondents[176] described how during the period of the year when the tide is high and

[176] Sources: Household representatives P15, P16 and P23; personal interviews.

there is a lot of new water in the river canals, they will shower or wash their vegetables with surface water, because they believe that this water is then fresh and clean. During the dry and low-tide months of May and June, on the other hand, people say that river water is of very low quality and thus, they need to treat it with alum before using it for this kind of activities. Likewise, many people choose to drink rainwater during the wet season, but switch to bottled water during the dry season, after the rainwater stored supply has exhausted. This was especially true for those rural households without access to piped supply and which did not have enough storage capacity to save more rainwater for the dry period. However, some respondents said they drink bottled water even if they have CERWASS-supplied water access, making the distinction between availability and preference. Households located in the urban areas that had access to central water supply however, tend to be more consistent in their exclusive use of tap water for drinking and for other activities, both it is the most convenient but also because they trust more in its good water quality.

Water behaviours can further vary between members of the same household, due to their diverse daily habits. Children spend much of their time at school while grown-ups might work in offices or at the rice-field, getting access to different types of water. Trying to understand how the risk of waterborne disease is distributed judging on the primary source of each household is thus oversimplifying a complex issue. The trend that emerges through research observations and the responses of local people, however, showed that most of the water used for daily-use, and much of what is used for drinking, is not being properly treated. Thus, the purity of the water is not guaranteed and the risk of diarrheal disease is increased. According to the results, the sources of well- and rainwater prove of particular concern for public health, as their treatment and storage are much dependent on each household's capacities and behaviours. While the preventive message of "boiling the water" seems to have been well engrained in the minds of rural and urban inhabitants, it appears to be conceptually connected only to piped- and river- water, but not to rain- or well- water. Despite the complex diversity that exists in the way water is being collected, treated, used and consumed, it is worth underlining how the latter two water sources deserve more attention, in terms of health education, in order to better prevent the risk of waterborne diseases such as diarrhoea.

7.2 Sanitation realities

Previous chapters discussed the difficulties faced by most people in the region of the Delta and in Can Tho, with regards to the construction and maintenance of sanitary facilities. This section presents empirical findings that not only illuminate aspects regarding their coverage, but most importantly, regarding the ideas around safe sanitation that local residents maintain and upon which they base their claims and practices. The analysis untwines and discusses the differences between the type of sanitation that people prefer, that which they can have access to and that which they are actually using.

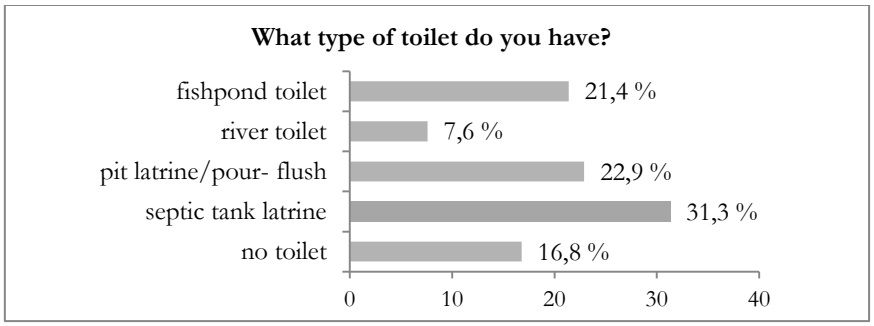
7.2.1 Household sanitation and community hygiene

The household survey results revealed a distribution of sanitation types similar to what was documented by CERWASS for the whole of Can Tho City (see chapter 5.3.1). Septic tank latrines were found to be the most prevalent toilet type (31%), but the number of open defecation practitioners (including river toilet, fishpond toilet and no toilet at all) was much higher than expected and reached 46%. Characteristically, the number of people using a fishpond toilet was almost the same as those owning a pour-flush or a pit latrine (Fig 7.8), indicating the gravity of the problem in the region.

The analysis of the results by region, demonstrates that only 14 of the 62 urban households did not have a hygienic latrine. Most of these 14 households were the floating houses of Yen Binh area (see chapter 3.2). One might argue that the urban "floating" households do not represent the majority of urban inhabitants.

However, their selection was intentional in order to emphasize the existing problem of urban poverty; a problem that is not exclusive to Yen Binh, but is spread throughout the Mekong Delta.

Figure 7.8: Total rates of different sanitation types in households of the two case-studies



Data collected through the household survey, 2011

Since open defecation in the region is mostly connected to surface water, it demands the presence of a fishpond or direct access to a river or canal. Considering the high price of land in the urban areas, on the one side, and the tendency to construct houses more and more inland, on the other, is making open defecation practically more difficult for urban residents. Of the interviewed households with direct access to a canal or the river, 64% were rural (in Phong Dien district) and only 35% were urban (in Cai Rang) (Table 7.2). This reflected on the percentage of people that practiced open defecation, including those who declared having "no toilet".

Table 7.2: Cross-tabulation of the variables "proximity to canal" and "sanitation type"

Unit=number of responses		Type of toilet					Total	**Rural**	**Urban**
		No toilet	Septic tank	Pit/pour flush latrine	River toilet	Fishpond toilet			
Proximity to canal	no data	9	5	3	1	4	22	22	0
	Yes	12	18	15	5	23	73	47	26
	No	1	18	12	4	1	36	0	36

Data from household survey, 2011

Table 7.3: Distribution of toilet types in the urban and the rural case study

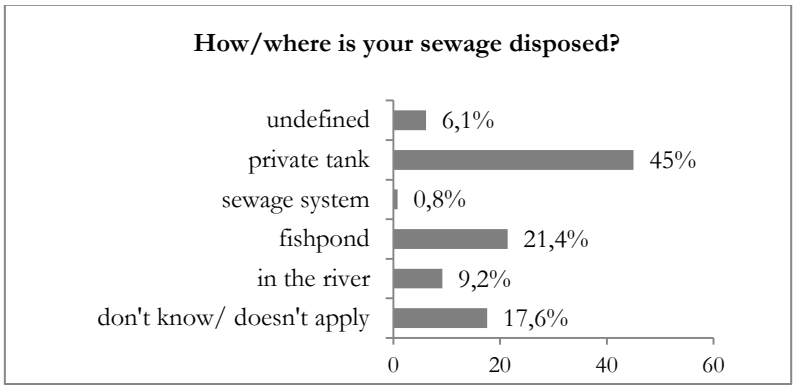
Unit=number of responses	**Type of toilet**				
	No toilet	Septic tank	Pit/ pour flush latrine	River toilet	Fishpond toilet
Rural	19	12	10	1	27
Urban	3	29	20	9	1
Total	22	41	30	10	28

Data from household survey, 2011

Overall, there was a tendency for fishpond toilets to be mostly located in rural areas. This by no means is to imply, however, that all the urban residents maintain hygienic sanitation facilities (Table 7.3). Merely abolishing open defecation is not enough to reassure proper sanitation in the community, or to mitigate public health risks, even in the urban areas. Many constructions, that can be named as "hygienic" by their owners because they carry some characteristics of a septic tank or a pour-flush latrine, are actually unsafe because they do not store or dispose faeces properly. When asked on the type of toilets they own, respondents would often reply with abstract terms, saying that they have "hygienic" or "flush" latrines. These descriptions, however, did not speak of any technical details or hygienic standards. In order to

cross-check the accuracy of the answers, a question regarding the disposal of sewage was also posed to each respondent. The answers regarding open defecation verify each other in the two sets of answers (Fig 7.8 and Fig 7.9). Results show, however, that only 45% of the expected 54% (pit latrine, pour flush latrine and septic tank latrine users) actually have a sewage collection tank. The rest of the "hygienic" toilet owners are likely to dispose their sewage directly in the river stream (see also chapter 5.3.1).

Figure 7.9: Rates of different disposal methods of sewage by households in the two case-studies



Data from household survey, 2011

Only one respondent openly admitted that their "hygienic" facility had serious technical shortages:

> "We have a tank that keeps the solid faeces and the rest goes into the river. This is not a septic tank, because that would cost five million [VND] to construct. This type of construction costs one million only." (Household representative P62, Cai Rang district; survey interview)

Looked at collectively, more than half of the respondents in the study areas seem to contribute to the contamination of surface water sources, posing a significant risk to the environmental hygiene of their communities. The results of a study from the coastal provinces of Vietnam by Sijbesma et al. (2010), found that such polluting practices are very common. This was confirmed for various provinces of the Mekong Delta, by experts who discussed how untreated sewage disposal is contributing to the deterioration of the river's water quality, especially in its small canals and in areas with a slower water flow and limited water circulation[177].

Even in the cases when a proper septic tank is in place to collect the sewage, the issue of emptying this tank and managing its content eventually arises. Such a process would demand a contract with the Urban Works Company of Can Tho and a payment of three million VND (105 Euros) by each household. Firstly, this can constitute a considerable expense that people will try to avoid. Secondly, the big collection trucks cannot reach the households in remote rural areas, since there are no suitable roads for them to follow. Local authorities have in the past avoided to address this foreseeable problem (Reis and Mollinga, 2012). Recently interviewed CERWASS officials, presented the sealing of the tanks that are full and the construction of new ones, as "an easy solution" (30.06.11, group interview). However, seeing how many households struggle financially to meet the expenses of constructing one tank, any additional costs do not appear to be as "easy" as the cadres present it to be. It was claimed by a water expert in the region, that under normal use, a single household owned septic tank would need more than eight years to fill up[178]. None of the interviewed families have needed to empty their tanks so far and therefore it appears that this problem is rather lurking for the future.

[177] Source: Water quality expert, University of Can Tho 30.06.11, personal communication
[178] Source: NGO expert in Water Supply and Sanitation, 11.12.11; personal interview.

7.2.2 Sanitation ideas and preferences

The problems of bad sanitation do not go unnoticed by the local residents. The majority of respondents (53%) expressed a desire to improve their sanitation situation, including almost all of the open defecation practitioners. Regarding those owning a latrine already, 63% of the pour-flush or pit latrine owners declared satisfied and did not express any desire to upgrade or change their facilities. This satisfaction was even more widespread among the septic tank latrine owners (85%). The reasons why people did not embark in improving or constructing a new and better and hygienic sanitary facility, even though they wanted one, were predominantly financial (Table 7.4).

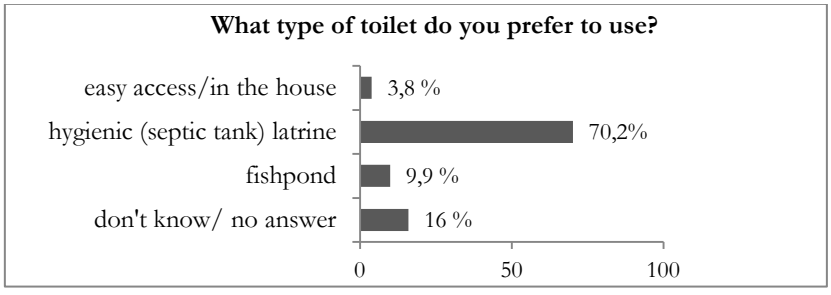
Table 7.4: Cross tabulation of present sanitation situation and declared constraints in changing

Type of toilet (present situation)	**Constraints in changing**				Total
	don't know	financial	not necessary	other	
no toilet	1	19	0	2	22
septic tank latrine	1	5	33	2	41
pour flush/pit latrine	0	6	16	8	30
in the river	0	7	0	3	10
fishpond toilet	0	22	2	4	28
Total	2	59	51	19	131

Number of given responses from the household survey, 2011

When respondents were asked directly on the type of toilet which they consider the most pleasant and preferable to use, most said that they prefer to use the "hygienic latrine" (Fig 7.10). As it was previously explained (see chapter 5.3.1), this description often refers to the septic tank latrine. However, this reference does not guarantee that the construction requirements are actually met when a toilet is constructed. In short, results show that the desire for the most modern and proper latrine does exist, but people seem to lack the funds and/or the knowledge on the construction details that will render their facilities hygienic and safe. The findings, therefore, contradict what local cadres have repeatedly claimed about people preferring open defecation and about the latter being the reason why the coverage of sanitary facilities remains low in the area.

Figure 7.10: Rates of preference for different toilet types among households in the two case-studies



Data collected during the household survey, 2011

Nevertheless, the survey's possible limitations in revealing the true thoughts and feelings of people when local cadres where present, need to be reminded. It would be against the state recommendations to give an answer that would be different to the promoted preference for the septic tank latrine and it would even be illegal to admit the use of a fishpond toilet. However, local cadres where not always present and not all cared as much as to lie either. Moreover, the fervour with which people supported their preference for hygienic toilets was noticeable and indicated that most of the interviewees indeed wanted access to improved sanitation facilities.

The question remains, however, of what 'hygienic' and 'improved' really means, for people that are not sanitation experts. Some respondents specified that by 'hygienic' they were referring to the septic tank latrine, but many simply described 'hygienic' facilities as those having a "strong water-flush" or a "closed room with a toilet seat and not just a hole in the ground". In most of descriptions, criteria of community and environmental sanitation are not included in the judgments people make or in the shaping of their desires regarding sanitation. It is more the concept of individual comfort and household hygiene that governs people's preferences. Considering the mismatch previously noted, between the facilities people claim to have and the disposal systems that they use (Fig 6.7 and Fig 6.8), there seems to be some confusion on three interrelated issues:

(i) what is a hygienic toilet,
(ii) why are hygienic toilets beneficial for the individual users and for the community, and
(iii) what is the difference between the individual and the community benefits of hygienic sanitation

For communities which widely use surface water and groundwater, these questions prove particularly important in relation to the spread of waterborne diseases, such as diarrhoea. In the study region, despite the continuous polluting of surface and groundwater resources from human activities, the residents proved particularly confused about the connection between improper sanitation, consuming groundwater and surface water and the spread of diarrhoea. This confusion was particularly clear in the answers regarding the issue of fishpond toilets. In the few cases (10%) when a fishpond toilet was preferred over other modern toilet models, this was not due to a lack of interest towards hygiene, but a result of different, personalized perceptions on sanitation-related health risks. Namely, open defecation practitioners revealed that practicing defecation in open air carries a sense of cleanliness and freshness associated with it. Contrariwise, the idea of defecating in a small room was described by them as "suffocating", "hot" and "uncomfortable". The preference to open defecation is, therefore, not clearly a case of ignorance or indifference towards hygienic sanitation, but a matter of personal and different criteria of what 'clean' and 'sanitary' feels like. Considering that most toilet rooms in public offices or common spaces (cafes, restaurants, and other households) are problematic in disposing faeces properly and are also not aerated nor kept clean, the preference of a fishpond toilet appears -at least- not completely irrational from a hygienic sense. Nevertheless, these answers continued to view personal health risks separately from environmental sanitation. Public health risks associated with the untreated disposal of faeces therefore, contradict such feelings.

From the above it is better understood that the choices people make regarding sanitation are often shaped by the interplay between their personal hygienic perceptions, their community sanitation concerns and their capacity to improve. Apart from awareness-raising campaigns that can encourage towards sanitation improvement, it is also the financial constraints that people need to overcome. As the interviewee below describes, sanitation can be a particularly tricky dilemma for those who cannot afford it:

> "Three years ago I could drink water from the river but now it is too dirty. In general, floating houses do not have a toilet. People realize they are causing the water to be dirty… but there is no other choice for us. I recognize the risks of getting diarrheal disease from this water." (Household representative T17, Cai Rang district; personal interview)

Summarizing, while the desire for sanitation improvements seems to exist, people's financial constraints and their unclear understandings around the nature and the usefulness of hygienic toilets, are hindering their spread. The lack of a sewage treatment system is further posing major constraints for the area to achieve safe and sustainable environmental sanitation.

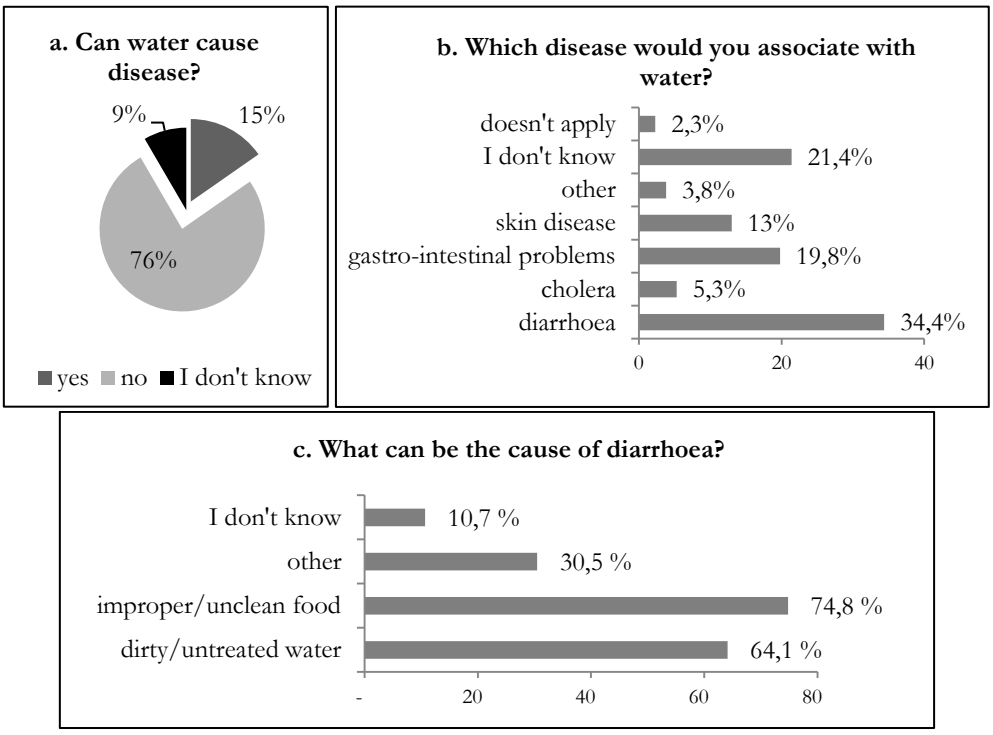
7.3 Identification of risks and local awareness around diarrheal disease

The difficulties in tracing patterns of water-related behaviour and in understanding the reasons behind everyday decisions around water and sanitation have been so far discussed. This section goes into exploring the beliefs and the perceptions that underpin the strategies people employ. It focuses on people's understandings of hygiene, of water safety, of disease and of health. These issues are examined in connection to diarrheal disease, looking particularly at how this disease is being discussed and what kinds of measures are followed for its prevention and treatment.

7.3.1 Where does diarrhoea come from?

Previous chapters have discussed the connections that the preventive health mechanism draws between the spread of diarrheal disease and issues of water use, water treatment and drinking water safety (chapter 6.3). This section questions the impact that such an approach has had to public understandings around the disease. When respondents were asked directly on the relationship between water and disease (Fig 7.11a), the vast majority did not recognise water as a potential carrier of disease (76.3 %) and some of them declared complete ignorance on the issue (9%). The question on diseases that can be associated with water proved even more difficult, with 21.4% of respondents not able to provide any answer (Fig 7.11b). Notwithstanding the above, when people were specifically asked about the causes of diarrhoea, they recognised water as the possible source of risk (64.1%).

Figure 7.11: Distribution of answers regarding the relationships between water and disease



Note: When answers (a) and (c) were contradictive (denial of water-disease relationship but recognition of water as the cause of diarrhoea), enumerators would return to question (b) and ask which disease would one associate with water. When answers did not contradict, question (b) would not be asked and would be marked as "doesn't apply".

Data from conducted household survey, 2011

The time and context when the above questions were asked can explain part of the contradiction in the answers. The preceding discussion was focused on *household* drinking water sources and the water treatment methods followed by the members within the household. It is therefore possible that the respondents automatically assumed the discussion was continuing in the same basis, assuming that 'water' is referring to water which is used and consumed in the household, even if the actual question (Fig 7.11a) was not meant in that way. It is thus, possible, that the given answers were reflecting the respondents' protective stance towards their household, by denying any connection of it with disease. This stance was however changed, when the researcher provided specific examples of general conceptualizations of water, such as "water that has not been boiled" or "water from the river". This was also the case for food, which was recognized as a disease-causing factor when placed under the frame of "food that is being sold on the streets" or "that has gone bad" (Fig 7.11c).

When discussions were clearly about water outside of one's households, many respondents would be very descriptive and critical about the quality of surface water. People often said that "water in the river is very dirty, polluted and fish die in it" and that "people throw everything in the river, even dead animals and waste from livestock"[179]. Some respondents were also of the opinion that even CERWASS-supplied water is of low quality and carries pollutants dangerous for human health. For this they would mostly blame the work done by the mini-supply station managers:

> "The water is contaminated. I told the officer at the mini-supply station but they do nothing about it. When we were getting water from the city centre, it was much better." (Household representative T12, Cai Rang district; personal interview)

> "Water is unclean, with impurities, because the people responsible [for the mini/supply station] are being lazy and they do not clean the tank." (Household representative P26, Phong Dien district; personal interview)

Food that was "dirty" or "improper" was the most prevalent perceived cause of disease (Fig 7.11c). Respondents often blamed canteens, street-vendors and restaurants, for the unhygienic food that they serve[180]. Unlike what was claimed by health officials, the risk of food-borne diarrhoea was equally recognized by urban and rural inhabitants, both of which spoke of food poisoning experiences and food safety problems. Defining what "improper" food is, in terms of diarrheal disease risk, turned out to be a quite diverse and personal issue. Many blamed alcoholic drinks for causing them diarrheal episodes. When they were asked to be more specific, they mostly mentioned "beer that is served with ice", pointing back to the issue of bad water quality in ice production. The consumption of seafood was also commonly mentioned as causing food poisoning. This was assigned to its long transport distances and the spoiling it goes through on the way. Beyond these epidemiologically explained perceptions about food-borne risks, there were also a number of responses which reveal another type of understanding on the relationship between foods, the body and disease and which are closer to principles of traditional medicine. Such were, for example, the claims that certain types of food are causing diarrhoea because they are "too oily", "indigestible" or simply because some people are sensitive to them. Certain other types of food, on the other hand, were considered to be helpful for the body to recover from diarrhoea, as will be described in following sections (7.4.3).

The levels of awareness around the sources of diarrheal disease (Fig 7.11), did not differ significantly for rural or urban households, neither between those with access to piped water and those without, or between surface water dependent households and those with access to other water sources. It is therefore evident that public health campaigns have been equally unsuccessful to establish a clear understanding of the basic connections between unclean water and the incidence of diarrhoea, in all the above groups. After years of water-focused communication efforts and hygiene-promoting activities, it is rather disappointing

[179] Sources: Household representatives (P1, P2, P3, N1, A1, P5, P6, P9, P12, T2, P17), Phong Dien district; survey interviews.

[180] Sources: Household representatives (T9, N13, P42) from Cai Rang district and (N3) from Phong Dien district; survey interviews.

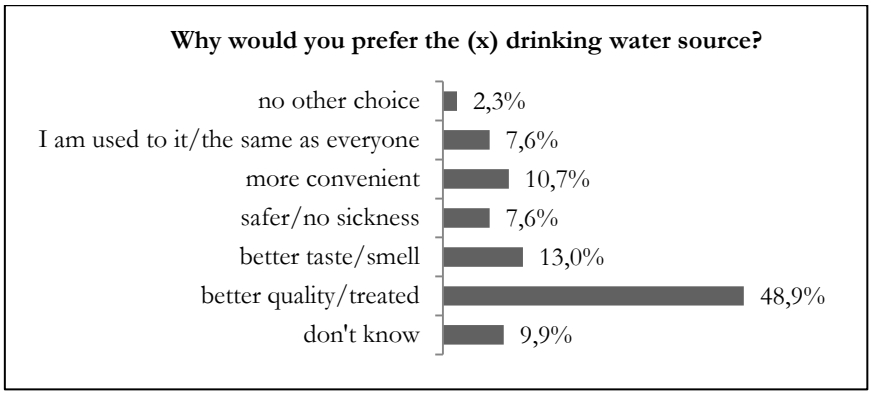
that no more than 59.1% of respondents associated diarrheal disease (including cholera and gastrointestinal problems181) with water. Another observation, with regards to the prevalent perceptions of people around diarrheal disease, is that they are often based on experiential knowledge and traditional beliefs. As it was discussed before, this is something rather disregarded in public health campaigns (chapter 6) and not used as a ground upon which to build new or complementary understandings.

7.3.2 Senses of water safety and hygiene

The most preferred source of drinking water among the respondents was tap water (Fig. 7.5). This preference was almost equally distributed amongst urban (40/62) and rural (37/69) inhabitants. The next preferred water source for drinking was claimed to be rainwater, followed by bottled water, well water and river water. Finally, some respondents chose not to answer that question. Prior its distribution, tap water has typically undergone some kind of treatment. As it was discussed before however, this does not always guarantee its purity. Piped-water supply and especially water that is provided centrally from a water company, was found to be of much better quality than river-, well- or rain- water that is collected and stored in the households. Looking at the responses regarding preference, therefore, it seems that most people have a good grasp of which water is of better quality.

Despite the fact that more than 40% of the respondents were using bottled water for drinking, only 12.2% prefer it from other sources. Compared to piped-supply, buying bottled water also does not make financial sense. The reason why many households do not yet have a water connection -and thus buy bottled water for drinking- is thus, most probably, because the water-delivery network cannot reach them and not because they do not want to be connected. When people were asked about the specific reasons for preferring one water source over another, the most common answer concerned the quality of the water and specifically the treatment water has gone through (Fig. 7.12). However, many of the answers were spread between various other reasons, including the water's taste or smell (13%)[182], the convenience of accessing some type of water (10%.7) and the acquired habit of using it (7.6%).

Figure 7.12: Distribution of answers, reasoning the choice of preferred drinking water source



Data from household survey, 2011

[181] The variety of answers provided when asking what kind of disease would one associate with water (Fig 7.11b) indicated a distinction between what people call "diarrhoea" and what they call "gastro-intestinal problems". The differences between the two are blurry, but could possibly be on the basis of people's own experiences (strong or mild symptoms, accordingly for diarrhoea or gastro-intestinal problems). They could also be paralleled to the distinction between "serious" and "everyday" diarrhoea, that was commonly made by health staff and officials. However, research did not find clear connections between what people call "gastro-intestinal problems" and what is categorized as "everyday" diarrhoea and escapes the reporting of the local (and national health system.

[182] Taste and smell are very close terms in Vietnamese language and are eve used interchangeably in everyday speach (taste (n.) = mùi vị / thị hiếu ; smell (n.) = mùi /mùi hôi thúi / khứu giác).For this reason, the above indicator included them both.

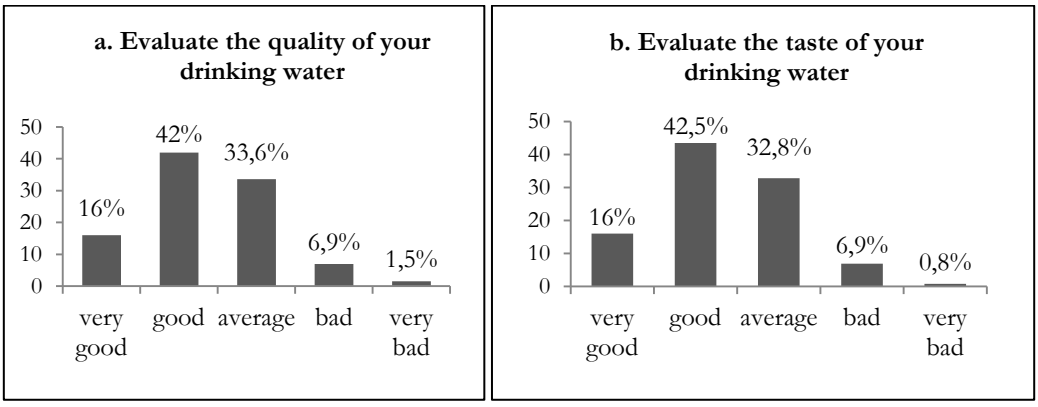
Closer analysis (crosstabs) showed that most people who claimed to prefer a certain water source due to its better quality, treatment or safety, were referring to tap water. On the other hand, most people who said to base their preferences on water's taste or smell would be referring to rainwater (Table 7.5). Despite the distinction between the concepts of quality and that of taste (or smell), which the researcher introduced by creating these categories, these concepts are not necessarily separated in the categories used by respondents to justify and describe their water preferences (Fig 7.13).

Table 7.5: Cross-tabulation of "reasoning of drinking water choice" and "preferred drinking water source"

Preferred drinking water source	**Reasoning of drinking water**							
	don't know	better quality/ treated	better taste/smell	safer/no sickness	more convenient	used to it/ same as everyone	no other choice	Total
rainwater	1	3	11	0	2	0	0	17
tap water	7	49	3	7	5	5	1	77
deep drilled well	0	5	0	0	1	1	1	8
river/canal	0	0	1	0	1	1	0	3
bottled water	1	6	2	2	4	1	0	16
don't know	4	1	0	1	1	2	1	10
Total	13	64	17	10	14	10	3	131

Data from household survey, 2011

Figure 7.13: Distribution of responses concerning the evaluation of drinking water quality (a) and water taste (b)



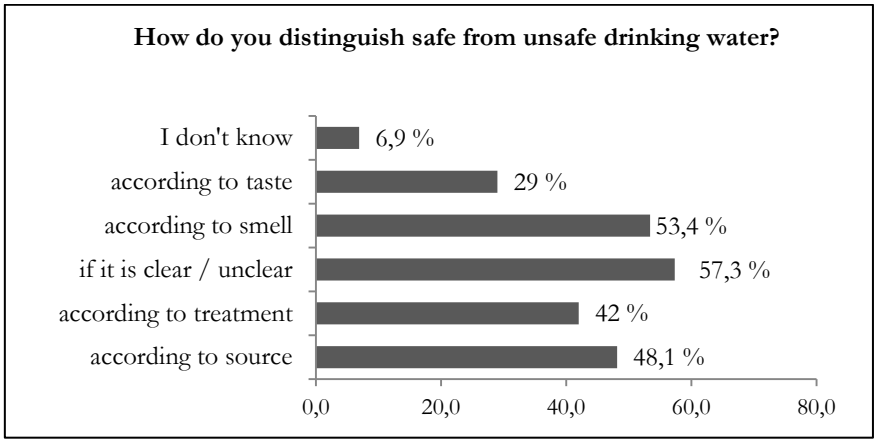
Data from household survey, 2011

The distribution of answers provided on the quality (Fig 7.13a) and the taste (Fig 7.13b) of drinking water are evidently similar. In fact, more than half of the respondents (59%) gave the exact same answer when evaluating the quality and the taste/smell of their drinking water; including people who drink tap water. This shows how these two categories are somehow interweaved in the way people evaluate drinking water sources. In other words, *taste* and *smell* are important indicators of water quality for people in the study region. Tap water is evaluated as of good quality, because of its prior treatment, even though people often

said "it smells bad because of the chemicals [chlorine] they use to clean it". Rainwater, on the other hand, has been often described as having a "sweet" and "cooling" taste and is being preferred exactly from people who base their evaluations on taste and smell (Table 7.5).

The question that arises is whether water of good quality and water that is tasty, is also understood as water that is safe for consumption. The related question revealed that most people judge safety based on their direct senses (including smell, taste and visually apparent clarity or turbidity) and fewer people consider safety as related to the water's source or previous treatment (Fig 7.14).

Figure 7.14: Distribution of answers concerning the distinction criteria between safe and unsafe water



Note: Multiple-answer question. Data from conducted household survey, 2011

This strong connection between odour and health, was also evident in the study of Knudsen et.al (2008), which showed how interviewed farmers strongly believed that if harmful 'smelly air' enters their bodies, it will make them sick (Ibid. 2008). Herbst et al. (2009) also found that it is difficult for locals to make judgments of water-related health risks and impurity, when these elements are not traceable by human senses of vision or smell. The importance of impurity being tangible or felt by people, in order to be recognized as a health risk, can also explain why the habit of hand-washing with soap is mostly practiced "when hands are dirty" (Fig 7.15).

Figure 7.15: Distribution of given answers regarding the practice of hand-washing

Multiple-answer question (N=131). Data from conducted household survey, 2011

Despite the open-ended nature of the hand-washing question, which intended to identify which moments are considered key for hand-washing by the respondents, the initial unprompted answers would often be characterized by confusion ("it is hard to say") or would be too abstract ("all the time" or "whenever I feel I have to"). When possible answers were given as prompts, interviewees tended to always answer affirmatively. Considering this bias posed by the researcher's prompts, the extent to which hand-washing

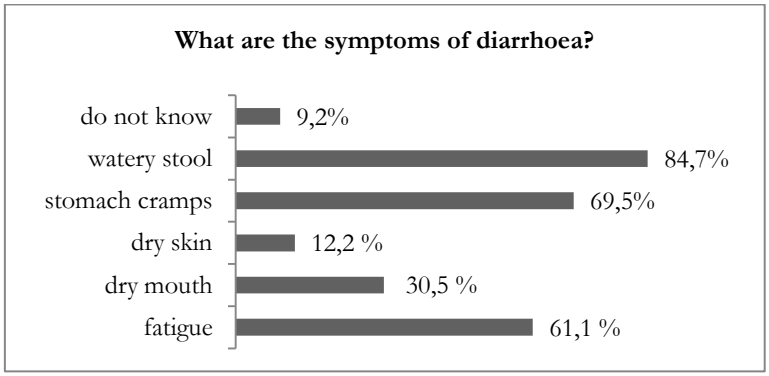
is actually taking place in the above mentioned instances is highly doubtful (Fig. 7.15). Moreover, most people claimed to only wash their hands with water and without the use of soap (48.1%). This percentage was very similar between the responses from urban and from rural areas. Of the people who said to be using some kind of soap for hand-washing (47.3%), many specified that they will only do so after particular situations, such as after cleaning the house or when their hands are looking very dirty. Observations from the field repeatedly indicated that the practice of rinsing hands with running tap water is indeed the most common hand-washing practice. It was also clear that soap was absent from the sinks of many households, public offices, restaurants and even of schools and hospitals.

So far it was shown how evaluations of impurity seem to be based majorly on what the human senses can detect. It is overall clear that the wider public does not have a good understanding of the epidemiological and microbiological aspects of "invisible" health risks. As a result, water treatment practices are not always accurate, water choices are often governed by confusion, sanitation practices remain widely unconnected to water risks and hand-washing with soap is not understood as important and is not yet embodied in people's everyday life.

7.3.3 Identifying, preventing and treating diarrhoea

When residents of rural and urban areas were asked about the symptoms of what they understand as diarrhoea, the vast majority were able to describe those symptoms in good detail (Fig 7.16), which indicates a personal, experiential awareness about the disease.

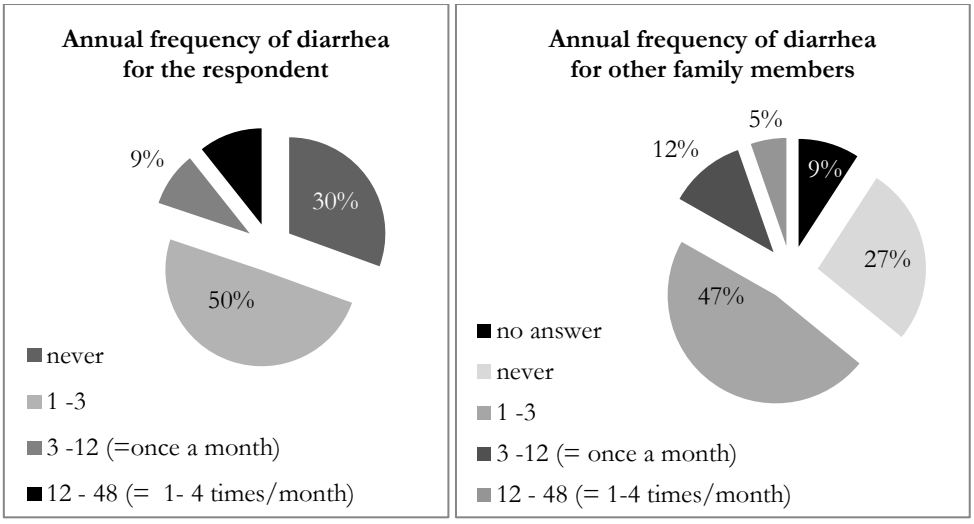
Figure 7.16: Distribution of given answers regarding the symptoms of diarrhoea



Data from household survey, 2011

More than half of the respondents revealed that they will suffer from diarrhoea at least 1 – 3 times every year. However, extracting information on the incidence of disease was a hard task and a lot insisted that neither they (30%) nor their kids (26.7%) have ever experienced the disease (Fig 7.17).

Figure 7.17: Distribution of given answers regarding the annual frequency of diarrheal episodes, for the respondent and for the members of her/his family



*For clarifications of the quality and validity of this set of data look at chapter 6.3.

Data from household survey, 2011

As it was discussed in previous chapters (chapter 4), the Vietnamese have a tendency to self-medicate and not seek for advice in public healthcare units, unless they face health problems that they evaluate as serious (Fritzen, 2007:1617, Nguyen Ha, 2011:12). In the case when people think they require medical help, it is very much likely that they will directly turn to a hospital and bypass[183] the local healthcare system (MoH, 2010a); something which was also recognized by health officials:

> "For the serious diseases they will go to the hospital, but for the normal ones, they will just visit the pharmacy or a private doctor…" (Top official in district Office of Health, Co Do, 18.07.11; personal interview)

Findings from the household survey show that most people spend averagely 100.00 to 500.000 VND[184] every month for their health. The principal health expense for the majority of rural and urban residents is the purchase of medicine (74.8%). The health strategy of almost half of respondents was to avoid health insurance (49.6%) and to buy medicine from a pharmacy or a local health clinic. For reasons already elaborated, the observed low insurance rate and the tendency to circumvent medical consultation are seen as institutionally interconnected facts. In short, the connection between these two lies primarily, on the financial constraints that people face, which prevent them from accessing healthcare and which make health insurance seem like a big expense with no return in the short-term. By taking the risk of remaining uninsured, people often opt for self-medication in the private sector.

Even if they are insured, Vietnamese often avoid public healthcare facilities, because of the low trust towards the services that these facilities offer. Local clinics might be the easiest, closest and cheapest place one can turn to for expert medical advice, but they have been described as "...busy places where one has to queue and that is inconvenient" and where "the medicine are not as good as the ones you can get in the pharmacy", whereas "going to the pharmacy is easy and fast" (Household representatives from Phong Dien (14.10.2011) and Cai Rang (18.10.11) districts; in-depth interviews). The widespread attitude of self-medication has also been reported for the case of diarrheal disease. Treatments for diarrhoea are often sought outside of the public healthcare system, unless the episode develops into a "serious" one:

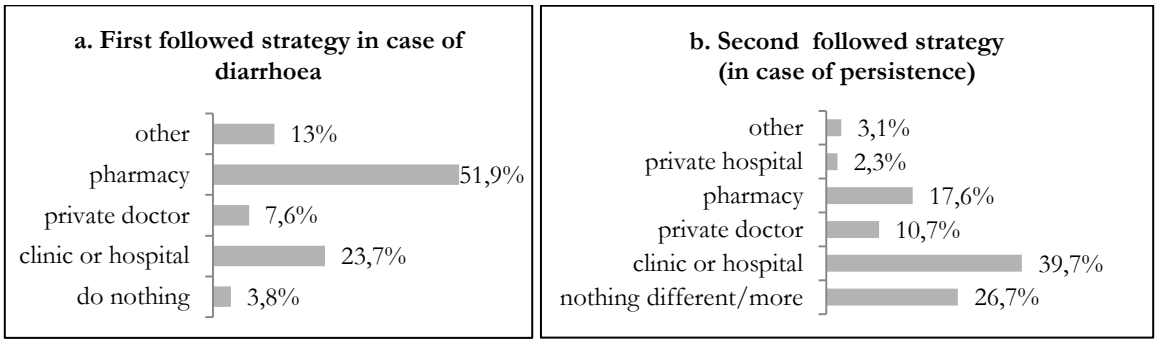
> "Although the number of adult patients hospitalized with diarrhoea is not high, the actual number of people with acute diarrhoea in this hot season is much higher. That is because adults often self-treat the symptoms

[183] The term means that people are avoiding the commune- and district- level health care facilities and are rather seeking treatment in central hospitals, even for diseases that could be handled by local health units.
[184] Equal to 3.5 - 18 Euros

of diarrhoea. Patients visit the hospital only when the symptoms are severe, like high fever, vomiting, abrupt bowel movement, severe abdominal pain, or after self-treatment has brought no result" (Thanh Nien online, 2010).

Findings confirm this general tendency to visit the pharmacy, as a first strategy for "normal" disease (Fig 7.18a). This was particularly common for the poor residents of Yen Binh area in urban Cai Rang. If the symptoms of illness do not recede, many respondents said that they would then turn to a public clinic or a private doctor. However, a significant percentage of people would continue with the same (first) strategy (Fig 7.18b).

Figure 7.18: Distribution of answers considering first and second followed strategies in the case of diarrhoea occurrence



Data from the household survey, 2011

Many of the respondents saw diarrhoea as an illness that is rather common and is not alarming unless it causes severe stages of dehydration and thus threatens one's life. However, as common as it is regarded, some respondents were very reluctant in admitting their personal experiences of the disease. The attitudes of people, when diarrhoea was discussed in personal reference to them, revealed that this reluctance was due to a sort of stigmatization that the disease carries. Many of the interviewed women would be embarrassed to discuss anything about the issue and they would even avoid using the word "diarrhoea" when referring to themselves, calling it rather a "belly pain" or "stomach ache". Some others would nervously laugh and completely avoid giving an answer, declaring complete ignorance about the disease. These reactions were obvious expressions of embarrassment. It is not clear, however, whether this embarrassment was indicating a tabooed perception of defecation (as a topic not fitting to the female profile or not proper for conversations that one has in public), or whether the disease itself carries some notion of disgrace related to inferiority, poverty and impurity.

Diarrheal disease is often publically discussed as a negative outcome of improper practices followed in a household, including mostly water- and food- related issues (via the central motto of "boil the water and cook your food"). The role of female actors is dominant in these spheres, as women are primarily responsible for work in the household, for preparing food and for keeping their children clean and safe. , therefore, have certain responsibilities towards their families and also towards the state, which pushes for "healthy, cultural communes" and "happy families" (MoH, 2004). The hesitation of some interviewed women to admit the incidence of disease within their families is then also understood as an effort to safeguard their own reputation as mothers and housewives. Gammeltoft (1999), in her study of women's health in Vietnam, explains how the human body needs to be understood as containing "both ethical and aesthetic aspects: it unites moral concerns with strivings for beauty and grace" (Ibid 1999:134).

Following the discourse of a number of health officials, some respondents also tended to discuss the disease as something happening only to "others" and usually to the poor, the rural or generally to those who are ignorant of proper hygienic practices[185]. Apart from moral or social considerations that might

[185] Sources: Household representatives (P42, P25, P39); survey interviews.

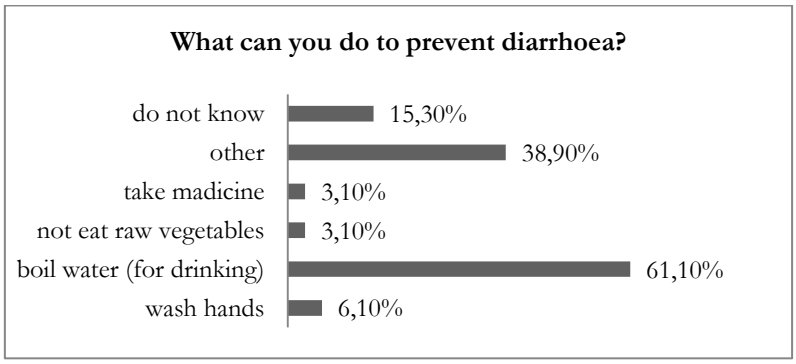
stand in the way of women admitting their own personal exposure to risks of diarrheal disease or to the experience of the disease, there is also the "optimistic bias" (Frewer et al., 1994) that people tend to apply to themselves (see chapter 6.2.2). As it was seen above, water or food that is coming from within one's household, is rarely considered by the members of this household as dangerous. Thus, the exposure to a health risk is automatically underestimated. Similarly, people might underestimate the severity of diarrheal episodes that they have gone through, categorizing them as "gastro-intestinal problems" or "indigestion", but not as diarrhoea.

Nevertheless, not all of the respondents rushed to deny having any experience of the disease and some spoke openly about its high frequency and the wide spread[186]. As one farmer commented, "no one can avoid diarrhoea; we can get it from anything" (Household representative P18, Phong Dien district; survey interview). As another elderly rural inhabitant frankly admitted:

> "Diarrhoea is the number one health problem; I get it four times a month" (Household representative N1, Phong Dien district; survey interview).

However, many of the crucial preventive measures against diarrhoea proved unknown to, or not practiced by, many of the respondents (Fig 7.19). The message of "only drink boiled water" was a strong measure of prevention against diarrheal disease, equally known to rural and urban inhabitants (crosstabs). However, hand-washing was almost completely ignored as a preventive strategy, with only 6.1% of the respondents recognizing its potential in protecting from diarrhoea. This disregard towards hand-washing was again equally present among rural and urban inhabitants. In-depth interviews showed that this reflects from the main messages circulated in health campaigns, which are reduced to the advice of "keeping your house environment clean, cooking food well and boiling the water before drinking" (respondent HH2, rural commune; personal interview) and ignore hand-washing.

Figure 7.19: Distribution of answers regarding the known preventive measures against diarrheal disease



Data from household survey, 2011

Firstly, the findings reaffirm that there are serious shortcomings in the current health communication mechanism. They further prove how little importance hand-washing is given outside of school classes and limited children-focused campaigns, underlining the serious lack of awareness about the connection of this practice with the spread of diarrheal disease. Secondly, the findings contradict claims about the rural and the poor being those particularly ignorant of disease-preventing measures, seeing how the population was collectively unaware of the usefulness of hand-washing. Moreover, other possible strategies that can significantly help in the control of diarrheal disease, such as vaccination, breast-feeding and hygienic food preparation, were completely absent from the given answers and indicate further gaps of awareness among the population.

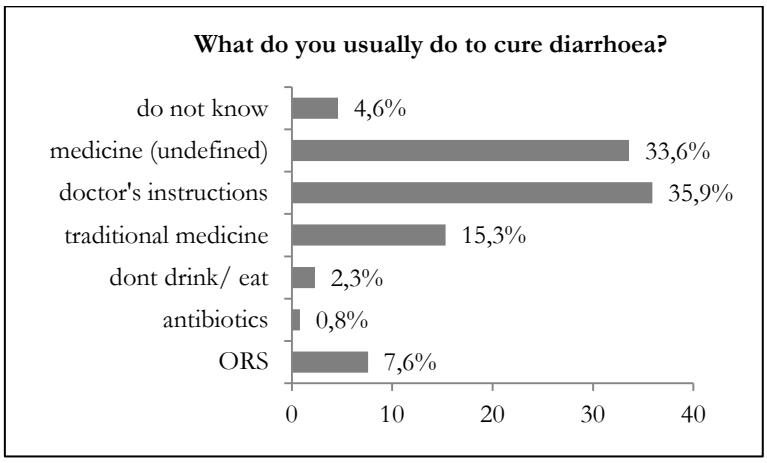
Interestingly, a significant number of people gave answers that did not fall into any of the predefined answers. Most of the preventive strategies were described under the 'other' category (Fig. 7.19), as they

[186] Sources: Household representatives (T18, P28, P18, N1); survey interviews.

were too diverse to be included in one category. These alternative preventive strategies included the consumption of certain beverages and foods, such as dark tea or coffee with lemon, small quantities of aged mangosteen alcohol, young green guava leaves chewed with salt and ginger tea. Often enough, the same strategies that were mentioned as preventive would also be identified as curative. The blurred lines between the concept of prevention and cure might have also been a reason why many people could hardly identify which every day practices contribute to disease prevention (15.3%). Some respondents claimed that the prevention of diseases such as diarrhoea requires a consistent schedule of sleeping and eating. Others believed that avoiding fruit and vegetables that have been grown with pesticides and fertilizers could protect them from cholera. The use of salted water for washing vegetables (preventive) and the consumption of coconut water with salt (curative) were the only two mentioned 'other' preventive practices that had some connection to medical explanations of disease.

When people were specifically asked about the means of treating diarrhoea when it occurs, most of them said they follow medical advice (35.9%) or take medicine (33.6%), but not specifying whether this was from the public or the private sector (Fig 7.20). The percentage of people recognizing the usefulness of oral re-hydration solutions was disappointingly low (8%) and further indicated the low prioritization that the CDD program nowadays receives. When people were specifically asked about the type of medicine that they are prescribed for diarrhoea, some mentioned ORESON or SMECTA (types of oral re-hydration solutions) and charcoal pills that can fight the symptom of diarrhoea. Others, however, presented medicine that is suitable for problems of indigestion, heartburn, stomach ulcers or gastritis[187].

Figure 7.20: Percentages of given answers on the treatments of diarrheal disease.



Data from the household survey, 2011

The inappropriate and/or unadvised medication accentuates the problem of controlling the disease and can potentially lead to the disease's prolongation instead of cure for the patient. Overall, the results underline the crucial role of the medical staff as well as the pharmacists, in prescribing and selling medication that is adequate to cure (and control) the disease. Last but not least, it was clear in the results that traditional medicine was sought by a significant percentage of the respondents (15.3%), even if this is not advocated in any official communicative material regarding the disease.

[187] The commercial names of some of the medicaments presented as anti-diarrheal were: Gastra QK9, gastrogel, Kamingast-S, EDOZ, GD carbo, and AXOLOP (loperamide 2mg).

7.4 Conclusions

Looking into the perceptions and the practices of everyday people around issues of water, sanitation, hygiene and diarrheal disease, the findings demonstrated that there are connections between people's assessments of safe hygiene, their cultural and social norms and their socio-economic capabilities. People strive to have clean water and they are very much concerned about their health and well-being. As findings show, however, the type of information and the resources that they have at hand, might be limited or faulty and thus, might not allow them to adopt the preventive behaviours that can protect them from disease.

Public understandings on water safety were seen to follow particularly intricate patterns in the case study areas. These local understandings did not always agree with assessments of water quality that rely on the measurement of pathogenic concentrations in water. While many people would base their water safety evaluations on water quality information, thinking about the water's origin and its prior treatment in relation to its designated use, most of them would base their evaluations on the water's smell, its taste and its turbidity. Considering the high levels of water pollution and the lack of water treatment systems in the region, such methods appear today highly risky, at least concerning diarrheal disease. Regarding sanitation, there was a varying amount of confusion, relating to notions of hygiene that were *felt* (personal senses) versus those that were *known* (acquired information coming from institutions). As a result, for example, open defecation was considered by some as healthier, while a latrine with a flush was considered by others as more hygienic. Not having a holistic understanding of the cyclic and interconnected processes of water use, wastewater disposal and sanitation, it was difficult for people to agree on what constitutes safe and hygienic sanitation and to relate their household practices with the health risks that they are exposed to.

While a large portion of population depends on groundwater, rainwater and river water, many also maintain fishpond toilets or discharge sewage into the canals. Enhancing the knowledge of how water loses its quality and becomes unsafe for human use and consumption, seems to be the missing key for improving people's water treatment and sanitation behaviours. However, traditional (sensed, experiential or felt) and new (informational, acquired, scientific) understandings of what constitutes healthy, hygienic and sanitary, are currently perceptually distant and sometimes contradicting, without however clearly excluding each other. Taking this into account, any efforts to enhance knowledge on the prevention of diarrheal disease would have to use both these types of understandings and build on them, in order to reconcile or to clearly differentiate them in people's hygienic consciousness.

Generally, financial constraints were found to massively hinder access to improved WSS and especially for the poorest. Even in the cases when WSS improvements where feasible, however, the motivation for attaining them was not always fuelled or accompanied by a health-related understanding of water safety and hygiene. The lack of clarity regarding these issues, as described above, paralleled the low awareness around the transmission pathways of diseases such as diarrhoea. As a consequence, disease prevention was a loosely understood concept. People could hardly pinpoint the prevention of diarrhoea to strategies other than "boiling water and cooking food well". Not being clear on the causes or on the ways to prevent from diarrhoea, the public treated it as a miasmatic topic. Many were hesitant to even discuss about it and often assigned diarrheal disease exclusively to poverty and backwardness. In order to maintain a discursive distance from the disease, there was a general tendency of people claiming that they follow certain hygienic behaviours (such as hand-washing, covering their water containers, having hygienic latrines), when in reality they were not. In a similar manner, while most recognized water and food as possible carriers of diarrheal disease, this was only admitted for water and food that were found outside one's household and related to *other* people's bad habits, dirty kitchens or careless water behaviours.

The problems of bad hygiene and of disease were thus not perceived as clearly technical or microbiological, but were enmeshed in certain socio-economic categories. As one result, instead of feeling

empowered and capable of controlling the disease in their communities, people appeared to be afraid of being associated with its "foulness" or being blamed of not following the publically advocated preventive measures. Diarrheal disease then becomes not only an indicator of a certain (low) social position, but also of (low) citizenship morals and (low) compliance to state regulations. Considering the notions of social morality that the state has attached to public health and prevention (discussed in chapter 6), these findings do not come as a surprise. The public opinions and attitudes that were expressed towards diarrheal disease also reflect the claims about "ignorant and indifferent poor" who do not care about their health, hat state representatives repeatedly used in order to justify the failures of the preventive health mechanism.

The results of the household survey showed that hygienic behaviours and prevention strategies can be inadequately practiced or misunderstood by both the poor and the better-off, as well as by those living in rural and in urban areas. This further underlines two major misconceptions that prevail in water and sanitation approaches in Vietnam and in other regions of the world. The first is that the expanded coverage of "improved" WSS equals to improved public health understandings. As it was made clear, some people construct "hygienic" facilities without knowing how these might protect them from diarrhoea, at the same time remaining uninformed of other preventive and curative measures, which can be even more effective in controlling the disease. The second misconception is that problems of disease can be boxed along with administrative definitions, such as 'urban' or 'rural'. This chapter demonstrated that people's vulnerability to disease is shaped by inequalities of access to resources and services and that these inequalities move beyond administrative boundaries.

In a context of intense population movement between rapidly changing rural and urban areas, town centres and city fringes, it would be of more value to unmask these administrative categories and to address problems in their socio-political complexity. Examining the topic of diarrheal disease indicated that there is the need to improve people's health literacy. In order to achieve that, health campaigns not only need to expand and multiply, but also to promote inclusiveness, participation and empowerment, instead of stigmatization, shame and fear.

CHAPTER 8

DISCUSSION AND CONCLUSIONS

The central aim of this study has been to examine the constellation of institutional structures, cultural traits and socio-political dynamics that determine the risk of diarrheal disease in Vietnam's Mekong Delta. In order to do so, the study initially looked into the country's health institutions, which provide the setting in which the disease survives and spreads (chapter 4). Within the wider field of health risk management, attention was particularly paid to the implementation of strategies that are widely known to be effective in the control and prevention of diarrheal disease and that have been -at least on paper - adopted by the Vietnamese government (chapters 5 and 6). The analysis clearly demonstrated that there are major gaps between policy and practice and that implementation is ridden by inequalities and institutional weaknesses. This is not only evidenced by issues of access to safe water and hygienic sanitation, but also by the ways in which the state tries to shape hygiene-related behaviour in the population. The research then drew attention to how actors define and experience diarrheal disease, focusing on the strategies followed to deal with the disease, as well as on the prevailing ideas and perceptions about the disease, both in urban and rural settings (chapter 7). Combining institutional and anthropological findings, the gaps between policy and practice become apparent in the habits and the beliefs of the local population. Based on these findings, it is becoming clear that such discrepancies cannot be explained simply by the insufficient resources that are being used to remedy the disease's spread, but by the insufficient respect and unequal attention that is paid to the actual problems that people face and to their varying understandings of disease.

This chapter synthesises the empirical findings that were presented and discussed in previous chapters. It does so by revisiting the analytical categories that this study chose to examine and by commenting on how these findings contradict or supplement previous research on the topic. Subsequently, the analytical framework followed is reflected upon in order to trace its contribution to the field of political ecology. The chapter also highlights some possible areas of future research that have emerged in the course of this work. Finally, the chapter draws to a close by summarising the essence of this study's conclusions and by sketching a way forward for the broader field of public health.

8.1 The interplay of factors shaping the risk of disease: a synthesis of findings

Background information and primary data from the Mekong Delta indicated that diarrhoea remains an unresolved problem for thousands of people annually, many of whom are of a very young age. The population still suffers the same morbidity levels of enteric diarrheal disease as it did 30 years ago. While cholera and typhoid appear less often and with lower prevalence, diarrhoea has sustained a high incidence over the years (MoH, 2012b, Kelly-Hope et al., 2008). Given its preventable nature, questions about the disease have continually garnered attention and begged for context-specific answers explaining the real obstacles that stand on the way of its successful worldwide control.

The international health community has a vast amount of accumulated knowledge at hand in the form of principles and guidelines, which is available to Vietnamese policy-makers (MoH, 2009c). These high-level documents become referenced examples of national policy but are not being adopted in practice (see section 6.2). The inertia in policy is clearly demonstrated, for example, by the fact that the Rotavirus vaccination remains inaccessible for the masses and that the two crucial preventive strategies against diarrhoea (breast-feeding and hand-washing with soap) are still in great need of promotion. Evidence

showed how the feeble or absent implementation of the state's declared policy objectives is contributing to the poor capacity of the population to embrace the recommended preventive measures. This weakness of the prevention policy was evident in the institutions that comprise the sector, with many of the actors in public health remaining ill-informed and therefore unable to effectively perform their personal and professional contributions in the fight against diarrheal disease (section 6.3.3).

Although Vietnam has a history of preventive health success (Marr, 1992), it currently faces serious health challenges, among which is the persistence of this preventable disease. Considering the significant economic growth that the country has been experiencing during the last decades (GSO, 2011b), which could provide support for the resolution of health issues affecting its population, the high morbidity rates of diarrhoea is indeed a peculiar issue. Scholars who have approached similarly unusually persistent health problems argue for the consideration and analysis of the various contextual synergistic factors which shape health problems (Briggs, 2003, Curtis and Riva, 2010). These factors often go beyond medical fields. They can either translate into direct health outcomes or can affect disease indirectly, appearing as inherent characteristics of the systems within which disease acts (Bloom et al., 2007, Morris, 2010). With this in mind, this study looked at the case of Can Tho City in Vietnam's Mekong Delta, investigating the risk of diarrheal disease within four contextual and synergistic spheres: the personal, social, environmental and political.

8.1.1 Health policy and the "normalisation" of diarrheal disease

Access and attitudes towards public healthcare

Fundamental changes in the administrational and economic policy in the health sector has rendered public healthcare in Vietnam less accessible and less trusted than it perhaps was some decades ago. A significant decrease of central funding to health, which now barely covers 38.5% of national health expenses, has impacted the local units of the commune and hamlet clinics, which are increasingly depending on a trickle down from provincial funding. Even though the state has promised support to local health units as a national objective (MoH, 2007b), this is not being fully realised. In many localities, clinics are deteriorating, with this phenomenon being accompanied by a tendency to self-medicate and to avoid interaction with the healthcare mechanism at the local level. This weakened access to public health units – or the weakened "effective availability", as Roberts et al (2003) describe it, becomes more evident when looking at the trends in participation in the public health insurance scheme (which guarantees access to public healthcare). Namely, every time the health insurance becomes obligatory for more fragments of the population, the rate of insured people rises. However, almost all of the people who are not yet obliged to insure themselves (farmers, self-employed) choose not to pay for public health insurance (section 4.2.2).

When the public health system is not preferred, cure-seeking behaviours lean towards the private sector. However, private services are mainly concentrated in the urban regions and can range widely in quality and cost. With 27% of the country's population living in poverty (World Bank (WB), 2013) and with the inhabitants of remote rural regions disproportionately impacted by poverty (GSO, 2013), access to basic health care of one's choosing is evidently not easy. The current situation of access to healthcare certainly reflects wider socio-economic inequalities (section 4.2.3). The deterioration of primary healthcare units leaves the poor with no better option for low cost healthcare than self-medication. The findings of the household survey and of the in-depth interviews with inhabitants in Can Tho (section 7.3.3), confirmed that diarrheal disease falls into the category of diseases, for which the public does not consider it necessary to seek professional medical advice, unless they reach severe stages (Thanh Nien online, 2010). Moreover, findings from the household survey showed that it is especially the poor from the urban areas that tend to self-medicate and to avoid interaction with doctors when they, or their children, get diarrhoea. Barriers of access to public healthcare were seen to exist also in higher-level healthcare. Contrary to local clinics, the

demand for services in the central specialised hospitals is high. This over-demand for treatment is, however, not addressed in a transparent and equitable way. Literature has repeatedly pointed to the frequent phenomenon of under-the-table payments, double standard treatments and widespread corruption, which have come to be everyday experiences at high-level healthcare units (Ha Mi, 2013).

Allowing decentralisation to diminish the quality of local units, on one hand, and tolerating the frequent financial abuse of patients, on the other, the Vietnamese state appears both unwilling and unable to safeguard healthcare access for the majority of people. Through opening up to the private sector and the toleration of an ill-regulated sector, the government has largely transferred its health-related responsibilities to the individual citizens, rendering healthcare dependent on one's willingness and ability to pay. Foley (2009: 60) finds that this is a common trend globally, as "international health priorities moved away from primary health care strategies and from their implicit assertion that universal health care is a basic human right". As the author continues, the experience of decentralised healthcare arrangement in Senegal has, similar to Vietnam, "meant the transfer of responsibility [to the city] with no transfer of means" (Ibid. 2009:71). Considering the low utilisation of healthcare services and the great number of uninsured people, empirical results showed that the healthcare system in Vietnam faces three major challenges in relation to diarrheal disease:

- widespread unadvised self-medication which relies primarily on the opinion of usually untrained pharmacists
- large portions of the sick population escape the reporting mechanism, because disease is being treated at home or via private practitioners
- the public health insurance and the healthcare system is being weakened financially, with the funds that are procured being circulated in an ineffective manner that is open to abuse (i.e. many people are not insured and much of the health spending is not going to public healthcare)

With diseases like diarrhoea that can be easily controlled only when an adequate diagnosis is administered in a timely manner, a lack of accessible and affordable primary healthcare is raising the possibility of disease aggravation and spread. At the same time, the regulatory framework concerning the provision of medication is weak and the retail of pharmaceuticals often takes place outside of legal provisions, hardly ever following a practitioner's prescription (section 4.3.2). Moreover, the decrease in utilisation of primary healthcare clinics compromises the potential for these units to carry out grassroots preventive health activities, a responsibility which is especially and exclusively assigned to them (MoH, 2007b, CERWASS, 2003).

What needs to be emphasized is that people's behaviours are not independent from the health system and the inequalities embedded in that system. The public sees the healthcare mechanism as one that is expensive, offering low service quality and having low capacity. This seems to be largely the reason why the Vietnamese public has developed an aversion to it. This aversion is effectively lowering people's expectations regarding their healthcare rights, since they exercise those rights increasingly only in the case of "serious" illness. This implies that the transfer of responsibility for health has not just shifted from the central state to the local health authorities, as mentioned before (Foley, 2009), but rather has shifted all the way down to the citizens. Individuals are now left to make the evaluation of how much money is worth spending on health, or, in other words, when is disease worth the trouble of seeking medical advice and treatment. The old proverb of "sức khỏe là vàng" - meaning "health is gold" - indicates how much the Vietnamese people value good health. The latest developments affecting the functioning of health institutions, however, has unfortunately provided for a more updated interpretation of the above quote: "health depends on wealth".

Interpretations of "normal" diarrhoea

Looking at the case of diarrhoea, the analysis demonstrates how a certain "normalisation" of the disease has been reached, not only through the public discourse in circulation and the healthcare policy being implemented, which tend to underestimate its spread and impact, but also through people's behaviour in response to its frequent incidence. Respondents often referred to diarrhoea as an "everyday" and "normal" disease. In-depth conversations showed that this "normality" refers to their familiarity with the disease, as it happens frequently and to everyone. Despite this familiarity, findings did not indicate that the public has a sound awareness about the recommended practices for its cure and prevention (section 7.4.3). Health cadres and state representatives in local offices spoke of the disease's "normality" in different terms. Their line of argument was often referenced the disease's low mortality rates in order to suggest that diarrhoea is a "normal" disease, from which people can easily recover (section 6.2.1). This claim was also used to justify its relative de-prioritisation in national health policy. Therefore, despite the disease's frequent occurrence, it is presented officially as a trivial issue that the preventive health system of the country is successfully dealing with.

Diarrheal disease is "normalised" also in another, more technical way, through its system of reporting and monitoring (section 4.3.2). A certain incidence is not considered as a diarrhoea epidemic unless it surpasses a baseline of cases in the population. This baseline, however, is based on the average incidence of the disease during the last 5 years, meaning that high morbidity levels of the disease will not appear as an outbreak if these levels have been maintained for years. At the same time, the public healthcare system does not report patients with diarrhoea unless they exhibit acute symptoms (indicating cholera or typhoid); thus the reporting mechanism itself is not capturing the actual baseline that is used for epidemic assessments. The contradictory and arbitrary reporting that has become standard in the health sector is further blurring the picture of the problem. Therefore, the extent of diarrheal disease spread and its significance for epidemiological and broader health prevention assessments remains unclear. As Trostle (2005) underlines in her anthropological assessment of diarrhoea and cholera, "when ill health is seen as normal, this itself can influence health service use and disease epidemiology".

Overall, although diarrheal disease is discussed and perceived as "normal" by many people, its normality differs according to the generators of such discourse. The disease was discussed as normal by many people living in poverty, who "don't know what to do to avoid diarrhoea" since "access to clean water is hard" and who, therefore, "can't avoid it"[188]; this all attests to their feelings of helplessness towards a health problem that they cannot address. This contradicts the type of normality that is constructed by many health cadres, who present diarrhoea as being under control, with the occurring cases being minor and not serious. This is not only underestimating the actual number of patients, but also disregards the health burden of those frequently suffering from diarrhoea and, in particular, the consequences it can have on child development, the susceptibility to other diseases, and people's day-to-day sense of being healthy. Literature suggests that an early assessment of a patient's de-hydration stage by an expert is of immense importance and that the inappropriate medication (i.e. antibiotics) can seriously inhibit a patient's recovery (Thapar and Sanderson, 2004). As was mentioned before, the cure-seeking paths for diarrhoea in the study region do not often include a medical diagnosis or the adequate rehydration treatments. Moreover, nutrition deficits are common among children in the region of the Delta and were found to be as high as 29% (stunted children) in Can Tho City (PHC Can Tho City, 2011a). Considering the repeated episodes of "normal" diarrhoea that often go unadvised, this points to a health issue particularly serious for the country's young, which appears to be deferred to the future by remaining under-addressed.

[188] Excerpts from the interviews held with household respondents in the urban and rural study areas in Can Tho City.

Misleading indicators of water-related health success

The reasons behind the retreat in national efforts to address diarrheal disease preventively and curatively are connected to the type of targets that are set in a global level. Many development organisations value health as a central humanitarian goal and try to evaluate it through selected indicators. The health-specific Millennium Development Goals, for instance, emphasize the control of HIV, malaria and "other diseases", focusing specifically on the reduction of children mortality rates (WHO, 2012e). In Vietnam, much of the official discourse and practice were aligned with such global health targets. Indeed, the country has managed to control malaria and is placing significant efforts into the prevention of AIDS, improving maternal health and increasing the number of healthcare establishments. Thus, the projected image of the country for international evaluators is largely one of good public health policy. As mentioned before, most of the reported cases of diarrhoea are not fatal, thus the disease does not appear as much of a threat to people's lives, unlike AIDS or pneumonia (WHO, 2012c). Nevertheless, it is also true that the annual incidence of diarrhoea - in both children and adults - is much higher in Vietnam than the rates of the above mentioned diseases. Diarrhoea constitutes a health hindrance for a very significant portion of the local population, but it is rather silent as an indicator of health or public health policy.

The target of fighting diarrheal disease does not prominently figure in the global health policy agenda, where it is addressed primarily through targets in the field of water supply and sanitation. This field has gained a central position in the efforts to eradicate all types of waterborne and water-related disease, as much in Vietnam as elsewhere. The discussion on indicators of "improved" facilities ranges from the subjects of disease eradication to rural development, women's empowerment and environmental sustainability. It was made evident however that, in the case of Vietnam, the presented success in WSS development masks the actual health objective of eradicating disease, which is not being achieved. Indeed, such indicators continue to only be concerned with the number of hygienic facilities constructed, subsuming many assumptions on the local distribution mechanisms, as well as on the behavioural patterns with regard to the use and maintenance of such facilities. Similar to what has been observed in other contexts (Movik and Mehta, 2010, Bain et al., 2012), the indicators that are used to describe access to clean water and sanitation in Vietnam were not able to capture the spatial, economic and social inequalities in the sector. Moreover, standardised indicators do not often describe local water-cultures, being thus rather uninformative about the actual effect that WSS expansion has in alleviating the risk of disease (chapter 5).

A closer look at water and sanitation realities has illuminated how the part of the population that is likely to be consuming contaminated water and to be living around unsanitary environments is much larger than what national statistics suggest. In Can Tho City, the percentage of people with access to "hygienic" water , according to the local reporting agency, mounted to 71.5% in 2011 (CERWASS, 2011a). The definition of 'hygienic water' can include rainwater, well water and river water, as long as "adequate" treatments are applied to this water in the household level (CERWASS, 2011b). The results of the household survey showed, however, that most well-water and rainwater was not being disinfected before consumption (45% of users stated that they do not boil this type of water and 44% do not filter it either). This indicates, moreover, that less than half of rural households had access to piped supply and that many people depended on the purchase of bottled water for their drinking needs. The exposure of the population to water that is polluted was also evident in the number of unsanitary toilets that were found in the study areas. More than 30% of the respondents practiced open defecation and the phenomenon of latrines discharging sewage directly into the river was also not rare (section 7.3.1).

Notwithstanding the advantages of expanded water supply networks, a vast majority of people in Can Tho continue to use water that can only be free of pathogens if it goes through further treatment at the household level (CERWASS, 2011a). This percentage reached 60% in the case study areas, assuming that the centrally supplied water does not need further treatment (section 5.2.3). The results of the household survey further show that the importance of water treatment is still not fully appreciated by the wider

public. Both in practice and in theory, more than half of the interviewees said that they base their drinking water choices on factors other than its measured quality or prior treatment (section 7.3.2). Moreover, no more than 42% of the respondents considered prior treatment the basis of their assessments for water safety. If these claims reflect how and why people treat their water (or not), it becomes clear that people consume water of very different quality than what is assumed when simply looking at the parameter of access to water from a "hygienic" water source.

Apart from the false impression about the actual situation of water safety, the fixation of the Vietnamese bureaucracy with counting constructions, producing numbers and publishing reports (Waibel, 2010) has affected the way that local health workers operate. Namely, the duties and interests of preventive health authorities have been monopolised by the expansion of WSS and shifted away from "software" approaches like health education (section 6.3.3), an area in which the health system has not developed concrete indicators.

The trust placed in what indicators supposedly indicate was also seen to guide policy-making and priority-setting within the sector of WSS. In Can Tho, the expansion of "improved" water access appeared to be moving apace, but only to 43% of the population had access to improved sanitation facilities (CERWASS, 2011a). This reflects the nationally reported trend of a satisfactory expansion of water supply but a weak expansion of sanitation. As a result, attention - both nationally and regionally - turned towards the expansion of "hygienic" toilets and away from facilitating safe water access for the people still lacking it. This turn was made clear, not only through the guidelines circulated and the content of communicative activities, but also in the allocation of funding. The regional budget for micro-credit loans and subsidies in Can Tho were almost entirely directed to the sector of sanitation. These are the two main programs for supporting the poor in their efforts to achieve safe water supply and sanitation and for promoting the building of healthy communities. A close questioning of how these programs have materialised in Can Tho City showed that they are interdependent, such that the beneficiaries of one program are typically the beneficiaries of the other. Essentially, subsidies are only given to people who can undertake a microcredit loan. Thus it became clear that many people living in poverty are being excluded from both because their trustworthiness in repaying a loan is low. Considering the above factors, it appears that, in sum, the prevention of disease seems to boil down to the promotion of sanitary constructions, which in turn are not accessible to those that need support the most.

In the sector of WSS, it is important to note the contradiction between what people are experiencing and what the state reports and projects. While statistics of "improved" WSS indicators are climbing, the details that form the picture of water supply and sanitation in the region constitute a somewhat dirtier reality, which the Vietnamese state does not want to bring attention to. Although connections do exist between the presence of sanitary facilities and improved human health, what seems to be the common denominator between the sectors of WSS and health in Vietnam is the drive to satisfy indicators of development, such as increased coverage and lowered mortality rates. The preventive approach focuses on aspects that help in meeting such global targets and thus, probably, in attracting international funding. However, it often ends up having very little to do with the everyday health problems that people face. What seems to guide policy and prioritisation of proclaimed health targets in the country (MoH, 2007b) is the projection of a "healthy image" but not the cultivation of a healthy population. In the course of this process, the initial purpose of supporting health education, which is to promote healthy practices and prevent disease (instead of simply counting less deaths), appears to have been forgotten. The discursive "normalisation" of a frequently experienced disease is a good example of how this takes place. The promotion of water and sanitation facilities, irrespective of whether these change the quality of water people consume or the environmental sanitation that they experience, is another example.

8.1.2 Constructing sick identities of poverty and rurality

Considering the limited access of the poor to healthcare and the constraints they face in reaching programs of support for water and sanitation improvements, their vulnerability to diarrheal disease is relatively high (sections 5.3.2 and 5.4). Some correlation between poverty and diarrheal disease was also noticed through the study of health records, where the poorest regions of the country demonstrated the highest incidences (MoH, 2012b). This correlation was, however, not so clear at the scales of the province and the district, indicating that there is more complexity involved in the distribution of health risks than what macro-level statistics of poverty and health can show (section 4.3.1). Nevertheless, the association of poverty with diarrhoea has often been used by state representatives as a way of justifying the disease's persisting incidence. Public health failures are often presented as a result of improper hygienic behaviour from the side of the poor; in this way, they dissociate poor health outcomes from the way policy has been designed and implemented.

When the interviewed residents of Can Tho talked about how frequently they experience diarrhoea, there was no significant difference between residents in poor and non-poor households. Nevertheless, considering the cultural and moral constraints that seemed to characterize the issue, the validity of the given answers might be of question. Most interestingly, however, was that the awareness of practices that can prevent the disease appeared to be at *equally* low levels among all the respondents, indicating a rather widespread misunderstanding; this is, unsurprisingly, bound be reflected in people's behaviour across the socio-economic spectrum (section 7.4.3). The distinction between poor and not poor, in relation to their (un)informed hygiene behaviour, is therefore not supported by the findings.

A common contention, both implicitly and explicitly, supported by state officials in Can Tho in their effort to explain why the poor are more vulnerable to diarrhoea, was that "the poor don't care about their health" (Top official in district PHC, Binh Thuy, 12.07.11; personal interview). This claimed indifference of people towards their health was then further discussed as being exemplified in their use of river water, their practice of open defecation and their living in dirty environments. The study's empirical results widely contradict this claim. People from the poorest households attested to their dissatisfaction with their current sanitary situation, and their inability to change it due to financial constraints (Table 7.4). Similarly, the problems that people face in accessing water networks were emphasized in their responses, with only three out of the 131 respondents saying they would opt for drinking river water (and then only in the absence of any other alternatives). What health officials did not discuss is that, more often than not, people living in poverty do not have a choice about water supply and sanitation. Part of the reason why is the noticeable paradox of pro-poor policies (such as subsidies and micro-credit loans) that rarely actually reaching the poor.

As Krause (2008) explains, the two ideational forms of institutions that govern access to WSS are "free markets that allocate services according to the price mechanism and state organisations that allocate services according to a political logic". Evidence from the Delta confirms mostly the dependence on the rules of a free market, as the sanitary sewage disposal necessitates a personal investment in the construction of a septic tank (necessitated by the lack of public sewage collection and treatment network). Likewise, the availability of drinking water is currently dominated by the purchase of bottled water (42%) or a connection to an urban water company (38%)[189], the costs of which can be rather off-putting for the poor. Krause (2008) continues in arguing that "the poor are handicapped with respect to both allocation mechanisms because of their low purchasing power and because of their political voicelessness and powerlessness". This accurately describes what is taking place also in Vietnam, seeing how the poor minorities are not only unable to "buy" services, but are also excluded from the programs meant to assist them, due to their lack of assets, their resultant financial unreliability and their weak political leverage. The unions and the credit groups that exist in Vietnam can serve as mediators in the process of microcredit

[189] These percentages are from the results of the household survey and correspond to the rainy season. For detailed graphs showing the distribution of answers, see section 5.2.2.

and thus help people to access capital but many people said that it is not easy to be actively involved in such groups, as it demands both time and money (Waibel and Glück, 2013). In this way, the whole mechanism of pro-poor policy implementation leaves the very poor "outside of the game" (section 5.3.2). Joshi et al. (2011) have also discussed this pattern in Bangladesh, Kenya and India, where the very poor are being left out of sanitation programs and where politics underpin the decisions of where (and to whom) subsidies are directed.

The UNDP reports that in Vietnam, "remoteness (or geographical inaccessibility) has more to do with the decisions about the allocation of water supply systems than has poverty, although of course these are often linked" (MONRE and UNDP, 2008). In the region of the Delta it was indeed observed that regions with high poverty indicators are also those predominantly agricultural and remote (GSO, 2013). This was also the case when comparing districts and communes within Can Tho City (DSO Phong Dien, 2010, DSO of Cai Rang, 2010, Statistical Office of Can Tho City, 2011). Due to such demographic realities, many state cadres would conflate the category of "the poor" with that of "the people living in rural areas". This happens despite the outdated nature of the criteria used for national poverty indicators (World Bank (WB), 2013) and an even rougher and less transparent process for documenting the poor at the local levels (section 4.2.2). When these two groups are conflated, the outcomes of policies that target rural areas, such as the development of water supply and sanitation (MARD and MoC, 2000) are often presented as success stories of poverty alleviation. This does not only disregard the constraints that the rural poor actually face in accessing these beneficial programs (as discussed above), but also takes attention away from the poor of the urban areas.

In relation to diarrheal disease and the water sector, the urban poor are a disproportionately affected cohort. There are fewer alternatives available for water and sanitation in the urban areas because urban planning and design is pushing inland the location of housing and thereby stripping people of the potential of having easy access to surface water sources. Urban living presupposes the connection to a centralised water supply network or the ability to own a private well. It also demands a sanitary toilet that safely collects and stores sewage, since fishponds are rare and river canals are not next to every household. This model might indeed be one of good hygiene and friendlier to the environment but, nevertheless, it leaves no room for divergence to cheaper solutions. Empirical findings confirmed that indeed most of the urban population does not rely on alternative water sources, with 82% having access to piped water supply and 73% owning a latrine. The survey also indicated that there is a minority of urban poor who have no access to such facilities and who live in particularly unhygienic conditions.

As a consequence of the lack of programs to support hygienic WSS and, in combination with the high cost of owning land in urban areas, the requirements of the urban living model are, for some, very hard to afford. In search of conditions that provide a home at low cost (floating constructions that do not need the purchase of land) and cheaper alternatives of water and sanitation (access to river water and open defecation), many of the urban poor are "occupying" the edges of rivers and canals. The accumulated water pollution that results from their unhygienic practices, as well as from the surrounding activities of a dense urban population, is putting their health at risk. What emerges as an even more serious concern regarding the urban population and especially those with the highest exposure to the risk of disease is thus their low level of hygiene awareness. However, since urban areas are considered advanced in terms of WSS, they are also considered as low-risk areas concerning diarrhoea. As a result, they are excluded from the dissemination of educational material and activities that could potentially increase awareness about the prevention and control of diarrhoea. Characteristically, the central district of Ninh Kieu was completely missing from the agenda of health education activities, even though the number of documented cases of diarrhoea was higher there than in any of the other districts in the city.

Mylott (2009) has noticed that "public policies are often aimed exclusively at either urban or rural areas", emphasizing how this jeopardises the equitable distribution of their interventions. Looking at how the content of health education activities is too often connected to rural WSS and thus, organisations like

CERWASS, indeed indicates why the aim of those activities to distribute specific health-related messages is being washed away. Mylott suggests that "for public policies to be effective in improving the economic, social and structural realities of urban and rural areas, they must address the entire region, and work to strengthen the ties between urban and rural areas" (Mylott, 2009:32). Dichotomising society into urban and rural groups, each of them portrayed as inherently having either one or the other of a variety of characteristics (such as poverty, education, disease, infrastructure, etc.), contributes to oversimplifying the complexity of the characteristics that they share.

The risk of diarrheal disease, for example, is shaped by factors that go beyond rural and urban borders. Apart from WSS infrastructure or the access to healthcare and health information, the risk of disease can be greatly influenced by food safety, household hygiene and environmental sanitation (Heller et al., 2003). Many of the institutional constraints and failures in relation to these issues were not geographically defined (chapter 6) and similarly, people from both rural and urban areas equally fall short in recognising and following disease-specific strategies of prevention, even basic hand-washing (section 7.4). As the findings demonstrate, the risk of diarrheal disease is equally distributed within and across regions. The discursive pinning of diarrheal disease to remote, rural and poor places not only incriminates the groups that inhabit those places, but also ignores the scope of the population that is actually vulnerable to the disease.

8.1.3 Perceptions and practices through an epidemiology of health messages

Public senses and understandings of hygiene

Much of the discourse about what is hindering progress in improving public health, particularly in the prevention of diarrheal disease, tends to single out the practices and strategies followed by individuals at the household level (UNICEF and WHO, 2009). This was largely acknowledged by health cadres and professionals for the region of the Delta and for the whole of Vietnam. Research indicated that there is indeed a lack of concrete public understanding of the epidemiological causes of disease, as well as a high level of confusion around the potential health consequences of unhygienic behaviour (section 7.4).

Much of the officially-generated discourse in the study region fails to provide a convincing explanation of why people continue to behave in ways that endanger their health, instead only referring to financial constraints, ignorance and indifference to the risk of disease. As discussed above, the socio-economic categories of poverty and rurality are often linked to the above characteristics. The low coverage of hygienic water and sanitation facilities and the low health insurance rates among households that belong to these categories (CERWASS, 2011a, Tran Van Tien et al., 2011) are often the indicators used by state representatives to make such claims. The difficulties that people face in adopting nationally advocated health-improving behaviours are, however, rarely discussed as a failure of the state to effectively promote and facilitate such behaviours. Certainly the shortage of financial means can be a significant hindrance in the uptake of healthy and preventive strategies, as these normally involve some costs (medicine, clean water, disinfection tablets, wood or electricity, storage jugs, etc.). However, from the analysis of the communication methods that are used in public health education, it seems that it is also the content and the quality of the advice being circulated that interferes with people's ability to take preventive action.

The emphasis which is given to the message of "boil your water and cook your food well", for example, has had a clear impact on how people act with regard to water safety (61% recognised boiling water as the most important preventive measure against diarrheal disease). However prevalent and inculcated in society this practice seems to be, its importance in eliminating gastrointestinal pathogens is still very loosely understood by the public. This was demonstrated foremost by the poorly consolidated ways in which respondents linked the concepts of water treatment, water consumption and the incidence of disease. Despite recognising the need to "boil water", each person would conceive of disease-transmission processes differently; some would see the connection with water quality while some would not. It was

clear that most respondents lacked a general understanding of the nature of pathogens and on what governs their survival and spread. Local health communicators, being the main carriers of preventive information, should themselves acquire such knowledge and be able to effectively transmit it to the public. The limited extent and low quality of the training that they receive is likely a contributor to the public's misunderstandings of the epidemiological causes of diarrheal disease (section 7.3).

The analysis showed that the concept of 'hygienic water' is often encountered with confused definitions and contradicting usage from various state cadres in water and health related posts (section 5.2.2). A closer look at the prevailing expert discourse at each administrative level showed that the ability to connect and communicate the various aspects that shape the disease's spread is mostly found at higher-level institutes that specialise in health. During the "journey" of messages from national-level experts to local communicators, through the training-of-trainers process, much of the valuable information regarding the ecology and epidemiology of disease is lost (section 6.3.2). Eventually, the messages that reach the public in the districts and communes are rather limited and lacking in explanation (section 6.3.3). The majority of the materials used to inform people about the prevention of diarrhoea, for example, mainly listing "good" and "bad" behaviours and focus on the practice of drinking boiled water and eating cooked food.

Apart from communication capacity limitations and weaknesses in content, the sector of public health is ridden by other more complex institutional obstacles. The thematic binding of diarrheal diseases with issues of water supply and sanitation has rendered disease-related education simply a part of promoting CERWASS water connections and hygienic latrines for rural areas. As a consequence, findings have indicated that the practice of boiling water has become perceptually connected to the consumption of water from a piped supply (either from CERWASS or CTWSC). People indeed boil their tap water (92%) but many are not aware of the need to do so also with water from other sources (section 7.2.2). Evidently, the health benefits of disinfecting water are thus not fully communicated nor understood by the public. As a result, people either follow the prescribed route (getting access to piped water which they boil), or diverge completely from it (using other sources and often not treating them adequately). Considering that alternatives for disinfecting water - other than boiling - are not popular, this association between tap water and the necessity for boiling, which is cultivated through the communication mechanism, seems to leave people confused about whether and how they can truly achieve a safe water supply if they cannot connect to a piped water network. This scenario clearly demonstrate why downgrading health education and compartmentalising its messages contributes to the fact that the preventive information being circulated hardly ever serves as a strong factor of behavioural change.

This confusion that exists can also be seen in the way the practice of water chlorination is encountered by rural and urban inhabitants (section 7.2.2). Water provided by CERWASS or a central water company is already chlorinated. This gives water a smell which people describe as "chemical" and "unpleasant". However, chlorination is widely recognised and accepted as a treatment that disinfects water. Smell, as an indicator of safety that is rooted in gut reactions of disgust or unfamiliarity (section 7.4.2), seems to somehow contradict the institutional claims about chlorination's harmless purifying effect. As a result, if given a choice, some people prefer to drink rainwater, which is perceived as more refreshing and tasty. However, rainwater was often found not to meet national criteria of safety (section 5.2.3) due, variously, to inadequacies in the practices of collection, storage and treatment; this phenomenon, in particular, became clear in the findings of the household survey (section 7.1.1). Traditionally, reactions of disgust to smell or taste have evolved out of rudimentary hygiene adaptations for detecting water quality and managing risk (Curtis et al., 2011). In this sense, people might find themselves in a dilemma between what they know from personal experience and social interaction ('a chemical smell indicates danger to my health') and what they trust and/or experience as true ('chlorinated water protects me from waterborne disease').

A closer look at the criteria with which people make assessments of water safety revealed that the personal senses (smell, taste, clarity) are trusted more than information about the kind of treatment that water has

undergone. The reliance on personal judgments and emotive senses of cleanliness were also seen to relate to hygienic practices. Hand-washing with soap, for example, was said to be mostly practiced when "hands are visibly dirty" (84%). This concurs with findings from Kenya (Aunger et al., 2010), about how feelings of disgust and the sense of social affiliation (instead of knowledge on the spread of pathogens) both acted as central motivators for hand-washing with soap. These sensed (rather than understood) notions of purity and safety were seen to also govern the choices of those who expressed a preference for practicing open defecation. The reasons claimed for preferring defecation in the open were all related to the sense of smell and air circulation. People said that when defecating in open air, they do not feel "invaded" by the odour of faeces which is unpleasant and feels suffocating (section 7.4.2). Many of them would support that the presence of a fishpond toilet in close proximity to their household is not a problem, as long as the disturbing smells do not reach them.

The percentage of people who practiced open defecation in fishpond toilets by preference was, however, not high (9.9%). It is observed in national and local statistics that the uptake of septic-tank sanitation has been quite fast in the Vietnam (section 5.1.2). Almost all of the survey respondents reacted very positively to the idea of hygienic toilets and expressed their desire to have one (70.2%). The reasons for wanting a latrine varied. Some people recognised its sanitary benefits, but some simply wanted the convenience of having a private toilet in their house or they felt compelled to comply with state guidelines (MARD, 2003, CERWASS, 2011c). Nevertheless, the phenomenon of badly maintained or improper latrine constructions was very common in the study area, demonstrating that even if in theory people want to have a "hygienic" latrine, they often fail to do so in practice. Apart from the financial constraints of building a properly hygienic toilet, this contradiction seems also to owe also to the confusion regarding what exactly qualifies as a hygienic toilet and, by extension, what makes hygienic latrines safer for a household and for a community (section 7.3.2). Seeing the fragmentation with which issues of environmental sanitation are managed and communicated by the state (section 6.2.5), it does not come as a surprise that people's understandings of personal and community hygiene are rather blurred.

As Kasperson and Kasperson (2005) contend, the credibility of information about risk is closely related to the trust towards the institutions that produce and circulate this information. This would point to the unreliability of the state's mechanism for guaranteeing that treated and regulated water sources (bottled water, water from piped-supply networks) are actually safe for drinking. Indeed, complaints and doubts about the quality of such water were commonly expressed by the interviewees. Moreover, it is perhaps the gap that exists between common understandings of water safety and the communicated messages that reach people (one based personal feelings and senses, while the other on expert information on concepts such as pathogens, purification, concentration etc.), which also contributes to blurred and conflicting understandings related to the risk of diarrheal disease.

Perceived and protected borders of safe households

Another set of categories that people applied in parallel to the concept of hygiene was the differentiation between the *inside* and the *outside* of one's household (sections 7.4.1 and 7.4.3). The household is considered a fortress, within which cleanliness and safety are both rarely doubted. It was noteworthy how during the interviews, female respondents who were discussing the risk of diarrheal disease would often accompany their answers with motions signifying the distance between the disease-causing agents and their own proximate living environment. This would include for example the turning of the eyes, or the body, towards the door or the yard, pointing to the general "outside" where harmful water or food can be found. Thus, in a sense, the source and the risk of diarrheal disease was conceptually dissociated from the space of the household by its members.

Along the same lines, Knudsen et al. (2008) found that farmers in a peri-urban area near Hanoi identified "dirt" as a disease-causing agent that should not enter the house, but such worries did not exist when they

talked about their working time in the field, during which they would happily use excreta as fertiliser. Specifically referring to the example of food safety, Bennett et al. (2010: 42) explain how this denial of risk is something common as people have a general tendency "to rate their own behaviours and situations as less risky than they actually are". This denial, however, was not present when people described their experiences with food bought along the street, beverages that they were served in restaurants, and water that they drank in other households. Thus, the denying claims were not directed towards their individual actions and personal judgment, as they admittedly do fall victim to unhygienic products, but towards what takes place in their household. Vietnam is a communist society where the unit of the family is largely emphasized as the basis of social integrity and organisation (MoH, 2004, Waibel and Glück, 2013). Consequently, a tendency to protect one's reputation and social identity is understandably very much related to the projected image of the household.

In agreement with previous findings from the region of the Delta (Herbst et al., 2009), many observations confirmed that taking care of the household's order and hygiene, particularly in relation to the preparation of food, is principally a woman's preoccupation. The difficulty in perceiving - or admitting - that food and water from one's kitchen could be unhygienic, reflects how health in the household is a display of the "face" of a family, an indicator of societal order and dignity. Considering the discursive association of diarrhoea to poverty and backwardness by many state officials, the difficulty of openly admitting the diseases' prevalence in one's family is also understood as one way to protect the household's socio-economic image. Gammeltoft (1999) notices how Vietnamese women carry a sense of responsibility towards their households, similar to the inherent need of protecting one's body from harm. This type of moral responsibility is one of many strong connections that exist between the individual and social body:

> "Just as bodies have insides which need protection from harmful winds and other outside pathogenic influences, families have insides which need protection from the public gaze and malicious gossip... Bodies and families mutually influence and depend upon each other: as strong and stable bodies are a precondition for the strength and stability of families, so do the health and strength of the bodies depend on families being happy and harmonious" (Gammeltoft, 1999: 132).

The hygiene of the general *outside*, on the other hand, is seen by the respondents to be governed by a set of rules and conditions, which function in scales larger than the family and beyond the control of one woman. The mistrust towards these rules connects back to the credibility of state institutions and their capacity to control water quality and food safety. The perceptions about what constitutes safe, where disease prevails, and how it is transmitted were similar between urban and rural inhabitants from various educational backgrounds and of different income levels. This shows that, despite how different vulnerabilities might relate to the consideration of their socio-economic position, many people's beliefs and attitudes towards the risk of disease are shared, shaped by the same discourses, whether contemporary or historically rooted. The subtle particularities that were noticed regarding the perceptions of the cyclic processes of food, faecal matter, and disease and the human body, are parallel to what Jewitt (2011) refers to of as 'hygienic beliefs' that shape people's practices of sanitation. Similar to the analysis of Douglas (2002), the perception of purity and dirt appeared to be very much related to the contextual social and cultural backgrounds that background them in the Mekong Delta.

Weakening health communication by narrowing its content

Culture and society constitute a historical platform upon which more volatile socio-economic factors and conditions act to define the choices and behaviours of people in relation to health and disease. However, societies and cultures are also undergoing change, even if the pace is variable in different contexts. In consideration of this ongoing transformation and evolution of societies and cultures, it is fair to expect that people's perceptions and practices with regard to disease will be neither static nor monolithic. However, the rate at which people's beliefs and understandings develop is not always in concert with the rate of change that is taking place in environmental, socio-economic and political spheres. The public

health education system in Vietnam is suffering from a public health discourse which not only lacks scientific clarity but also does not take into account the traditional beliefs and practices through which disease becomes relevant and meaningful to local people.

Phenomena such as the severe and ongoing pollution of surface waters, the increasing population in urban areas, and the increasing price of water delivery, are all taking place concurrently and are combining to affect people's vulnerability to disease. Local policies are also changing, often in response to global development paradigms, which shape programs of intervention for improved sanitation or regulation of public healthcare access. Such changes, internationally and locally, do not always appear to take into account the distribution and the growth of vulnerabilities towards, in this case, disease. The capacity to adapt to such contextual changes seems to be particularly hard for those living in remote areas, for the ethnic minorities, for the landless and the poor. The risk of disease might thus be increasing at a pace faster than what support policies require in order to develop and to reach everyone, especially those mostly vulnerable. Considering the pressure that the above changes are having on the people of the Mekong Delta, and considering also the existence and persistence of beliefs and practices that exacerbate the spread of disease, a health education mechanism would help in bridging knowledge gaps by addressing contradicting perceptions between local values and will expand the range of options for achieving consistently safer behaviours. One of the difficulties in achieving a dynamic, empowering and adaptive public health education system was its current inability to integrate and preserve useful knowledge in its content. The term "useful knowledge" is here meant to encompass both scientific and lay understandings, both biomedical and traditional principles of medicine, both factual and socio-cultural meanings of disease.

The fact that people maintain categories of health and hygiene that might be rooted in local culture but do not correspond to current conditions is a largely disregarded issue despite the fact that it has clear implications for health outcomes. The content of the communication approaches for healthier WASH behaviours in Vietnam seems to leave out lay knowledge and everyday practices. Instead of bridging, comparing and reconciling understandings, the efforts aim only to introduce new knowledge to replace the old. When people's habits and understandings are not adequately addressed in health education programs, it is likely that state-produced messages will be discarded by the public as irrelevant or misleading. Considering also that people do not always see the health benefits of following the state's advice, either because it is too narrow to have an effect, or because it is not justified properly, placing trust in this advice is is less likely. Health education on diarrheal disease would therefore perhaps stand a better chance of being successful if it was able to include and address the real-world aspects of the problem. In the end, trust and respect always go both ways.

The way interviewees described the causes of diarrhoea and the preventive strategies they employ differed depending on the institutional unit where interviews were held. From single household members to community leaders and representatives of the Ministry of Health, views and beliefs were communicated using elements from both the scientific and the lay fields of knowledge, with mixed levels of clarity and accuracy. The analysis demonstrated that this knowledge is compartmentalised along administrative levels and dichotomised according to the positioning of the interviewees along civil-to-state lines. The content of the interviews is illustrative of a gap between how experts from national research institutes and offices explain the presence of diarrheal disease and the presence of these explanations in the discourse produced by local-level counterparts. High-level health representatives are not only more informed regarding the scientific knowledge that exists on the topic, but are also more capable of linking problems of disease to the socio-economic and institutional context in the country. Consequently, they appear to better understand the salient and the underlying factors that shape disease (section 6.3.3). Health workers and cadres from the grassroots, on the other hand, appear rather unable to provide elaborate explanations and arguments about how to reduce the risk of diarrhoea.

As was addressed in above, it is natural to connect this superior ability to understand and elaborate on the issue of disease with the higher education requirements of staff at upper administrative levels. However, there is an important underlying to take into account when interpreting the content of discourse provided by state representatives: there exists a strict notion of hierarchy and central-level control in the Vietnamese system of administration - which has its roots in Confucianism - and which penetrates aspects of social and political life (Kerkvliet, 2001). The staff of the Ministry, for example, rank higher in this hierarchy and are therefore less vulnerable to castigation when expressing their honest – but critical - opinion on a topic such as the socio-political drivers of disease. Unlike the cadres in commune or district levels, which are always subject to control and surveillance from higher-level authorities, ministerial staff is not reluctant to correlate the incidence of disease with the bad implementation of policy and with phenomena such as the privatisation of health services or rapid urbanisation.

The effect that this can have on the discourse on disease being circulated is the hesitation of local cadres to discuss the connections that exist, for example, between the quality of primary healthcare, price of medicine, ownership of land, participation in community education programs, and the incidence of disease. This is because more explanation and elaboration on the problem will inevitably imply - or explicitly refer to - shortcomings of party-formulated policy and party-driven practice. In summary, apart from educational weaknesses, the lack of connecting discourse on the issue of disease at the local levels might also be due to the silenced opinions of cadres whose position and 'party loyalty' are more strictly expressed in the stance they take towards governmental decisions and policies. Even within the context of a one-party state, where grassroots critique is often discouraged and in which the Vietnamese have learnt to exist and manoeuvre, the question of what governs the "epidemiology" of health messages remains. Following Nichter and Nichter (1996b), the question becomes Why do certain messages – even in their discursive simplicity and critical "dryness" - survive while others are lost in the process of public communication and health education?

Through the analysis above, it has been illustrated that there exist alternative understandings about the risk of diarrheal disease which are either based on traditional medicine principles or lay knowledge. The example of how people assess the safety of water using sensory information is illustrative of how important addressing this is in order to understand why unhealthy practices persist. In a related example, many survey respondents thought of traditional medicine as the best cure (15.3%) for diarrheal disease, even though official guidelines strongly recommend the use of Oral Rehydration Solutions (ORS) combined with sufficient intake of nutritious food and clean water (MoH, 2009c). Some people also believed that food intake should be minimised in case of diarrhoea (2.3%) and a few (7.6%) recognised ORS as the appropriate treatment measure (section 7.3.3). Many people suggested that preventing a disease is a matter of maintaining a healthy balance of sleep, and the intake of "hot" and "cold" foods in relation to the outside weather or to other external conditions (section 7.4.3). Irrespective of how accurate or effective, these are also ways in which people understand their bodies and their health. As already discussed, instead of addressing such beliefs, the materials produced to promote safer and healthier practices seem to widely disregard them.

The widespread presence of traditional Vietnamese medicine in the national healthcare and medical education sector has not hindered the expansion and development of biomedical approaches (Wahlberg, 2006), a phenomenon which is evident in the remarkable expansion of biomedicine in Vietnam and the wide use of western medicine by Vietnamese people (chapter 4). Despite its long history, traditional medicine has been largely absent from the preventive health discourse, perhaps being viewed as irrelevant, or as a hindrance to the adoption of globally prescribed disease eradication measures. As with many other types of policies that are imported and implanted - rather than incorporated - into local context, public health campaigns related to the prevention of diarrhoea were also found to be rather blind to the cultural and social realities of much the population. It might be hard to translate microbes, antibiotics or toxic chemical substances into traditional categories of health and equally difficult to translate local language into medical diagnosis in order to understand the meanings that people frequently ascribe to disease.

However, at least attempting this seems to be rather necessary if health prevention campaigns aim to become interesting and relevant to the people whose health is at stake. The research of Nichter and Nichter (1996b) on the anthropology of international health concludes that for health communication to be "infective" it has to start from the facts and metaphors people understand and relate to:

> "In the field of health education far more time, energy, and resources have been expended identifying what a population does not know or do, than in assessing what a population does know and the way in which it is known. What is often neglected is a consideration of those concepts of health and images of body processes which underlie the layperson's health practices. Due to this lack of appreciation of tacit knowledge and the cultural common sense (and empirical observations) upon which it is based, cultural resources are often underutilized by health educators [….] There seemed to be a tacit assumption on the part of health trainers that once health workers were supplied information, they could then pass it on to villagers in a suitable manner" (Nichter and Nichter, 1996b: 407)

With a strict top-down approach to the selection and communication of preventive health messages, the Vietnamese state appears to care and be knowledgeable about the health issues that trouble its citizens. At the same time, however, the state does not allow for an active bottom-up enrichment of these topics by not allowing an active dialogue on the policies followed in the field of preventive medicine, as the following section will discuss in more detail. In that sense, much of what people *do* know gets dismissed, with the only goal being to transmit what people do *not* know. Unlike what the public health mechanism implicitly tries to suggest, different kinds of knowledge do not necessarily contradict each other; often they can be used collaboratively to address the risk of disease, particularly if they go through an inclusive process of discussion and debate. Through this process of inclusion, new concepts that were before unknown or uncommon, but potentially beneficial, can be better understood and more easily accepted and remembered.

Beliefs and practices about disease prevention are versatile and co-evolving with the social, cultural and natural environments within which they are used and (re)invented. In the context of fast-paced change, however, some ideas and beliefs might clash and eventually distort people's vulnerability to risks. This is either because old risks change or new types of risks arise. It is precisely the space where ideas and beliefs about disease clash and call for reinvention that presents an opening for health communication strategy to play a significant role. In Vietnam, this space was often found to be shadowed by a top-down communication approach that is woefully behind in content and methods of implementation. Bennet et al. (2010) refer to the "shadow" spaces which surround such contested and debated issues of risk, underlining how these spaces are often dominated by technical experts who are not paying attention to local context and not involving the public. The authors stress and warn that, no matter the expertise that this type of discourse might contain, "all forms of knowledge construction have their limitations when taken out of the specific context in which knowledge was created" (Bennett et al., 2010: 34). This accurately describes how the tailoring of preventive health policies in the study region stops at the highest administrative levels and does not manage to reflect the specific problems and needs of the localities. As Waibel et al. (2012: 191) have described for the water sector in general, "the devolution of decision-making powers and management responsibilities stops at the provincial level, hindering the development of solutions appropriate for local conditions at the district and commune level".

8.1.4 The politics of health risk communication

Crippled participation in a disempowering health education

One way in which the public is excluded from health education activities in the study region is through the formal and informal rules that govern the participation in the training classes of the commune level. Formally, the state supports the dissemination of information through training classes and educational material and by assigning provincial experts to guide this process and pass information down to the localities (section 6.3.2). The law governing these processes does not specify how and for whom health education will happen, but generally points to its potential and to the need for the trickle-down of information from the experts to the public (MoH, 2007b, CERWASS, 2003).

Observations and interviews within the communes and wards showed that health education activities are scarce and rarely ever take place twice in the same commune (section 6.3.2). This makes it hard for people who participate in these classes to come back and give feedback on the strategies they were recommended and on the advice which they might have followed. It is not only the scarcity, but also the methodology that characterizes these classes, that does not encourage feedback and participation from the audience (health education activity O Mon, 05.08.11; personal attendance). Moreover, the audience is limited to 50 attendants and was seen to only include state cadres, public office employees and representatives of unions. In other words, the opportunity to be part of the education process is restricted to a rather select number of people, who are directly or indirectly connected to the Party. Considering the moral commitment of the participants to faithfully serve the government, complaint or questioning of the given information and the prescribed advice is unlikely.

The participants of these classes were referred to as local communicators. They are the considered human "loudspeakers" who carry the responsibility of spreading the health-related information they receive to everyone in their community, mainly through group gatherings and household visits. Despite this mini-narrative about their role and activities, which was repeated by many state officials, it was made clear that local cadres who visit households do not discuss issues of health, but rather run checks about whether certain practices are followed. The list of activities that is being checked mostly includes issues of water and sanitation and is principally focused on the presence of facilities defined as "hygienic" (section 5.3.1). The latter is considered a preventive measure against diarrhoea and as an indicator of awareness about it. Health education for the wider public becomes, in the case of a waterborne disease like diarrhoea, merely a test of how much people have invested in the prescribed water and sanitation solutions and a reminder of the state's expectations for them to make such investments.

This issue goes back to how much the two topics of disease and of household water infrastructure are discursively interwoven. Institutionally, this also goes back to the national fixation on such indicators and the related production of statistics, which will accordingly boost the country's image with regard to global developmental goals. However, it also illuminates how the hierarchical attitude of the state is maintained and it represents itself to the citizens, even at the very local levels. Namely, even if local cadres are close to and literally part of the communities, they preserve an approach of supervision rather than trying to engage in a constructive dialogue with the citizens around health. This way of understanding participation is not new to the Vietnamese state. As it has been discussed by Waibel et al. (2012: 173), the political system in the country depends on the assumption that people's concerns, needs and ideas are fully understood and represented by the selected cadres and therefore, once this determination has been made, the activities of those cadres are not to be called into question.

This ingrained political assumption reflects how health campaigns are executed, with the public being only a receiver of information, advice and concrete guidelines. Then negotiation of this advice is not given any public space. On the contrary, the public is subjected to control with regard to proper implementation. The whole process has ironically adopted the name of "health information, education and communication

activities". Studies of risk communication and risk understanding have widely discussed how the perceptions and the practices of people are highly dependent on the level of involvement they have in risk education activities (Kasperson and Kasperson, 2005:22ff). Based on this, the behavioural factors that shape the risk of diarrheal disease in Vietnam are more than likely connected to the public's inadequate exposure to, and involvement in, such activities. What has been described by state representatives as improper health behaviours of "stubborn", "backwards" or "ignorant" people (section 6.3.4) is then better understood as the uninformed behaviours of excluded, ignored and marginalised people. Apart from public health objectives not being achieved, the non-involvement of the public is hindering the many empowering effects that health education can have (Nutbeam, 2000). Policing health behaviours but not being able to offer the knowledge that people need in order to formulate their own informed judgments and strategies, is leaving them insecure, uncertain and often unable to act to the benefit of their own health. Echoing Bandura (2004), health education is a lens on the practices of social systems. If participation is not encouraged in society, health education can hardly ever be successful.

Public non-compliance in the face of a dominant state

The impact of health campaigns is largely dependent on how the public encounters, embraces, adjusts or rejects the supplied messages (Nichter, 1996c). The results of this study show that even if many people are aware of what the state wants them to do, they cannot - or simply will not - follow state guidelines or advice. This becomes clear in the example of sanitation, with a share of more than 20% people who practice open defecation reported nationwide (JMP Vietnam, 2012b), and similar proportion (25%) in Can Tho City (CERWASS, 2011a). Despite the prohibition of the fishpond toilet and the strong promotion of hygienic facilities, there are still many families who "insist" on this practice. The household survey actually showed that the percentage of people practicing open defecation is as high as 45% (section 7.3.3). As was noted before, this statistic is not only indicative of institutional shortcomings but is often the result of an underprivileged socio-economic position. People might insist on open defecation and ignore the advice for sanitation, but this can also be understood as the result of "suffocating" and badly maintained toilets which are a result of restricted access to microcredit for improvement, expensive construction requirements, or the lack of proper justification from a hygienic view. Similarly, the practice of hand-washing with soap might seem incomprehensible if one is unaware of how pathogenic transmission through the hands takes place, and also if soap and clean water is a considerable expense for a family. This type of non-compliance is thus a result of financial difficulties and of a lack of access to support resources and information.

Kerkvliet (2003 cited in Waibel et al. 2012:173) speaks of this discrepancy between what the state commands and what people actually do, pointing to the bottom-up process of decollectivising agriculture in Vietnam during the 1980s. In the sector of agriculture discussed by Kerkvliet (2003), people have a good grasp of the practical benefits they need to subtly negotiate on, which is apparent when they do not following centrally prescribed *practices* and instead prefer other forms of *action*. Issues of health, however, contain a lot of abstract, unknown, ungraspable and unexplained risk. Some people's ideas and opinions about how to safeguard their health have their roots in traditional and herbal medicine, others are acquired through experiential learning and many are, of course, based on acquired medical understandings. As findings showed, the public's health perceptions are often an amalgam of the above sources and, more often than not, result in contradicting health behaviours. The persisting incidence of many infectious diseases, diarrhoea included (section 4.3.1), indicates that few people manage to protect themselves from this type of risk. Half of the respondents in the household survey admitted that they suffer from diarrhoea at least 3 times per year (section 7.3). With only 15% of people able to readily recognise the risk of waterborne disease and only 6.1% presenting hand-washing as a known measure of prevention, the need for behavioural adaptation and change does not seem to be fully realised by the local communities of the region. Unlike the case of agricultural decollectivisation, where people took action for their own vision of

agricultural life and practice (Kerkvliet, 2005), the non-compliant practices of hygiene and sanitation do not appear as a conscious form of resistance. Instead of leading to some commonly desired outcome, the behaviours that are often followed perpetuate the loose control of the disease's spread and boomerang against the health of local people.

The figure of a dominant state is, however, seen to play a role in shaping health behaviours. Although in some cases the state has successfully promoted healthy behaviours, in many other cases it has resulted in superficially compliant but ineffective behaviours, or clearly incompliant and still risky ones. In Vietnam, the communication of health risks has a commanding character with a top-down and didactic tone, reinforcing the idea of the central state's unquestionable expertise. This was demonstrated in how "do's" and "don'ts" constitute the only form of communicated health related information, especially at the level of the district and below, and within the circulated educational material (section 6.3.3). Bennett et al. (2010: 32) have spoken of this mistaken tendency "to summon up the *deficit model* [190] of an ignorant and ill-informed public" and stress how this approach "fails to understand the basis of public concerns and provokes feelings of antagonism and rejection". In other words, when the form of advice assumes public ignorance, it will probably be rejected by a public that does not want to be identified as ignorant. This relates also to the "optimistic bias" (Frewer et al., 1994) people tend to have, which leads to the assumption that one's own behaviour is not risky and that information about disease risk is directed at "others", who are not knowledgeable and not aware (this was discussed in relation to food safety, section 6.2.2). This can explain why people do not follow state advice, even if it is within their ability to do so. Survey data shows, for example, that many of the average-income households are not adequately following recommended water treatment practices and that very few respondents actually practice hand-washing with soap, even though many were aware of both these practices as health-promoting behaviours.

In this light, it is better understood why any health-related information and advice needs to be framed in a way that will respect the views, the knowledge and the socio-cultural realities of the people whose problems it aims to address. Dismissing people's abilities to protect themselves by trying to replace their understandings with new concepts that are loosely understood and unfamiliar, is a strategy doomed to fail. As Bennet et al. (2010) further note, "people do not need information for information's sake, but as a means of taking responsibility for personal choices, improving their own or their family's wellbeing or supporting their role in society" (Moore 2002 cited in Bennett et al., 2010: 149). The marriage of new knowledge with pre-existing perceptions is, as already discussed, a process which can build trust and facilitate educational empowerment with relation to health. In line with the above, Nichter (1996c) notes that the difference between empowerment (active demand) and imposition (passive acceptance) can define whether healthy practices are adopted or not:

> "It is only when vaccinations are recognized as a perceived need and demanded by the 'community' that they become community development resources in a 'comprehensive primary health care' sense" (Rifkin and Walt 1986 cited in Nichter, 1996c).

The state-society nexus in Vietnam has special characteristics which render the compliance with state policy a socially complicated process. Gammeltoft has linked health to Confucianism, which she refers to as the "intellectual and ideological backbone of Vietnam" (Nguyen Khac Vien cited in Gammeltoft, 1999: 134). The author (Gammeltoft, 1999) sees health understandings and practices as social behaviours related to the hierarchical balances kept between the individual, the family and society. This linkage was indeed observed, firstly in the written preventive health guidelines, which are often presented as moral obligations towards the community or the country (section 6.3.1) and secondly through the defensive responses of people (mainly women), who assertively protected their household's and their own reputation when discussing hygiene behaviour and the (lack of) disease risk in the household (section 8.1.3). The compliance to norms and guidelines was thus often on the basis of keeping an image of good citizenship and representing a healthy community.

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[190] Bennett et al. (2010) are here citing Irwin and Wynne (1996).

The attitudes of respondents reflected how these moral notions have created an imperative for healthy behaviour, with most people being hesitant to declare non-compliance with state-provided advice in the presence of state officials. Respondents would rush to declare that they have a "hygienic latrine", they drink "boiled water" and eat "well-cooked food", even if that was not the case. As findings indicate, the mere recognition of advocated messages does not imply that an understanding exists of the links between these practices and the spread of disease. Rheinländer et al. (2010) similarly observe that "the drive for sanitation and hygiene can be not due to biomedical knowledge but more to show social class or cultural compliance". Nevertheless, it is precisely when people superficially try to show their compliance without being clear on how to achieve healthier lives, that public health measures expose a flawed implementation. This was seen in the example of latrines that are labelled as hygienic, but discharge untreated sewage into the river (section 7.2.1) and in the case of households which are connected to the water network, but also consume other types of untreated water (section 7.1.2).

Policy and politics shaping the distribution of health risks

As was discussed above, respondents might be pushed to report compliance with advocated measures because of their feelings of responsibility towards the state and moral obligation to good citizenship. The same kind of tendency to declare compliance and progress towards achieving national targets was also observed from offices of the local state. This was not only through the contradicting claims of representatives from these offices, but also through their produced reports. An example here would be the over-reporting of the expansion of "hygienic" water and sanitation by district level authorities (section 5.4). In making reporting, instead of effective implementation, their primary concern, Beresdorf (2008) notes that "local authorities are largely responsible to their superior levels rather than to the people".

This strive to comply in the eyes of superiors seems to be, at least in the WSS sector, primarily a matter of attracting funding. It was made explicit by informants that the distribution of provincial funding in the sector of WSS depends on each province's declared public demand for construction (i.e. number of people willing to invest) and on the province's previous performance in attracting funding and in realising "hygienic" constructions (section 5.3.2). The generated discourse on the demand and the implementation success of WSS, therefore, serves not only as a moral achievement and an expression of loyalty to the Party, but also as a way of attracting funding. In this context, the tendency to over-report compliance in the sector becomes a matter of provincial competition for resources. The examination of these processes in the study region flagged accounting discrepancies and indicated a serious misappropriation of funds (section 5.3.2). For example, while the Vietnamese Social Policy Bank gave out about 27 billion VND for the purposes of WSS micro-credit loans in 2010-2011, the newly constructed facilities reported by CERWASS would have only cost a maximum of 12 billion VND (VBSP, 2011, CERWASS, 2010, CERWASS, 2011a). This leaves a tremendous amount of 15 billion VND unaccounted for, either as a result of administrative mishandling or because beneficiaries used the money for purposes other than investing in WSS. Irrespectively of how or by whom these funds were spent, it is clear that the lack of transparency in the distribution compromises the potential of such policies to deal with disease, unhealthy environments and poverty.

Another issue that arises in the sector - apart from the inability of the poor to benefit from credit that goes unaccounted for - is the overemphasis on measures that require capital investment (i.e. sanitary constructions) over those that mostly require an effective and inclusive communication between experts and the public (education on how people can prevent and cure disease more efficiently). Reis (2012:190ff) has indicated that prioritising sanitation over alternative water options is underpinned by the personal interests of local bureaucracies. Taking also into account that "software" measures are being overshadowed by "hardware" solutions, the latter of which promise more funding for the provinces, the political nature of preventive health policy begins to surface. Part and parcel to such phenomena appears

to be the increased level of bureaucratic corruption that operates in Vietnam under what Gillespie (2001) terms "fuzzy" legality. As Gillespie (2001) explains, despite the efforts of the state to promote legal conformity and control corruption, the power of cultural ideologies often seems to overcome the law by reinterpreting its purpose and ultimately ignoring it. Much of the Vietnamese bureaucracy is operating under what the author terms a 'socialist legality' which "only incidentally promotes legal conformity" (Gillespie, 2001: 24). Waibel et al. (2012: 173) have noted how the gaps between policy and practice in the wider water sector are not simply due to economic or capacity constraints, but as a result of intricate political and managerial paradigms followed in the country. In agreement with their findings, the unequal emphasis on "hardware" versus "software" solutions seems to be much more than an issue of insufficient funds or a lack of expertise in communication.

The political nature of disease begins to emerge when considering the processes that will define risk. The selection of appropriate responses and prevention strategies requires recognition of the exact factors that constitute the risk of disease. These processes are dependent on social and political structures. Moreover, in order to address a risk, there needs to be an agreement on the evaluation of its gravity. For these reasons, risk in general is often seen as entirely socially constructed (Bennett et al., 2011: 18). In Vietnam, public discussion and bottom-up participation was not seen to be encouraged. The domain of disease prevention, through disease risk recognition and formulation of strategies, was seen to be exclusively occupied by the central state. In return, the priorities of the state are largely influenced by international development requirements and defined indicators in the sectors of water and health. Examined though the example of water supply and sanitation, part of the reason why the country tries to tune its efforts to international demands appears to be the fact that, in this way, development points are gained and more investment flows in. This way of designing risk policy, of recognising the factors that constitute this risk and of formulating strategies to address it, is not driven by local needs. It does not allow for genuine feedback about whether the strategies followed actually benefit the health and the life of the majority. The reported "hygienic" latrine becomes a symbol of progress and compliance, but not a means of achieving disease-free communities. Similarly, the high coverage of piped water supply (JMP Vietnam, 2012a, CERWASS, 2011a) ticks international development boxes for rural development, while the actual drinking water needs of the majority are met through the purchase of bottled water or through the consumption of polluted water sources (section 7.1.1).

The political side of disease and of health communication goes beyond questions of how capable or functional the governing bodies of the sector are. As Lupton (1994 cited in Geist and Gates, 1996) has warned, "until health communication takes cognizance of recent developments in social and political theory, media and cultural studies, discourse analysis, and their application to communication in the health setting, it is destined to remain a derivative paternalistic and narrowly focused version of health education". Findings from the Delta show how the process of defining a health risk is inherently political, as it empowers the state to be the only knowledge carrier, the solution provider and the entity to which people must be amenable to. The analysis point to the fact that attaching moral and ideological content to public health messages might enhance the implementation of the advocated measures to an extent, but most importantly, it weakens the potential of empowering people with knowledge. As a result, the ability of these messages to yield sustainably informed practices is also weakened. Moreover, when lacking such empowering knowledge, people are also less likely to express concern about their current situation. Reis (2012: 212) has questioned the potential for people to react against the root causes their non-accessibility to clean water when "the awareness about health risks connected with drinking polluted water is not very distinct among the rural population, even if many feel uncomfortable with drinking river water" and when "the problem of polluted water is not assigned to failures of state management [...] but to economic development involving the arrival of pesticides, fish farming and factories" (Ibid. 2012: 211). It is perhaps an underlying interest of the state not to overemphasize the issue of waterborne disease, as this would reveal the large and unequal distribution of such risks, which are largely a result of party politics and local administration decisions.

It is becoming clearer why the distribution of health risks is not only a highly complicated matter, but mostly a political one. Bambra et al. (2005) attest to the political nature of health, noting that "like any other resource or commodity under a neo-liberal economic system, some social groups have more of it than others". In the case of diarrheal disease in Can Tho City, such correlations between sickness and poverty were not made clear through the empirical examination of disease incidence. However, it was shown that access to healthcare is almost entirely commodified and thus subject to people's financial capacities (chapter 4). This has rendered the poor over-exposed to potentially disastrous health costs and has cultivated a view of healthcare as a sort of a luxury or last resort only to be sought in case of "serious" disease (section 7.4.3). The constraints in accessing clean water, sanitation facilities and sanitary environments faced by those living in poverty further support this claim.

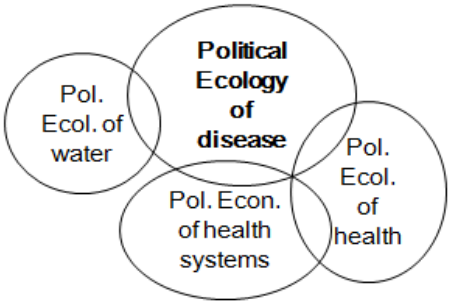
Bambra et al. (2005) continue their claim that "health is political because its social determinants are amenable to political interventions and are thereby dependent on political action (or more usually, inaction)". Sectors like food safety, Rotavirus vaccinations and the control of malnutrition have all been proven crucial for the management of diarrheal disease risk. In order to be able to substantially contribute to the strengthening and the accessibility of these sectors, however, requires political will, prioritisation and transparency. As witnessed in Vietnam, such measures largely remain on paper only (MoH, 2009c). Instead of being prioritised, they are rather downplayed by policies which guarantee the circulation of funds within the Vietnamese public administration (section 6.2). As the authors (Bambra et al., 2005) conclude, "health is political because power is exercised over it as part of a wider economic, social and political system".

Indeed, human health is a field where the fear and the faith of people are both magnified. Health is a personal but also a public domain that is imbued with uncertainty due to the coexistence of many knowns and unknowns. This uncertainty might increase when people feel disempowered to control its outcomes. Due to this uncertainty, the discourse around health risk is a vivid field, within which opinions are shaped and power is negotiated. In Vietnam, this field is dominated by the state and the power that comes with access to this field is used to re-empower the state. Through the platform of health education, social moralisation is reproduced. Knitting a web that ties together ideas of public health and state ideology, the VCP strives to reinforce its legitimacy. Through the disguise of bureaucratic procedures and meaningless reporting as health-promoting activities, the "success story" of adequately addressing water and health issues seems to be kept alive for the purpose of attracting international funding. At the same time, however, the implementation of even the most basic elements of diarrheal disease prevention fall short.

8.2 A political ecology of disease: theoretical implications

With diarrheal disease as a central research topic and point of departure, this study paid particular attention to water as the encompassing element defining this disease. The principal theoretical connections with the field of political ecology have thus been the access to resources and of the interaction that takes place between societies and the natural environment. The analysis demonstrated why people's access to safe water, a basic human right, is anything but a simple issue. In order to examine this in a holistic manner, the study's theoretical grounding expanded outside the borders of a 'political ecology of water' and explored a more specific and more inclusive, 'political ecology of disease'.

Figure 8.1: The fields of study contributing to a political ecology of disease



Author's elaboration, 2014

Whereas environmental issues, like resource scarcities and natural disasters, have often been analysed by political ecologists who tend to reveal their social and political nature (Otero et al., 2010, Kaika, 2003), the same can hardly be said about the health outcomes of those issues, such as disease and epidemics (but see: Turshen, 1977, Mayer, 1996a, King, 2010). By focusing on the related health problem, rather than on the problem of water management, a political ecology of disease includes aspects of public health governance, and goes deeper into the question of how the population is affected - within the scope of natural resources management. As Richmond et al. (2005: 352, my emphasis) contend, "political ecology identifies the dimensions of a politicized environment and focuses explicitly on the role of power relations as a source of environmental debate […] yet seldom addresses *how* the health of populations is affected". There is a difference between the questions of *what* kind of environmental health problems can be created and *why* this happens and the question of *how* such a health issue is shaped and expresses itself. The difference lies, primarily, in that in order to answer *how*, one has to employ methodologies that will turn attention to the people, to how they understand, document and represent health and to how they experience disease. One of the core novelties in the analytical approach followed here, is that it incorporates two different perspectives in the study of an environmental health problem: the institutional and the cultural.

To begin with, in order to critically examine the institutions that govern disease, a political ecology of water resources needs to be complemented by a political ecology of *health* and of *healthcare* systems. A political ecology of health will examine how and why the risk of disease is distributed along different environmental and socio-economic terrains. A political ecology of healthcare will assess how the structure and function of health services affects the vulnerability of different individuals to disease risk. While studies in the political economy of health and disease are not lacking (Farmer, 2005, Foley, 2009), and especially not in the transitional context of Vietnam (Fritzen, 2007, Forsberg, 2011, Bloom, 1998), they have rarely offered an empirical coupling of critical views regarding both the issues of natural resources management and health governance (but see: Collins, 2001, Saravanan et al., 2011, Few and Tran, 2010). This study filled this lacuna, by focusing on the links between water pollution, water supply, sanitation and the spread of diarrheal disease, not only from a biophysical point of view but through their common institutional underpinnings. This is how the unique aspects of a political ecology of disease were allowed to emerge.

One of these aspects was the examination of the ways in which the country's formal institutions communicate the risk of the disease's spread. Prevention in health has gained recognition as "the best cure", but for public health preventive action to even begin, health risks need to be defined. In relation to this, the second analytical theme that arose through the political ecology of healthcare systems was how health risks in society are defined, re-defined and communicated within these systems. Interestingly, in the study of diarrheal disease, the definition of health risk entails discussions about water management, water pollution and water treatment. While management of these issues can be assigned solely to the realm of individual personal behaviour, which was often the case in Vietnam, they go beyond this to constitute major fields of public policy and related debates. There was therefore a critical transition, from asking

questions of how and why environmental risks are *distributed,* to asking how and why they are *communicated* in the frame of public health policy. Surprisingly, many of the answers pointed back to the same essential elements of what guides policy and what characterizes the relationship between state and society in Vietnam. It was argued that diarrhoea has been rendered "normal" through the intricate discourse-building processes of the state, materialised through legal, professional and communicative practices, in order to define the acceptable limits of ill-health and healthcare quality, as well as of water quality, implementation of law and, more generally, of acceptable risks.

Despite the apparent uniformity with which the acceptability of risk is treated, risk does not seem to affect all people the same way due to structural inequalities and varying vulnerabilities. It is this basic notion of inequality that the politics of environmental risk and the politics of health risk communication have in common. Merging and comparing the distribution of risk to the communication of this risk, pointed to their common denominators. In Vietnam, these denominators have roots in the drive for modernity and relentless economic growth that the state follows (with the precondition that the current political structures will be sustained). Polluting waters is accepted if the economy requires it, and "hygienic" constructions are showcased as promoting health if this attracts international funding. In other words, it was made obvious through the study of a health risk how the "shadow" spaces in the debates about risk (Peeling et al. in Bennett et al., 2010) are used to reproduce a system of values where privileged elites maintain their privileges and the participation of the masses in defining policy is essentially hindered.

It is precisely the issue of participation that begged for an examination of human agency and the inclusion of culture. Participation can be roughly described as a process through which communities and civil society engage in dialogue with the state, with the results of this dialogue finding representation in the central offices of policy-making, or directly translating into practice at a local level. As Reis (2012) argues, policy should not simply be thought of as the push-factor for practice, but "as a metaphor and as a context where practice takes place" (Molle 2005 cited in Reis 2012: 9). If we consider institutions as social structures "made up of a collection of individuals or organisations, within which collectives exercise action or orientations" (Weerakody et al. 2009:53 cited in Collyer, 2012 :46), then policy needs to be understood as shaping and being shaped by practice. Actions themselves can be institutionalised when they are habitualised and reciprocally typified (Burger and Luckmann 1984 cited in Collyer 2012: 46). In that sense, the practices performed and the ideas shaping these practices also count as indicators of participation. In order to examine such cultural practices and ideas in this analysis, the methods and the analytical categories of anthropology proved extremely useful. Through tracing patterns of behaviour that are culturally specific and are linked with people's beliefs, values and world-understandings, many of the shortcomings in public health were brought into the light. By questioning the extent to which culturally specific traits enter the field of policy or practice concerning diarrheal disease prevention, patterns of exclusion were revealed and reasons behind the failure of health education and disease prevention campaigns were further explained.

Though Bryant (1992) has long argued that "the role of ideology and culture in environmental change seems particularly important", political ecology has often dealt with culture as a "black box" in which certain behaviours and ideas are placed, in order to be later questioned in relation to the workings of socio-economic and political spheres. This, however, ignores how powerfully these behaviours and ideas demonstrate the transfer and the transformation of knowledge about both environmental and health-related issues. A single focus on formal institutions might lose sight of the different meanings people give to concepts such as nature and life, including water, food and the human body and which define their actions in relation to dynamics like the handling water in the household, children's nutrition and health-seeking behaviour. The actions of collectives or individuals are not homogeneous and are not independent of the institutions in which they act, but rather "highly-interactive and mutually constitutive" (Hall and Taylor, 1996). For this reason, when institutions and policies are studied through the lens of political ecology, an accounting for local context in an ethnographically informed way emerges as necessary. As Escobar argues,

> "We need new narratives of life and culture. These narratives will likely be hybrids of sorts; they will arise from the mediations that local cultures are able to effect on the discourse and practices of nature, capital, and modernity" (Escobar cited in Peet and Watts, 2002: 65)

Incorporating cultural questions, by studying local perceptions and beliefs about diarrheal disease, made it possible to distinguish the subtle ways in which people are eventually excluded from health understandings, how they are made more vulnerable to disease and most importantly, how they are disempowered in their to pursuit and claims for better health. Viewing this through the concept of an "epidemiology of communication" (Nichter, 1996b: 125), attention was drawn to the social and cultural environments where disease is encountered, tracing *how* and *why* knowledge around health circulates through different parts of society and what kinds of "black holes" exist that prevent it from reaching more people in a more effective way. This showed how the de-prioritisation of "everyday" diarrheal disease did not only take place because measures against its spread were not adopted. It also happened due to a continuous disregard for people's traditional beliefs, a dismissive attitude towards lay knowledge of health risks and a didactic and moralising approach to health education by the state. Moreover, the de-prioritisation of diarrhoea was a symptom of attaching meanings of backwardness, poverty and foulness to it, which allowed the disease to be used as a negative social category and turned it into a taboo issue. As such, it becomes more imperative for people to deny the disease than to publically address it.

Practically speaking, while political ecology looks at problems and asks for people to "change the system", pointing to the need for different processes of political participation, for a redistribution of the risks and benefits that emanate from the use of resources and for the inclusion of more voices in the definition of social values, critical anthropological views follow up on this, highlighting where change can beg: in the ideas and the practices of everyday life. The turning of attention to culture entails grappling with meanings, ideas and forms of knowledge that might be unfamiliar in western knowledge paradigms. However, in return, this entails the reward of better understanding human behaviour, which proves essential particularly in the field of development studies. Challenging categories of shame, disgust, safety, cleanliness and health, as they are understood in the context of a Vietnamese rural village or peri-urban area, helped to clarify elements of hygiene behaviour that heretofore had gone unexplained.

That people's understandings of how to prevent disease were still far from what the state has adopted as its official guidelines, pointed to the fact that much of the knowledge available on paper remains unrealised and thus not useful to local communities. It further demonstrated that the size of the chasm between 'what the state says' and 'what people do', owes also to the detachment of people's understandings and opinions from the state's nationally enforced policy. In a context where expressions of discontent are generally silenced, "everyday politics" (Kerkvliet, 2005) can be a form of public contestation. At the same time, the strictly hierarchical and regulated ways in which the one-party state communicates with its citizens, while not explicitly a means of exercising control, favour a Gramscian notion of hegemony, where force and consent are combined and "balance each other reciprocally, without force predominating excessively over consent" (Hoare and Nowell-Smith, 1971 cited in Karim, 2008). Critical anthropological views were able to reveal the indirect and subtle ways in which public disobedience, as well as state control, has been taking place.

What has been gained from this study's use of an analytical framework that centres on political ecology and embraces the critical approaches of medical anthropology? The usefulness of the resulting analytical framework was evident in its ability to outline the multiple spheres (cultural, social, environmental, and political) that encompass health risk and also to allow for intricate connections and interrelations between these spheres to arise. Institutional structures were placed under the same lens as ideational realms. This revealed not only that the outcome of public health policy cannot be explained without examining common understandings, but also that the prevailing discourse is significantly shaping the extent to which people can support and safeguard their health. The analysis further showed that in Vietnam, the formulation and implementation of that policy appear to be mostly serving the actors that have the power

to negotiate them. In retrospect, it becomes clearer why studying the spread of disease strictly from an epidemiological point of view would have deprived it of valuable explanations related to human agency and social context. The integration of different analytical scales allowed for the discovery of their connecting thread, which is crucial in order to better understand disease and to address it.

Despite the attempt to be holistic in explanation, this study has faced limitations in discovering every aspect and answering every question in relation to the socio-political and cultural determinants of diarrheal disease in the Mekong Delta. Some of these issues with potential for future research within the fields of political ecology of disease and critical medical anthropology include:

- The evolution of cultural food habits and understandings of safe nutrition, as they correlate to the incidence of chronic disease (cardiovascular and cancer)
- The silent or unheard concerns of communities about health in the context of changing socio-ecological landscapes. The spaces that exist (or not) for such concerns to be turned into a movement for environmental health justice
- The role of global climatic change and local environmental degradation in bringing about mutation of epidemic-capable pathogens, and the consequences of this for human health, especially in the context of extreme and un-regulated consumption of antibiotics

8.3 From discourse to incidence

Indicators of disease incidence and mortality provide a measurable and logical way to assess health risks. However, through this type of assessment, risk is necessarily very narrowly defined. The analysis of discursive practices in societies that face such risks provides the basis on which to reflect on the processes that underpin risk definitions and thus, offers a better understanding of the risk itself. This work intended to point out that, just as development is not to be understood, defined or determined only through the field of western-inspired economics, human health is also not to be understood, defined or determined only through biomedicine. By dissolving the images that have been painted through culturally and politically uninformed indicators of health and of development in general, the consequences of persisting inequalities will crystallise and the basis of inequality can be better understood.

In the case of Vietnam, it was shown how the projected image of a modernised and developed state which takes care of its citizens contradicts the reality of a degrading and increasingly unhealthy environment, with significant parts of the population being vulnerable and suffering from a disease that can be controlled. This now obvious contradiction, however, remains blurred within the country. The constructed discourse marginalises the poor and normalises suffering, while at the same time legitimising the state's abdication of its responsibility to provide basic healthcare and clean water; instead the state transfers these responsibilities to the people. The Vietnamese state has subtly, but methodically, designed its institutions in a way that they obey bureaucratic order and present proof of their prescribed activities even if in reality, much of the policy is hardly ever turned into meaningful practice.

In the example of health education, millions of VND are being spent annually with the objective to spread information and to foster public participation, but health education remains a limited process which, more than anything else, advocates the values and priorities of the Party and the government. The construction of an identity of a powerful nation where the state takes care of its citizens and is oriented on fulfilling their common desires, serves a dual purpose: it satisfies both the socialist imperative of one-party rule, which could not survive under widely-voiced public dissatisfaction, and also the requirements of international development agents which rarely examine the products of the country's meticulous bureaucracy in critical depth. In this context, it becomes clear why, in order to understand any complex

problem, one would always need to look at the relationships of state and society, nature and culture, institutions and agency.

This leads to the second core insight of this study, which aims to provoke discussion about the potential of interdisciplinary approaches for the study of disease. The core message that this work transmits with regard to the epistemology of health is that scientific reality means very little if it cannot help real people. In other words, even if the factors that govern the distribution and the transformation of a health risk have indisputable biophysical attributes, what happens in the socio-political sphere where those attributes are to be encountered can also shape risks and health outcomes. It is for this reason that biomedical experts, public health practitioners and international think-tanks on health need to engage in a sincere dialogue with the humanities, including ethnographers, sociologists and political scientists. Although the methodologies and the epistemologies followed in these widely-defined fields might diverge immensely, they share a common interest of acting for the improvement of human health. If such a claim holds truth, then there is a lot to be gained from interdisciplinary thinking and sharing.

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ANNEX

I. Trajectory of fieldwork methodology

Contextualization

Within the first two months of research, interviews were held with district-level organizations in six of the nine districts of Can Tho City[191] (hospitals, Preventive Health centres, district offices of health under the People's Committee etc.). In addition, representatives of provincial and higher-level authorities that were responsible for water supply and sanitation, environmental protection and health, were also interviewed (DONRE, CERWASS, Institute of Public Health and Hygiene, medical universities, CIDS, WHO, UNICEF). Interviewees at this stage were not personally selected and their names were not made known to the researcher before the actual interview took place. As will be described below, according to the topics of discussion, which had to be pre-designed and given to the disposition of state authorities beforehand, a representative would be assigned by the organization to participate in the interview.

The typical duration of each interview would be between 45 min and 1.5 hours, as most interviewees would claim too busy or too tired to stay longer. A list of questions/prompts was always used, as a guide for the issues planned to be touched upon. During this first stage of research, the interview topics were generic and similar for all the informants. In practice, the depth of the discussion would much depend on the respondent's interest and expertise. By the end of the fieldwork period, it was made sure that through newly identified sources as well as follow-up interviews, information was triangulated.

Language barriers that the researcher could not overcome herself, demanded for the hiring of a research assistant. All the interviewing and the communication with local authorities were made possible through the work of the research assistant, who also translated Vietnamese documents. This constituted both an indispensable help and a research constraint, as will be explained below. The use of a voice-recorder, that would allow accurate transcription and easily retraceable original statements, was faced with discomfort from the side of the interviewees. Even in the few cases that the respondents did not explicitly disapprove of its use, they would keep a rather "stiff upper lip" during the discussions. Therefore, its use was abandoned after the first few interviews, as it was proving more of a research obstacle than a facilitator. These difficulties in acquiring detailed and accurately documented oral information were able to be surpassed to a substantial degree through the extensive training of the assistant and her gradual familiarization with the research topic and the researcher herself.

After 27 semi-structured interviews, a first overview of the institutional structure and its functions around health care, prevention of disease, water provision and sanitation in the region was achieved. Interviewees and secondary data verified the relevance and indicated the importance of the research problem, diarrheal disease. During this phase, the contrast between areas that were developing an urban character and those remaining essentially rural, stroke the researcher as relevant and worth examining. Through an initial analysis of the results, the selection of the two districts where research would go further in-depth was made possible.

Selected districts

Within the selected districts of Cai Rang and Phong Dien, 21 more semi-structured interviews took place. Interviewees mostly consisted of civil society representatives (Women's Union, Farmer's Union, Youth

[191] Those were the districts of: Cai Rang, Ninh Kieu, Phong Dien, O Mon, Binh Thuy and Co Do.

Union, Red Cross offices etc) but also cadres of health-related offices, departments of education, economic and social policy[192]. Finally, some interviews took place with workers the healthcare sector in commune and ward clinics as well as teachers and caretakers in elementary schools and kindergartens.

In this round of interviews the questions were more distinct for the different interviewees and were more focused and less explorative. Triangulation of previously gathered information was possible and some discourse patterns were already being made more evident. Practically, research was easier because it focused on a smaller area, where relations with the locals could be built. Some offices were visited for the second time and familiarity between the researcher and the informants was gradually increasing. Moreover, some explorative "drive-around" the communes and hamlets was allowed. This offered useful observations of the livelihoods and the particular characteristics of rural and urban spaces, at the same time enriching the photographic material. More importantly, the researcher could obtain a better idea of the different areas within each district for the future selection of study-sites for the household survey.

Household Survey

The choice to conduct a household survey with a pre-decided standardized questionnaire was a research decision shaped by the field's character. Whereas the preferred approach would be an equally high number of in-depth interviews with targeted residents of these two selected localities, the method had to be re-considered. In-depth interviewing was thought of as a way to explore people's perceptions, voice their concerns and document their realities in relation to topics of health, disease, water and sanitation. It would also provide the opportunity to closely observe their household practices, habits and current situation with regards to these issues. Despite the adequacy of the method, access into households was not possible without a research permit. In turn, to obtain such a permit demands a pre-decided list with the addresses of individuals whom interviews are to be held and a pre-decided specific set of questions that would be asked. Interaction between a foreign researcher and local cadres or citizens was confined and restricted by this "official research permit" regulation and thus research was lacking those trustworthy key informants who would be able and willing to guide the selection of those households (according to certain criteria such as poverty, profession, location). Under these conditions, the only way to obtain permission for interviewing citizens would be a random selection of households and a pre-decided questionnaire; something that is not far from a household survey.

The process of a household survey, on the other hand, is a research process very familiar to the Vietnamese authorities, with which it is easy to surpass bureaucratic and procedural obstacles. Therefore, though it was initially thought of as a complementary method, the household survey proved to be the perfect "Trojan horse" for observations and conversations with people in the research study-sites. The process was well-known and administered by local offices within the district once approved centrally obtained. A large number of households were visited and apart from the collection of quantitative information, "off-research" time was spent with local cadres and lay people while ensuring my centrally approved unlimited and daily access to the selected hamlets and communes.

Sample selection and characteristics

Whereas the selection for the districts and communes was based on an extensive round of observations, local literature study and interviews with district-level authorities, the selection of the hamlets and areas for the household survey was mostly based on the advice and help of local cadres who were very knowledgeable of the inner area's specificities, such as the extent of the available water supply and sanitation infrastructure, and even could provide information for each household in their jurisdiction.

[192] Namely, those were the district-level offices of education, offices of health, preventive health centers, offices of labor and social affairs, office of agriculture and rural development (Phong Dien) and office of industry and economy (Cai Rang).

Generally, the involvement of local cadres in the organization and supervision of the survey was an official requirement (see also section 3.3), which introduced a bias but also facilitated the research process. It was often the case, for example, that the consulting cadre would lead the survey to households whose members would have a public office position, with the claim that people working for the state are more likely to tolerate the survey procedure. Even if the above is true, the selection of such households is also believed to have posed the bias of providing "correct" answers, in line with regulations and social imperatives, especially if a household is connected directly to the party-state apparatus. Under this light, some answers might have been biased towards the recommended or legal way of doing things and not the practices or ideas that people actually adopt.

The final decision of which households to visit was left to the researcher and was mostly based on a desired representation of purely rural and distinctively urban locations, accordingly for the two districts. The second requirement set by the researcher was for a mix of poor, normal and better-off households. In total, 25 households from the sample were officially classified as poor or nearly-poor and the rest 106 were not. Judging from each household's belongings, infrastructure and livelihood sources in the rest of the households, a representation of the "average household" was attempted, avoiding to interview households that seemed overly wealthy. The percentage of those in an extremely poor situation did not exceed ¼ of the sample. Thirdly, it was interesting to examine households that had direct access to river water and those who didn't. In the rural case, the sample included mostly households that are located near a surface water source (47) while for the rest this was either not true or no related information was gathered (22). In the urban case this was "naturally" divided into the two selected areas. The visited households located in the central Yen Hoa area did not have access to surface water (29), while from those located in Yen Binh area (33) most were located near the river where the floating market activities take place (26). About half of these houses were actually "floating", as is described in detail in section 4.3.

The gender and the age of the respondents were left random because the researcher could not control which member of the family would be available at the time of the interview. In total, more women (83) than men (48) were interviewed. Concerning the age of the sampling population, most of the sample was almost equally distributed in the groups of 36 -55 years old (45%) and over-56 years old (43%), with only 11.5% of the respondents being younger than 35 years old. Finally, the education level varied significantly, with 17 respondents being illiterate, 47 having attended elementary school, 27 being junior high-school graduates, 38 having finished secondary high-school and only one interviewee having gone through higher education.

Questionnaire

The questionnaire used for the household survey was a shortened and slightly modified version of a questionnaire designed by researchers Simon Benedikter, Ute Köster and Phạm Thị Trung Ngọc[193], for previously conducted research in Can Tho. The questionnaire is published and available in the Master thesis of Ute Köster (2008). Making use of this pre-designed and pre-tested research tool with formulated categories (i.e. water storage types, water supply sources, wastewater disposal options, diarrhoea symptoms etc) allowed for time economy by avoiding repetition of the same type of preliminary work. The questions were translated into Vietnamese and re-tested during the training of the local enumerators, in order to make sure of its clarity and contextual fit. The selection and adjusting of some questions was necessary in order to suit the particular objectives of this research. In detail, 24 of the 43 questions were kept as in the original questionnaire (Köster, 2008), nine were slightly changed and ten questions were newly introduced (see Questionnaire in Annex).

[193] A resulting journal publication of 2009: Herbst, S., et al. 2009. Perceptions of Water, Sanitation and Health: A Case Study from the Mekong Delta, Vietnam. *Water Science & Technology,* 60**,** 699-707.

In the selection and formulation of questions, attention was paid to keep the questionnaire short and manageable to finish within 45 minutes. Maintaining and creating a lot of open-ended questions was aiming to prompt discussion with the interviewees. Descriptive information from these open-ended questions was used to form new categories which were included later in the survey analysis (see Codebook in Annex). Other type of information that was obtained through the household-survey discussions was used as complementary qualitative data, in combination with note-keeping, observations and photographic material.

Training survey assistants

Apart from the full-time research assistant/translator that was already working with the researcher, two additional enumerators were recruited especially for the execution of the household survey (female university students). In order to train the enumerators, we held two training sessions of four hours each, during which survey questions were discussed and the desired approach was explained, stressing the need for subtlety, respect and patience. Before the fielding of the enumerators, it was assured that each of them had first attended about ten survey interviews acting only as the researcher's translator, in order to clearly exemplify the desirable manner of going about with the survey questions. Overall, the training drew attention to the following issues:

- Providing an introductory overall presentation of the research project to the participants, shortly explaining the survey's purpose and getting their consent.
- Not giving the questionnaire to the respondents to fill in but asking questions openly, in order to avoid any predisposition on the wording or the pre-defined categories. Fitting answers into the multiple-choice options or keeping notes and creating new categories.
- Allowing dialogue and expression of personal opinion of the respondents, even beyond the strict boundaries of the survey questions. Constantly keeping notes on this additional information provided from the respondents
- Oral and written reporting at the end of each day, including a description of the visited households and respondents, a run-through the questionnaires filled in and discussion of any uncertainties (blanks, open-ended answers) or difficulties faced.

In total, the number of survey interviews led by the researcher herself was 61 (of the 131) and the rest 70 were conducted by the trained enumerators. At the end of each interview, a small gift was offered to each household as an appreciation of their time and willingness to be part of this research project. The gift constituted of a bag with some basic essentials for a household (a pack of sugar, coffee or tea and some bars of hand-washing soap) which constituted basically a symbolic and well-received gesture of gratitude, recommended by the local authorities.

Overall, the survey allowed research to grasp local realities and strengthen the findings on issues that were beforehand only discussed in terms of existing policy by official representatives of the state. Previous observations and implications of informants were crystallizing in the words of the interviewees and research was enticingly gaining flesh. However, it must be stressed that a lot of respondents seemed confused on whether and what they should say and were hesitant to open up conversations, especially in the presence of local cadres (see also section 3.3)

In-depth household interviews

The presence of the researcher in the same hamlets and areas for more than a month of conducting the household survey resulted in the building of trust between her and the local authorities. This consequently allowed for a number of in-depth household interviews to be organized. Nevertheless, the involvement of the local cadres in selecting the households and their presence during the interviews was again outside of the researcher's control. However, all nine interviews lasted from one to two hours, during which the presence of the local cadre was somehow less felt than in the household survey. The researcher was often

left alone with the interviewees after the first 20 minutes, allowing for discussions to expand and for more "difficult" questions to be asked.

The examined issues at this stage were mostly focusing on the preventive communication approach and the effect it has on the perceptions of people. One of the sample selection criteria was for interviewees to be mothers of young children. Second criterion was for respondents to have (also) undertaken micro-credit loans or subsidies for the improvement of their sanitation situation. As a result, four young mothers were interviewed in the rural hamlets of Phong Dien district, one of which had also taken up a loan for sanitation. In the case of urban Le Binh ward of Cai Rang district, there is no loan policy being implemented. However, as local informants claimed, there are households that face sanitation problems:

> "In Cai Rang, there is no policy that gives loans; people build their toilets on their own and by now 99% have toilets. But there are people who have no money to repair toilets that exist already. The ones who are classified as poor are more taken care of than those who might be a bit better-off. This is because only the poor get state support to build and repair the toilets in their house; the rest have to manage on their own" (Local informant from Cai Rang, 20.12.11, personal communication).

This was seen as an interesting case of non-access to social policy and thus, apart from four households with young mothers, one of the selected households in Le Binh had a faulty sanitation facility.

Interviews in targeted offices

After these rounds of interviews and comparing official statements, people's opinions and issued policies, data presented certain gaps and mismatches. Moreover, the screening of collected answers in comparison to the study's refined objectives, revealed unanswered questions. The above indicated the need for more research in order to clarify and triangulate information and led to the selection of 19 targeted state offices and organizations in the wider case study area of Can Tho[194]. Additionally, interviews with representatives from six high-level departments and research institutes in Ho Chi Minh City and Hanoi were also conducted[195]. The method used in this stage was also the semi-structured interview with the help of an interview guide. In combination to these scheduled visits, some additional informal meetings were held with fellow researchers, NGO representatives and local experts, whose knowledge and experiences brought about rich discussions and supported the findings.

[194] These were: CERWASS, CIDS, the Food Safety Unit, PHC of Can Tho, the DoPI and the CHECC of Can Tho, as well as the district hospitals in Cai Rang and Phong Dien, the public pharmacies within these hospitals, local clinics and health stations within the above districts, water supply companies of Can Tho City and the Cai Rang branch, rural water stations in the communes of Phong Dien, and finally the district level Women's Union offices.

[195] These were: the IHPH, the WHO and the Pasteur institute in Ho Chi Minh City, as well as the Institute of Hygiene and Epidemiology, the Department of Preventive Medicine, the VIHEMA and the HSPI of the MoH which are located in Hanoi.

Operationalization of research objectives

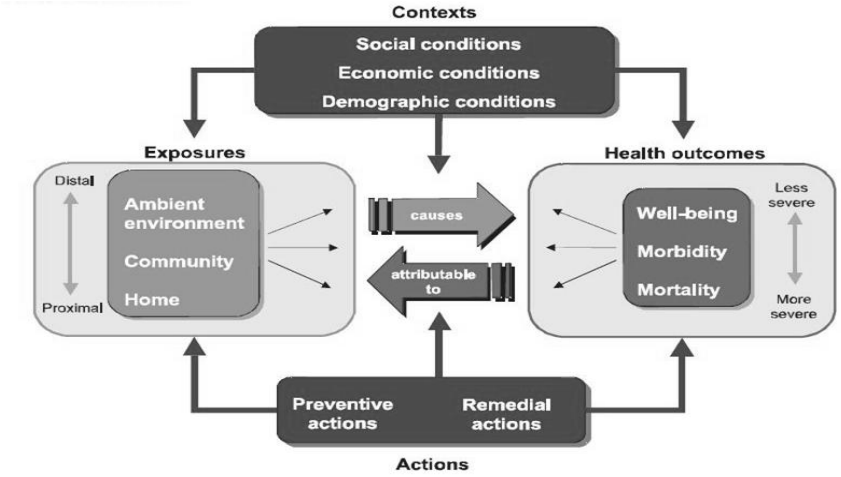
Sub-questions	Sources	Methods used
Objective 1: To delineate the institutional structures behind the prevention and control of diarrheal disease and to question their contribution in limiting the disease's prevalence in the country		
• How is the healthcare sector organized (hierarchy, structure) and how is it regulated (legislation, norms and rules)? • How do citizens gain access to healthcare services?	Experts in health (consultants, academics) State agencies of health (representatives from central to commune level) Local government representatives Health staff (doctors, nurses, volunteers) Individuals in households	Semi-structured Interviews In-depth interviewing Observation from healthcare facilities Study of legislation and sector-generated statistics Collection of news articles
• What kind of policies are there in place to prevent from diarrheal disease (i.e. control of water pollution, wastewater treatment sanitation facilities presence, maintenance and use, educational programs)? • Which are the institutional structures in place to implement these policies and what incentives or disincentives exist for their implementation?	Experts in water resources management Water agencies Local authorities NGO representatives Individuals	Semi-structured interviews In-depth discussions Observations from households, local communities, centres of health promotion Study of legislation and sector-generated statistics
• What is the quality of healthcare services in terms of infrastructure, personnel, equipment etc, in rural and urban environments in CTC? • What other (non-governmental) organizations are there actively helping and how, in spreading information about diarrheal disease? • What kinds of treatments do patients receive from the local healthcare facilities for the various types of diarrheal disease?	Local government representatives Health staff (doctors, nurses, volunteers) Individuals	Semi-structured Interviews In-depth interview Household Survey Observation from households, pharmacies, healthcare facilities

Objective 2: To describe which environmental and socio-economic aspects create favourable conditions for the exacerbation of the disease in the Mekong Delta		
• What are the socio-cultural and economic characteristics of places (provinces, districts or communes) demonstrating high prevalence of diarrheal disease (ethnicity, main economic activity, rural or urban, water and sanitation infrastructure)? • Which are the main sources of water pollution within the province of Can Tho? • How do floods affect the spread of diarrheal disease	State agencies of health (representatives from central to commune level) Local authorities Health staff & personnel NGOs Individuals	Semi-structured Interviews Household survey Study of state-produced reports and statistics Scientific literature Observations
Objective 3: To trace the existing perceptions and understandings around diarrhoea and around the practices that can drive its spread, in both urban and rural settings in Can Tho City		
• How do people's definitions of diarrheal disease differentiate along categories such as age, gender, profession, location, income or others? • What different forms of exposure do people perceive in relation to the risk of diarrheal disease? • Is water pollution thought of as a contributor to disease, therefore a threat to human health? • What are the different strategies that people follow in order to protect themselves from water pollution? • What are the different strategies that people follow in order to protect themselves from diarrheal disease? • Are there any alternative medicine approaches (preventive or remedial) to diarrhoea and if so, in which context are they being offered/practiced?	Individuals NGOs representatives Health staff & personnel Local governance representatives	Semi-structured Interviews Survey In-depth interviews Observations Study of literature
Objective 4: To discover and discuss the socio-political factors guiding the discourse and underlying the implementation of public policy around		

diarrheal disease, in both national and local levels.		
• How can the healthcare system be appraised with regard to equity, efficiency and effectiveness in treating and controlling diarrheal disease? • What are the underlying interests of actors that result in halting or promoting the control of diarrheal disease? • What kind of contest or negotiation is taking place shaping policy and implementation in the field of healthcare and disease prevention? • Who are the key actors that shape the discourse and the understandings around diarrheal disease in the different levels (from national to local) and by which means do they achieve so?	Combined sources	Discourse analysis (documents and transcripts) Triangulation and comparison of findings

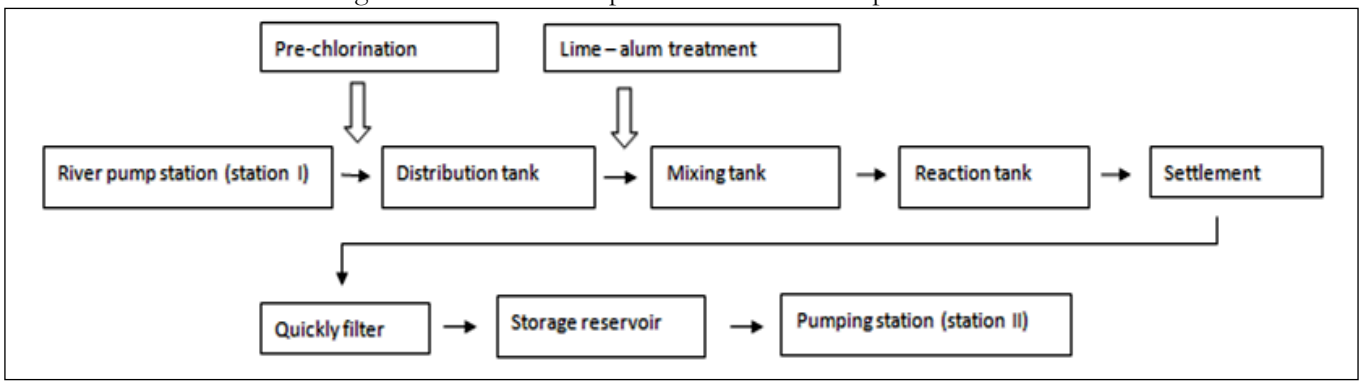
II. Figures

Figure 1: the MEME (Multiple Exposures Multiple Effects) model



Adopted by Briggs (2003)

Figure 2: The treatment process that water companies follow



Source: Head of water factory in Cai Rang district, personal communication

III. Tables

Table 1: Example of the questionnaire used for the survey on poverty status

Revenue	Total Income	Total expenditures
1. Crop Production (including product sales and consumer products for household)		
• food crops		
• Industrial plants		
• Fruit trees		
• Crop by-products (coal, leaves, tree tops, straw, wood ....)		
• Other planting products (seedlings, ornamental plants ....)		
2. Livestock (including product sales and consumer products for household)		
• Cattle		
• Poultry		
• Other products (eggs, milk, cocoons, honey farming, seed)		
• Animal by-products (faeces, feathers, leather...)		
3. Agricultural service activities		
4. Forestry (including product sales and consumer products for the household) and forestry services		
5. Fisheries ((including product sales and consumer products for the household) and Fishery Service		
6. The business activities of non-agricultural services (including product sales and consumer products for household)		
7. Salaries and wages		
8. Other amounts (including items on revenue gathering, gifts, remittances from outside, interest savings, home rentals, pensions, grants preferential treatment of persons)		
TOTAL		
Total household income (= total income of question 4 – total expenditures of question 4)		
Average income / person / month (= total income in question 5.1 / demography of households / 12 months)		
CONCLUSION (Mark x in appropriate boxes)		
POOR HOUSEH0LD Rural : < = 400,000 / person / month Urban: < = 500,000 / person / month		
NEAR POOR HOUSEHOLD Rural: > 400,000/person / month and < = 520,000 / person / month Urban:> 500,000 VND / person / month and < = 650,000 / person / month		

Source: OLISA Cai Rang (2011) translated.

Table 2: Reported cases of diarrhoea from various agencies, accumulating statistics to the indicated administrative levels

Source	Years	Accumulated per administrative level	Average annual cases	Reference documents
MoH	2001-2011	National	**925893**	(MoH, 2012a)
IHPH	2005 – 2011	Regional (20 Southern provinces)	**220476**	(IHPH, 2012)
Children's Hospital	2009 - 2010	Regional (various provinces of the South) – children diagnosed	**12670**	(Can Tho Regional Paediatrics Hospital, 2011a)
Children's Hospital	2009 - 2010	Regional (various provinces of the South) – children inpatients	**2562**	(Can Tho Regional Paediatrics Hospital, 2011b)
Reported for the Province				
MoH	2007 - 2010	Province (Can Tho City)	**17990**	(MoH, 2012a)
PHC of CTC	2008 - 2011	Province (Can Tho City)	**2090**	(PHC Can Tho City, 2011b)
PHC of CTC	2011	Province (Can Tho City) - children	**10**	(PHC Can Tho City, 2011f)
General Hospital of CTC	2006 - 2011	Province (Can Tho City)	**1528**	(General Hospital of Can Tho City, 2011)
Reported for the district of O Mon				
O Mon hospital	2010 - 2011	District of O Mon	**931**	(General Hospital of O Mon, 2011)
O Mon PHC	2010 - 2011	District of O Mon	**868**	(PHC O Mon, 2011a)
PHC of CTC	2010 - 2011	District of O Mon	**1350**	(PHC Can Tho City, 2011b)
Reported for the district of Phong Dien				
Phong Dien hospital	2010 - 2011	District of Phong Dien	**346**	(General hospital of Phong Dien, 2011)
Phong Dien PHC	2010	District of Phong Dien	**76**	(PHC Phong Dien, 2011)
PHC of CTC	2010 - 2011	District of Phong Dien	**1278**	(PHC Can Tho City, 2011b)
Reported for the district of Binh Thuy				
Bihn Thuy PHC	2009 - 2011	District of Binh Thuy - children	**562**	(PHC Binh Thuy, 2011)
PHC of CTC	2009 - 2011	District of Binh Thuy	**1558**	(PHC Can Tho City, 2011b)
Reported for the district of Cai Rang				
Cai Rang PHC	2007 – 2011	District of Cai Rang	**377**	(PHC Cai Rang, 2011a)
PHC of CTC	2008 - 2011	District of Cai Rang	**1839**	(PHC Can Tho City, 2011b)
Reported for the district of Co Do				
Co Do PHC	2010 – 2011	District of Co Do	**976**	(Medical Centre of Co Do, 2011a)
PHC of CTC	2010 - 2011	District of Co Do	**997**	(PHC Can Tho City, 2011b)

Based on collected reports and statistics from health institutions, 2011

Table 3: Household survey results from the PATH project, on water treatment methods in Co Do and Vinh Thanh districts

Methods	Ever heard of	Ever used*	Used yesterday**	Used (almost) every day the past month**
Boiling the water	100.0	99.8	69.7	65.2
Alum	97.8	69.1	7.9	6.7
Filter water using cloth, or net filter	91.2	50.7	5.8	7.2
Allow water to settle and decant	83.9	69.1	10.7	11.2
Chlorine/bleach tablet or liquid	19.5	34.3	4.4	4.4
Mineral pot (purifying device)	9.2	30.1	78.6	78.6

*Note: * Among household who ever used this method, ** Among households who ever used the method .*

Data by (Abt Associates Inc., 2011) for PATH project. Design by author.

Table 4: Water supply sources for the districts of Can Tho (excluding Ninh Kieu) according to CERWASS-provided information for 2011

	Percentage of people using hygienic water (%)			Deep drilled (dd) well			Clay jugs with stored rainwater			River/lake water		Piped-supply water	
Name of district	Population	Population using hygienic water	%	Number of dd wells	Number of dd wells that provide with hygienic water	Population using hygienic water from dd wells	number of clay jugs	number of clay jugs with hygienic rainwater	Population using hygienic rainwater from clay jugs	Number of surface water resources that are treated hygienically	Number of people using surface (river/lake) water	Number of private tap	Number of people having private taps
Vinh Thanh	104.867	62.028	59,15	6.479	4.458	23.380	1.947	1.812	7.367	5	26	6.953	31.255
Thot Not	126.828	86.657	68,33	2.590	2.502	11.852	123	114	466	2.403	5.613	15.603	68.726
Co Do	114.138	93.856	82,23	8.824	8.647	42.614	900	776	3.045	108	452	10.612	47.745
Thoi Lai	116.909	84.953	72,67	11.764	10.238	49.894	476	362	1.442	288	868	7.234	32.749
O Mon	100.269	74.038	73,84	7.292	6.992	34.524	284	263	960	2.190	5.213	7.216	33.341
Binh Thuy	40.380	27.467	68,02	1.802	1.802	9.059	243	243	640	0	0	4.202	17.768
Phong Dien *	98.450	67.683	68,75	6.410	6.168	29.552	1.014	988	3.766	2.596	9.694	7.866	34.365
Cai Rang *	76.711	59.649	77,76	2.791	2.583	13.019	295	276	1.245	1.721	6.861	8.914	38.524
total	**778.552**	**556.331**	**71,46**	**47.952**	**43.390**	**213.894**	**5.282**	**4.834**	**18.931**	**9.311**	**28.727**	**68.600**	**304.473**
total (2010)	778.552	538.824	69,21	47.952,0	43.390	213.894	5.276	4.834	18.931	9.303	28.727	64.585	286.966

* Case-study districts. Source: (CERWASS, 2011a, CERWASS, 2010)

Table 5: Reported rural and urban population in Can Tho City from the Statistical Yearbook and by CERWASS

Yearbook of Can Tho									**CERWASS** - rural districts and parts of urban districts- 2010
	Urban 2006	Rural 2006	Total 2006	Urban 2009	Rural 2009	Urban 2011	Rural 2011	Total 2011	
Ninh Kieu	212.095	-	212.095	244.065	-	249.451	-	249.451	-
O Mon	130.537	-	130.537	130.274	-	131.972	-	131.972	100.269
Binh Thuy	93.839	-	93.839	111.306	-	116.349	-	116.349	40.380
Cai Rang	78.708	-	78.708	86.328	-	88.432	-	88.432	76.711
Thot Not	23.528	172.413	195.941	159.461	-	161.563	-	161.563	126.828
Vinh Thanh	13.374	139.363	152.737	17.302	95.586	17.458	96.900	114.358	104.867
Co Do	26.047	153.091	179.138	12.979	111.266	13.071	111.718	124.789	114.138
Thoi Lai	- - -	- - -	- - -	10.643	110.678	10.735	111.517	122.252	116.909
Phong Dien	-	104.072	104.072	10.746	88.921	10.828	89.198	100.026	98.450
Total	578.128	568.939	1.147.067	783.104	406.451	**799.859**	**409.333**	**1.209.192**	**556.331**

Based on data by Can Tho Statistica Office (2007, 2011, 2009) and CERWASS (2011a)

Table 6: Results from hygiene and water quality checks in water factories (serving>500hh) in 10 provinces of the Delta

1. Testing the general hygiene in water factories	**2010**	**2011**
Total water factories in the area	1610	6515
Total water factories were checked	1171	3525
Total testing checks in a water factory	2954	3003
Total testing checks that showed non compliance with **general hygiene**	748	522
Percentage of **non**-compliance in the total of factories checked	63, 87%	14,81%
Total facilities that were tested for a second time and were still found to not comply	2	0
2. Results from water samples	**2010**	**2011**
Total water samples are tested	3077	4645
Total water samples that complied with hygienic standards	2251	3868
Percentage of water samples that reached hygienic standards	73,16%	83,27%
Total water samples that did not reach hygienic standards	826	777
- of which, how many did not reach physical and chemical indicators	619	614
- of which how many were due to microbiological indicators	300	163

Source: (IHPH, 2011a, IHPH, 2011b)

Table 7: Sanitation information for the districts of Can Tho, provided by CERWASS Can Tho

		% of hh using hygienic toilet:		**% hh having hygienic toilet**		**1. septic tank latrine**		**2. pour-flush latrines**		**3. two-vault composting**		**4. pit latrine with aeration**		**5. other**
		hh using hygienic toilet	% of total	hh having hygienic toilet	% of total	# latrines	# of hygienic latrines	# latrines	# hygienic latrines	# latrines	# hygienic latrines	# latrines	# hygienic latrines	# latrines
Name of district	# of hh													
Vinh Thanh	23.080	11.852	51,35	11.385	49,33	9.463	9.463	1.827	1.826	30	27	69	69	11.228
Thot Not	28.534	15.510	54,36	14.211	49,8	12.414	12.333	1.878	1.878	0	0	0	0	13.024
Co Do	25.806	10.524	40,78	10.144	39,31	4.188	4.188	5.804	5.676	0	0	297	280	15.282
Thoi Lai	27.221	7.787	28,61	7.364	27,05	5.347	5.204	2.073	2.057	0	0	103	103	19.434
O Mon	23.327	8.025	35,94	7.845	35,14	5.177	5.159	2.607	2.573	23	23	90	90	14.297
Binh Thuy	9.878	4.386	44,4	4.240	42,92	3.974	3.974	266	266	0	0	0	0	5.492
Phong Dien *	22.998	8.102	35,23	7.834	34,06	6.019	6.017	1.603	1.603	58	58	156	156	14.563
Cai Rang *	18.479	12.975	70,21	12.064	65,28	9.363	9.248	2.831	2.816	0	0	0	0	5.504
Total of 2011	**178.323**	**80.461**	**45,12**	**75.087**	**42,11**	**55.946**	**55.586**	**18.889**	**18.695**	**111**	**108**	**715**	**698**	**98.824**
total of 2010	178.323	77.716	43,58	73.807	41,39	55.946	55.586	17.609	17.415	111	108	715	698	100.169
* study districts														

1. septic tank latrine
2. pit pour-flush latrine (THẤM DỘI NƯỚC)
3. two-departments composting latrine (HAI NGĂN)
4. sink with aeration latrine (CHÌM CÓ ỐNG THÔNG HƠI)

Source: (CERWASS, 2011a, CERWASS, 2010)

Table 8: Sanitation information from 10 Provinces of the Mekong Delta

Data provided by IHPH Ho Chi Minh City		**2010**	**2011**	**Average**
General information	Total households (in the study area)	5.904.427	4.042.074	
	Total latrines	5.534.034	2.929.496	
	Total hygienic latrines	3.738.730	2.156.207	
	Percentage of hygiene	67,56%	73,6	
	Number of hygienic latrines that newly built in the report duration	65.619	52.307	
	Number of latrines becoming unhygienic latrines in the report duration	108.927	98.125	
Details of the specific type of latrines				
Septic latrines	**Total latrines**	**3.641.083**	**1.651.401**	
	Number of hygienic latrines	2.707.845	1.452.951	
	Percentage of hygienic latrines (compared to total septic latrines)	74,37%	87,98%	81,17%
	Number of newly built hygienic latrines in the report duration	46.935	38.676	
	Number of latrines becoming unhygienic latrines in the report duration	20.254	13.156	
	Percentage of septic latrines % (compared to total households)	61,67%	40,86%	51.26%
Pour-flush latrines= NHÀ TIÊU THẤM DỘI NƯỚC	**Total latrines**	**1.083.602**	**909.408**	
	Number of hygienic latrines	882.754	743.490	
	Percentage of hygienic latrines (compared to total pit pour water latrines)	81,46%	81,76	
	Number of newly built hygienic latrines in the report duration	18.336	14.257	
	Number of latrines becoming unhygienic latrines in the report duration	8.604	8.366	
	Percentage of pit latrines % (compared to total households)	18,35%	22,50%	20.43%
Two vault compost latrines= NHÀ TIÊU HAI NGĂN	**Total latrines**	**64.698**	**50.155**	
	Number of hygienic latrines	51.591	37.493	
	Percentage of hygienic latrines (compared to total two compartments latrines)	79,74%	74,75	
	Number of newly built hygienic latrines in the report duration	215	212	
	Number of latrines becoming unhygienic latrines in the report duration	1.743	745	
	Percentage of two-vault compost latrines % (compared to total households)	1,10%	3,04%	2.07%
Pit latrines with aeration = NHÀ TIÊU CHÌM CÓ ỐNG THÔNG	**Total latrines**	118.467	63.051	
	Number of hygienic latrines	96.540	45.159	

HƠI	Percentage of hygienic latrines (compared to total pit latrines with aeration)	81,49%	71,62	
	Number of newly built hygienic latrines in the report duration	959	266	
	Number of latrines becoming unhygienic latrines in the report duration	695	3155	
	Percentage % of pit latrines with aeration (compared to total households)	3,25%	3,82%	3.54%
Other kinds	Number of latrines	626.184	503.564	
	Percentage % (compared to total number of households)	31,10%	12,46%	21.78%

(IHPH, 2011a, IHPH, 2011b)

Table 9: Microbial water quality standards for drinking and daily use water in Vietnam

	Parameter	**Unit**	**Maximum limit**		**Testing method**
Drinking water	Total Coliform	Bacterial/100ml	0		TCVN 6187 – 1, 2: 1996 (ISO 9308 – 1,2 – 1990) or SMEWW 9922
	E.coli or thermo-tolerant coliform	Bacterial/ 100ml	0		TCVN 6187 – 1, 2: 1996 (ISO 9308 – 1,2 – 1990) or SMEWW 9922
Domestic water	Total Coliform	Bacterial/ 100ml	50*	150**	TCVN 6187 – 1, 2: 1996 (ISO 9308 – 1,2 – 1990) or SMEWW 9922
	E.coli or thermo-tolerant coliform	Bacterial/ 100ml	0*	20**	TCVN 6187 – 1, 2: 1996 (ISO 9308 – 1,2 – 1990) or SMEWW 9922

* Applies for water provision units

** Applies for water exploitation of individual, household (piped water supply through simple treatment e.g. drilled wells, dug wells, rain-tank, gravity pipeline)

According to the National Technical Regulations (MoH, 2009b)

Table 10: Number of loans for WSS from the VSPB for the years 2005 – 2010

District	Total (2005-2010)		2005		2006		2007		2008		2009		2010	
	Households (hh)	amount	hh	amount	hh	amount	hh	amount	hh	amount	hh	amount	hh	amount
Thốt Nốt	4.629	25.338	0	0	906	4.260	1.452	7.662	2.271	13.416	0	0	0	0
Thới Lai	2.372	9.492	0	0	0	0	0	0	0	0	672	2.688	1.700	6.804
Cờ Đỏ	7.218	32.482	0	0	302	1.000	1.174	4.688	2.254	9.015	2.307	10.708	1.181	7.071
Vĩnh Thạnh	4.732	32.031	0	0	222	994	1.052	5.822	1.067	7.239	1.358	10.284	1.033	7.692
Phong Điền	6.229	34.593	0	0	435	1.710	842	3.323	2.144	10.500	2.003	13.600	805	5.460
Total	**25.180**	**133.936**	**0**	**0**	**1.865**	**7.964**	**4.520**	**21.495**	**7.736**	**40.170**	**6.340**	**37.280**	**4.719**	**27.027**

Notes (by the issuing authority):
- These numbers include loans for water supply network connection and for building toilets
- Only give loans to hh in rural areas (communes)
- In 2009 Thot not changed from rural to urban district and Co Do split to create Thoi Lai and Co Do in 2009

(Unit: households / million)

Data source: (VBSP, 2011)

Table 11: Analysis of the IEC material acquired by three types of organizations, according to the number of times selected recommendations were mentioned

Selected recommendations	CHECC	pPHC	dPHC	Overall	Average CHECC	Average pPHC	Average dPHC	Average overall
1. Use cooked-food and boiled- water	8	2	3	13	1	0,67	0,6	0,81
2. Wash hands clean before having meals, when preparing food	6	2	3	11	0,75	0,67	0,6	0,69
3. Wash hands after going to the toilet	6	1	3	10	0,75	0,33	0,6	0,62
4. Do not eat fish and seafood, especially not raw	5	0	2	7	0,62	0	0,4	0,44
5. Use a hygienic toilet	2	2	3	7	0,25	0,67	0,6	0,44
6. Do not exercise open defecation	5	2	2	9	0,62	0,67	0,4	0,56
7. Use clean water for cooking	4	2	1	7	0,67	0,67	0,2	0,44
8. Use chloramine B or alum to disinfect water	5	2	2	9	0,62	0,67	0,4	0,56
9. When someone in the family gets acute diarrhoea, inform the nearest health care centre	6	1	2	9	0,75	0,33	0,4	0,56
10. Do not eat raw vegetable	4	1	0	5	0,5	0,33	0	0,31
11. Avoid eating out in mass servings like in weddings, funerals etc.	2	0	1	3	0,25	0	0,2	0,19
12. Keep your latrines clean, have enough water and soap	3	1	0	4	0,37	0,33	0	0,25
13. When getting diarrhoea, one must use the toilet and throw powdered lime or Chloramine B with water to flush (magazine on food poisoning)	3	0	1	4	0,37	0	0,2	0,25
14. Don't throw garbage or dead animals into the rivers, lakes and ponds	3	2	1	6	0,37	0,67	0,2	0,37
15. Control the spread of flies (magazine – on flies)	1	1	0	2	0,12	0,33	0	0,12

Table 12: Analysis of semi-structured interviews with preventive health offices in Can Tho, based on the mention of selected issues around diarrheal disease understandings

Issues that were discussed /brought up after or without prompt by the interviewer	**ministry**	**provincial**	**district**	**commune /ward**	**hamlet/area**
1. the high prevalence of diarrhoea in the region	75%	20%	25%	25%	0
2. the distinction between different epidemiological causes and knowledge on the symptoms	44%	0	30%	0	0
3. the general connections between water, sanitation and diarrhoea	69%	80%	65%	75%	50%
4. the importance of in-the-house behaviours for the prevention of diarrhoea	56%	40%	70%	50%	50%
5. the importance of hand-washing to be promoted as a prevention measure	31%	40%	25%	25%	0%
6. the connection between diarrhoea and malnutrition, exhaustion and other health impeding conditions	31%	20%	20%	0	0
7. the different stages of diarrhoea and the recommended treatments	37%	60%	50%	100%	100%
8. The role of IEC in enhancing understandings around disease and changing behaviours other than WSS improvements	56%	40%	60%	50%	0
9. Knowledge of diarrheal disease pathways (faeces, fingers, water, food, people, digestive system)	50%	60%	30%	25%	0
Total score	50%	40%	42%	39%	22%

IV. Boxes

Box 1: New indicators and targets for re-defining "improved" water and sanitation proposed by the Joint Monitoring Program of UNICEF and the WHO

For water supply: For a basic water service in the household, drinking water should be simply collected from an "improved" source (proxy for both availability and quality), within 30 minutes per trip (accessibility). For an intermediate/higher water service, the criteria to be fulfilled are:

(1) Drinking water collected from a source that supplies 50 litres per capita per day year-round (with daily or weekly interruptions in supply)
(2) requiring no more than 10 minutes to collect
(3) with no detectable E. coli in a 100 ml sample
(4) the combined expenditures on water, sanitation and hygiene will cost no more than 5% of the disposable household income.

For sanitation: A proper sanitation:

(1) Separates excreta from human contact and ensures that excreta does not re-enter the immediate household environment
(2) is safe (protects the user from risks such as vermin, falling into the pit)
(3) is durable
(4) belongs to one household or is a shared toilet within or nearby the plot shared by no more than 5 families or 30 people, whichever is fewer, and used by people who know each other,
(5) is accessible at all times (seven days a week, 24 hours a day)
(6) is accessible to all members of household, including those with disabilities
(7) protects users from culturally-inappropriate exposure or invasion of privacy

Additional parameters include aspects of affordability and community-wide sanitation by the abolishment of open defecation and adequate treatment of excreta before they are disposed.

(JMP, 2012b)

Box 2: Official instructions for collecting data on clean water supply of households in Can Tho

Hygienic water (NƯỚC SẠCH) definition: Hygienic is the water used directly or after filtration satisfying the quality requirements: colourless, odourless, with no strange taste, can be used for drinking after boiling. This definition is also quantitative, and should be combined with the observations that follow the instructions below:

1. Tap water: water that is collected from a faucet (in the house or public tap water) supplied from a water supply centre station. The water resource must be not polluted, treated hygienically for the supply of people via a pipe system.
2. Rain water: collected in tanks or jugs (clay). Rain water is collected from a tile roof (red one), steel roof, and concrete ceiling (after the discharge of dirt before collection) and leaded into the pottery jugs which are also washed before water collection. Tanks and clay jugs must have covering and an installed tap or the use of mugs to get the water is required.
3. Mineral water or surface water: water that is being collected from the stream or a spring and is lead to the household by conduit; surface water that is not polluted by human or animal waste, chemicals, pesticides, industrial waste material, or handicraft village waste.
4. Dug wells (water from shallow layer) with a covering, floor, water extraction tool and filtering material: dug-wells must be located at least 10m far from a barn or any other source of pollution. The well has to be made out of bricks or rocks and the drop pipe has to be at least 3 meters deep. The floor around the well has to be covered with concrete or bricks without cracks.
5. Deep drilled wells (using drilling machine): The well should be located far from latrines, cattle barns, or other sources of pollution at least 10m. The floor of and around the well has to be built with concrete or bricks without cracks.

Considering data collection on hygienic water:

Data is collected at the hamlet level by observing the type of water supply (based on the criteria such as colour, odour, and strange traces), checking the quality of the construction and the current operational status of it (the way people use it):

- If a household uses two or more of waterworks (infrastructure) at the same time, only the source mostly used will be recorded into the statistic records to assess whether households use clean water. If households have to buy clean water regularly from a boat or a mobile water truck, the source of this water (drilling well or tap water) is determined and recorded accordingly.
- For the hamlet level: reporting is done by observing methods and by interviewing and collecting statistical data from each household. For the commune/district/Province level: representative data sources can be selected (normally selecting from 20% to 30% of the population in the commune or surveying the total population)

(MARD, 2008a, CERWASS, 2011b, CERWASS, 2011e)

Box 3: Sanitation regulations and definitions in Vietnam

Houses' sanitation should technically ensure the following requirements: Isolating the faeces, preventing their spread and strictly preventing their contact with humans, animals and insects, being able to kill pathogens in the faeces (viral, bacterial, protozoan, eggs, worms) and not polluting the surrounding environment. Specific regulations exist for the construction of each type of latrine to qualify as hygienic. For the two prominent types (septic tank latrine and pour-flush latrine) it is suggested accordingly:

(1) Septic tank latrines: should be constructed to process waste in a 3-compartment tank, with the sub-tank not sinking or falling, its lid being sealed and not have any cracks, with no odour or water leaks. There should be a flush and a ventilation pipe. Regarding its maintenance, the flush should have intense flow and enough water. There should be no mosquito larvae in the flush water tank. The toilet should be odourless; the room should be clean, without slippery moss and without paper trash around. The toilet paper should be placed through a hole (if it is for consumption) or placed in trash cans (if it has been used already). There should be no flies or insects in the toilet room; it should be clean and tidy. Latrines must be housed and protected from rain. Sewage must enter drains or sewage pits and not flow freely around.

(2) Pour-flush latrines: should not be built in flooded areas and should be at least 10 meters away from drinking water sources. The sub-tank should not be sinking (above the ground at least 20cm) and its lid should have no cracks. The floor should be flat and not cause stagnation of water. There should be a flush. [...] Regarding its use and preservation, there should be enough and intense water flowing from the flush container and it should be free of mosquito larvae. There should be no bad odours; the room should be clean, without any slippery moss or paper trash. The toilet-paper should be flushed down (if the paper is bio-degradable) or placed in trash bins. There should be no flies or insects in the room; it should be clean and tidy, with a roof and protected from rainwater.

(CERWASS, 2011b, MoH, 2005, CERWASS, 2011a, CERWASS, 2011d)

Box 4: The way out of sanctioning: the case of bottled water and ice

In order for a water-bottling company to get officially registered and be allowed to begin operation, a two-step process of sampling and testing has to take place[196]:

- The company sends a sample of the produced water to the Food Safety Unit, together with a description of the purifying technology that the company is using.
- If the analysis of this sample assures it is adequate for human consumption (according to national water quality standards) [197], staff from the Unit will re-sample and analyze the water produced by the company, making sure that the results from the two samples coincide. However, this visit does not happen unannounced as the company is notified of it beforehand.
- After the successful crosschecking of the samples, the company is free to operate without any further requirements.
- Snap-checks might take place abruptly, but this is not necessary happening to all companies.
- Even when standards are found not to be met, the Food Safety Unit has no sanctioning power and can only give advice for better compliance.
- The only authority able to actually impose fines is the Department of Health, representatives of which would have to visit again the company and confirm the violation of food safety standards taking place.

[196] Officer in the checking department of the Food Safety Unit in Can Tho 16.12.11, personal interview

[197] Water quality parameters checked include concentrations of total coliform, Clostridium, Streptococcus, and total bacteria, as well as Pd, Mg, Fe, and Ca, to name a few.

Box 5: Selection of legal excerpts on preventive health education

Connecting communication and education with awareness-raising:

"[...] to accelerate communication and education work so as to raise public awareness about the importance and benefits of preventive medicine; to foster knowledge and skills in the people, families and community so that they can proactively prevent and combat diseases and improve their health, prevent and combat lifestyle-related diseases and change their behaviours in order to build a healthy lifestyle in their community; to encourage people not to smoke, reduce the number of smokers, especially among adolescents and children" (MoH, 2007b: 84)

"Food hygiene and safety has gained concern from authorities at different levels and the public response. Propaganda, education activities as well as surveillance, monitoring, inspection on food hygiene and safety have been conducted effectively with intersectoral collaboration. These activities have contributed to raise the public awareness and reduce the number of poisoning cases" (MoH, 2007b: 102).

Connecting communication and education to the control of infectious disease:

"Article 10: Everyone is entitled to access to information, education and communication on prevention and control of infectious diseases" (GoV, 2007: 58) ... "Requirements on information, education and communication on prevention and control of infectious disease: (1) to be accurate, clear, easily understandable, practical and timely. (2) To be suitable to target groups, cultural and national traditions, social morality, religions and beliefs and traditional practices and customs" (GoV, 2007: 59).

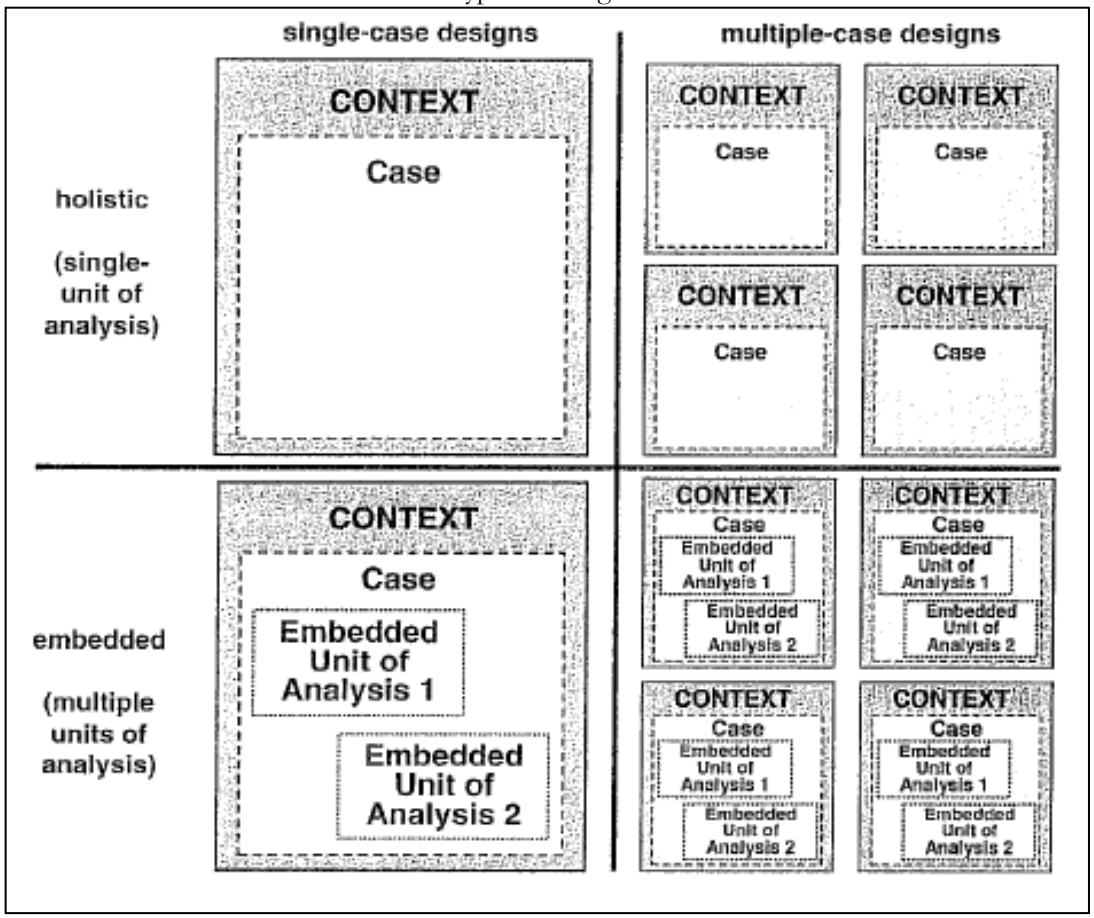
Using communication and education to promote water and sanitation for disease prevention:

"Article 13: Education establishments are responsible for providing learners with education about sanitation for prevention and control of infectious diseases, including personal hygiene, sanitation in daily life and working activities and environmental sanitation. Health care units of education establishments are responsible for providing public information on sanitation for disease prevention, examining and supervising environmental sanitation and food safety and hygiene and applying measures for preventing and controlling infectious diseases" (GoV, 2007).

"The quality of drinking water has been ensured. The proportion of households using clean water and hygienic latrines is increasing. This is the result of the 'Cultural and Healthy Village' movement which is being scaled up and developed, the inter-sectoral collaboration and the community response in the movement of 'The entire population unites and builds a cultural life' " (MoH 2007 :103).

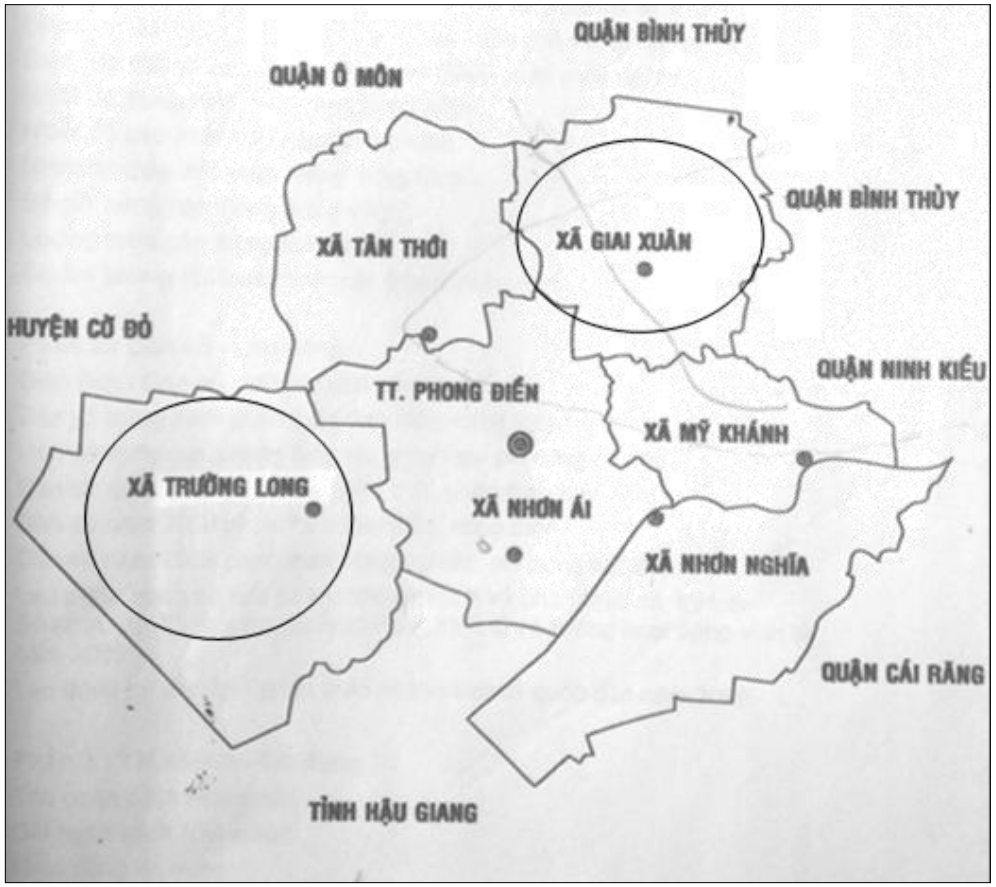
V. Pictures

Picture 1: Basic types of designs for case-studies



Adopted by Yin (2003).Cited source: COSMOS corporation

Picture 2: Map of Phong Dien district from the district's statistical yearbook (2010).



The map is showing the commune boarders and their centres, with the central town as a separate entity (TT Phong Dien).

The circle indicates the case-study communes (Xa Giai Xuan and Xa Truong Long)

Picture 3: Example of material on diarrheal disease collected from district level PHC

TRANSLATION:

6 THINGS WE SHOULD NOT DO : (1) Do not eat raw vegetable (2) Do not eat raw blood (3) Do not eat "mắm tôm", dry fish, shrimp (4.) Do not eat raw fish (5) Do not eat skin NEM (skin of pigs) (6) Do not drink raw water, unhygienic ice

5 THINGS THAT WE MUST DO: (1) Use cooked-food and boiled water. (2) Wash hands clean by soap before eating and drinking. (3) Bowls, chopstick, plate need washed and dip boiling water. (4) good preservation of prepared food.(5) Use hygienic latrines, do not urinate wherever.

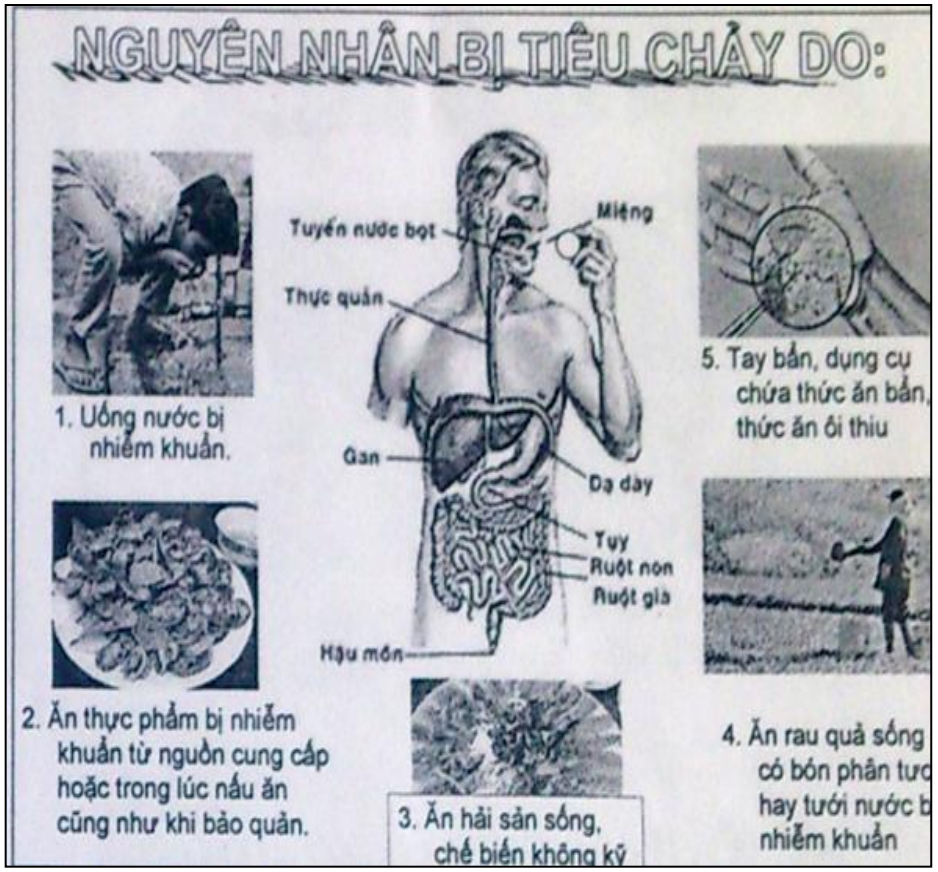
Picture 4: Brochure on food safety distributed widely for food producers and consumers

TRANSLATION:

(left) FOOD PROCESSING MUST FOLLOW THE STANDARDS. Advanced Production line, reaching regulation on food safety. Production line is aligned according to the guidelines, on one side. Tools and processing equipment must be cleaned up frequently. (centre) MATERIAL MUST FOLLOW REQUIREMENTS ON QUALITY: Food additives only from the permitted list issued by the Ministry of Health. Fruit, fish and meat must be of ensured good quality. (right) HYGIENIC CONDITIONS IN THE PRODUCTION PROCESS: Practice good production (from post-preliminary treatment up to the finished product). Construct sanitary areas for the workers (ensure hygiene conditions for personal needs).

Provided by the PHC of Binh Thuy, Photo taken by author, 2011

Picture 5: Example of material collected from the CHEC in Can Tho City



TRANSLATION:

CAUSES OF DIARRHOEA: (1) Drink contaminated water (2) Eat contaminated food from supply sources or cooking as well as preservation. (3) Eat raw seafood, not carefully in processing food. (4) Dirty hands, dirty food containers, rotten food (5) Eat raw fruit and vegetable that are fertilized by raw faeces or contaminated water.

VI. Questionnaire of the household survey

Date of interview:___ / ___ / 2011

Name of interviewer: _____

Place of interview (exact address / point in map): _____

Proximity to **canal** named_____

Starting time of interview: _____

Introduction:

Dear Sir or Madame,

Thank you for giving us the opportunity to talk to you and kindly accepting us in your house. We would like to collect some information about the everyday life and the habits of you and your family. We will emphasize in issues related to water, sanitation and disease. This information is essential for us to understand and assess the local situation in the household level, regarding these issues.

Your answers, comments and opinions are very important for us and we will treat them with absolute respect and confidentiality. We will not reveal your name or affiliation in any occasion unless we ask for your permission. You are free to deny answering questions or stop the interview whenever you want.

With your agreement we would like to start with interviewing you or another member of your family who is available to talk to us.

We appreciate your help,

Panagiota Kotsila (PhD researcher) and WISDOM research team

1: Household information – **general**

1.1	Name of household head:_____
	- sex: (1). male ☐ (2). female ☐
	- *Age:* _____

1.2	*Name of respondent:* _____				
	- sex: (1). male ☐ (2). female ☐				
	- *Age:* _____				
	- *occupation:*				
	- ethnic group:	(1). Kinh ☐	(2). Hoa ☐	(3). Khmer ☐	(4).Cham ☐
		(5). others/specify:_____			
	- religion:	(0). no ☐	(1). buddhism ☐	(2). christian ☐	(3) islam ☐
		(4) Cao Dai ☐	(5). Others, specify_____		
	- Education level: which of the below have you finished or attended? _____ (0). illiterate ☐ (1). basic level on reading and writing ☐ (2). elementary school ☐ (3). junior high school ☐ (4). secondary high school ☐ (5). college, university (bachelor) ☐ (6). university (master), PHD ☐				
	Household head's relation to the respondent: _____				
	Do you hold an office within your community? (For example farmers union, women's' union, people's committee of the ward, fatherland's front, party...) *(0). no* ☐ *(1). yes* ☐, *specify position:*_____				
1.3	- Do any members of the household hold an office in the communal or district administration or local organizations?				
	(0). no ☐	(1). yes ☐, specify who _____ Specify position_____			

1.4		- How many people are currently living in this household? _____

	name	age	Occupation	Place of work	sex		Relation to respondent
					m	f	
1							
2							
3							
4							
5							
6							

1.5		-Anyone living in your household temporarily/ only some days of the week? _____

	name	age	Occupation	Main residence	sex		Relation to respondent
					m	f	
1							
2							

1.6	- What is the average monthly income in this household? (VND)					
	< 500,000	500,000 – 1M	1— 3 M	3 – 5 M	5 --10M	>10 M
	- annual income _____					

2. WATER – collection, treatment, storage and usage

2.1 Drinking water

	Where do you get water from for drinking?	rainy season	dry season	Since when	Previous years
2.1.1	[1]. rainwater	☐	☐		☐
	[2]. water from local water supply station	☐	☐		☐
	[3]. water from deep drilled well	☐	☐		☐
	[4]. river water	☐	☐		☐
	[5]. pond water	☐	☐		☐
	[6]. well water	☐	☐		☐
	[7]. bottled purified water	☐	☐		☐
	[8]. others, please specify:_____ _____				

	Do you use storage vessels to store water for drinking purposes?	
2.1.2	*(0). no* ☐	*(1). yes* ☐

	Which type of storage vessels do you use to keep water for drinking purposes? (Interviewer : ask for permission to see the storage vessels)				
		Quantity	Cost (VND)	Capacity (liters)	*Covered ?*
2.1.3	[1]. concrete basins ☐				
	[2]. clay jugs ☐				
	[3]. barrels/bottles (plastic) ☐				
	[4]. tanks (metal) ☐				
	[5]. flasks ☐				
	[6]. Purifying device at home ☐				
	[7]. bought purified water ☐				
	[8]. others, please specify: _____				

	Where do you usually keep your drinking water stored?	
2.1.4	(1) outside the house ☐	specify where _____
	(2) inside the house ☐	specify where _____

- Drinking water in–house treatment

2.1.5	*Do you usually purify the water you use for drinking purposes before drinking it? Please distinguish according to the below-mentioned water sources.*								
		rain-water	*from water supply station*	*deep drilled well*	*river / channel water*	*pond water*	*well water*	*bottled purified water*	*other*
	never								
	sometimes								
	always								

2.1.6	*How do you purify water that is used for drinking purposes? Distinguish according to the below-mentioned water sources.*								
		rain-water	*from water supply station*	*deep drilled well*	*river water*	*pond water*	*well water*	*bottled purified water*	*other*
	aluminium sulfate								
	cloth filter								
	Purifying device at home								
	UV-radiation								
	boil								
	disinfectant (e.g. aguatap)								
	others, please specify: _____								

- Drinking water quality

2.1.7	*Which would be your preferred water source if you had the choice?*	
	[0]. do not know	☐
	[1]. rainwater	☐
	[2]. Water supply station water	☐
	[3]. Deep drilled well water	☐
	[4]. River water	☐
	[5]. Well water	☐
	[6].bottled water	☐

	[7].other, please specify: _____	
	Why? _____ _____	

2.1.8	*How would you evaluate the QUALITY of your drinking water?*				
	(1). V. good ☐	*(2). good* ☐	*(3). average* ☐	*(4). bad* ☐	*(5). very bad* ☐

2.1.9	*How would you evaluate the TASTE of your drinking water?*				
	(1). V. good ☐	*(2). good* ☐	*(3). average* ☐	*(4). bad* ☐	*(5). very bad* ☐

2.1.10	*How do you distinguish safe from unsafe drinking water?*	
	[0]. do not know	☐
	[1]. According to the source	☐
	[2]. According to the treatment	☐
	[3]. Clear or unclear (by vision)	☐
	[4]. Smelly or not	☐
	[5]. According to taste (specify) _____	☐
	[5]. others, please specify: _____	☐

2.2 Water for daily activities

	Which types of water sources does your household use for daily activities (excluding drinking purposes)?	rainy season	dry season	Since when	Previous years
2.2.1	[1]. rainwater	☐	☐		☐
	[2]. water from local water supply station	☐	☐		☐
	[3]. water from deep drilled well	☐	☐		☐
	[4]. river water	☐	☐		☐
	[5]. pond water	☐	☐		☐
	[6]. well water	☐	☐		☐
	[7]. bottled purified water	☐	☐		☐

	[8]. others, please specify:_____ _____

2.2.2	Which types of water sources does your household use for the below mentioned daily activities? (indicate: T = treated, U= untreated)							
		Rain-water	*Piped supply*	*Deep drilled well*	*River water*	*Pond water*	*Well water*	*Other _____*
	-cooking							
	-personal hygiene							
	-laundry							
	-washing dishes							
	-washing hands							
	-cleaning raw food (fruit, vegetables, meat, fish…)							
	-cleaning house							
	-irrigation garden							
	-others/specify: _____ _____							

2.2.3	*Does your household use storage vessel to store water for daily activities?*	
	(0). no ☐	*(1). Yes* ☐

2.2.4	*What type of storage vessels do you use for storing water you use for daily activities?*									
		Rain water	*Water Supply Station*	*Deep Drilled well*	*River water*	*Pond*	*Well*	*Other _____*	*Capacity (Liters)*	Cover?
	concrete basins									
	clay jugs									
	plastic barrel									
	metal tank									
	Others, specify: _____									

2.2.5	*Does your household usually treat the water for daily activities before using it?*

		rain-water	from water supply station	Deep Drilled well	River water	pond water	well water	others
	never							
	sometimes							
	always							

	How does your household treat water that is used for daily activities?							
		rain-water	from water supply station	deep drilled well	river water	pond water	well water	others
2.2.6	aluminium sulphate							
	cloth filter							
	Home purifying device							
	UV-radiation							
	boil							
	disinfectant e.g. Aguatap							
	others, please specify: _____							

2.3 Water Access

2.3.1	Is this household directly connected to the water supply station with pipes?	
	(0). no ☐	(1). yes ☐

2.3.2	Does water have to be transported from distant sources to your household?		
	(0). no ☐		(1). yes ☐

2.3.3	How far away from your house is the water source that you use?					
	<10 m	10-50 m	50-200 m	200 – 500 m	500m – 1km	>1km

3. SANITATION and hygiene

3.1 Personal Hygiene

3.1.1	*When do you usually wash your hands?*	
	(0). Hard to tell – don't know	☐
	[1]. when hands are dirty	☐
	[2]. Before cooking	☐
	[3]. Before eating/having meal	☐
	[4]. Before feeding babies	☐
	[5]. After field work	☐
	[6]. After handling excreta from animals	☐
	[7]. After handling excreta of infants	☐
	[8]. After Defecation	☐
	[9]. others, please specify: _____	☐

3.1.2	What kind of cleanser do you use for washing hands?	
	(1). only water	☐
	(2). soap and water	☐
	(3). others, please specify:_____	☐

3.2. Sanitation facilities

3.2.1	*What kind of toilet do you have?*			
	(0). No toilet	☐		
	(1). flush toilet	☐		
	(2). pit latrine	☐		
	(3). defecation directly into the river / channel	☐		
	(4). fishpond toilet	☐		
	(5). others, please specify: _____			
3.2.2	*Do people from other households use your latrine / facility?*			
	(1). No	☐	(2). Yes	☐

3.2.3	*How does your household dispose waste water from sanitation (toilet)?*	
	[1]. composter	☐
	[2]. pour/discharge channel	☐
	[3]. use as fertiliser	☐
	[4]. pour into pond (fishpond toilet)	☐
	[5]. connection to the public sewerage system	☐
	[7]. private disposal service/septic tank	☐
	[8]. others, please specify:_____	☐

3.2.4	Would you like to change your sanitation facility?		
	(0). Yes ☐ To what: _____	(1). No ☐	(2). Do not know ☐
3.2.5	*Why don't you (want to) change to another type ?*		
	(0). Financial cost ☐	(1). Not necessary ☐	(2). Other, _____ ☐
3.2.6	*Which type of latrine do you prefer to use ?*		
	Type _____	(1.) No preference ☐	

4. Health Access

4.1	*What kind of Health Insurance do you have?*				
	(0.) No insurance ☐	*(1). Public* ☐		*(2). Private* ☐	
4.2	*How much do you spend per month on Health Care and Treatment in your household for the below (VND)?*				
		<100.000	100 – 500.000	500 – 2.000.000	>2.000.000
	(1.) Medicine				
	(2.) Public Health Care				
	(3.) Private Health Care				
	(4.) Insurance				
	(5.) Other, _____				
	(6.) **Total**				

4.3	*How far away from your house is the nearest Health Care Center?*					
	<500 m	500m – 1 km	1 – 5 km	5 – 10 km	10-20 km	*>20km*

5. Waterborne diarrheal disease

5.1	*Do you think water can cause disease?*		
	(2). no ☐	*1). yes* ☐	*0). do not know* ☐
	If yes, what kind of diseases would you associate with water? : _____ _____		
5.2	Of those, which is the most commonly experienced disease in your household and from the people you know? _____		

5.3	According to your opinion, what are the causes of diarrhoea?
	(0) do not know ☐
	(1) causes:_____ _____ _____

5.4	*How often will you (or your children) experience "light" diarrhoea per month?*				
		Average frequency (per month)	Days off work /school	Time until recovery	Times of defecation/day
	(1.) Kids < 5 y old				
	(2.) Kids > 5 y old				
	(3.) Young members				
	(4.) Adults				
	(5.) Elderly				

Please give short notes on the respondent's answers and attitude towards the issue:
_____
_____
_____
_____
_____
_____

5.5	*Which of the below would you assign as symptoms of diarrhoea?*	
	[1]. fatigue	☐
	[2]. dark coloured urine	☐
	[3]. dry mouth, thirst	☐
	[4]. dry skin, non elastic skin	☐
	[6]. stomach cramps	☐
	[7]. watery stool	☐
	[8]. other symptoms, please specify:_____	
	(0). do not know	☐

	a. What will you do if you (or a member of the family) has diarrhoea for days? b. What if it persists (prioritize)?	
		Ranking
5.6	(0.) don't do anything about it ☐	
	(1.) Visit the local clinic/ Hospital ☐	
	(2.) Visit a private doctor ☐	
	(3.) Visit a Pharmacy ☐	
	(4.) Go to a private Hospital ☐	
	(5.) Other, _____	

	What can you do to avoid diarrhoea?
	(0). do not know ☐
5.7	*Specify the prevention strategies:* _____ _____

	What do you usually do to cure diarrhoea?	
	(0). do not know	☐
	(1.) Take Oral Re-hydration Salts (ORESON)	☐
	(2.) Take Vitamins	☐
5.8	(3.) Take Antibiotics	☐
	(4.) Don't eat or drink much	☐
	(5.) Take traditional herbal medicine	☐
	(6.) Follow doctor's instructions	☐
	(7.) Other, _____	

VII. Codebook for the analysis of household survey results in SPSS

1. Introductory characteristics of households

Name	Type	Label	Values		Missing	Measure
			Survey answer	Numerical value		
ID	numeric	Identification Number		none	none	scale
Location	numeric	Address roughly	PD_GX_TG	1		scale
			PD_GX_TH	2		
			PD_GX_BX	3		
			PD_GX_AT	4		
			PD_GX_TA	5		
			PD_TL_TTA	6		
			PD_TL_TT	7		
			PD_TL_TP	8		
			CR_LB_YH	9		
			CR_LB_YB	10		
Canal	numeric	Proximity to canal	Yes	1	none	scale
			No	2		
Sex	numeric	Sex /gender	female	1	none	nominal
			male	2		
Age	numeric	Age of respondent	###		none	scale
Education	numeric	Highest education level	Illiterate	1	none	scale
			Elementary	2		
			Junior highschool	3		
			Secondary highschool	4		
			Higher education	5		
Poverty	numeric	Official classification of poverty	Poor	1	>>	>>
			Near-poor	2		
			None of the above	3		

2. Water – collection, treatment, storage, handling and usage

Name	Type	Label	Values		Missing	Measure
			Survey answer	Numerical value		
Q2111	numeric	Rainwater for drinking_rainy	Yes	1	none	scale
			No	2		
Q2112	>>	Water supply station for drinking_rainy	Yes	1	>>	>>
			No	2		
Q2113	>>	Deep drilled well water for drinking_rainy	Yes	1	>>	>>
			No	2		
Q2114	>>	River/canal water for drinking_rainy	Yes	1	>>	>>
			No	2		
Q2115	>>	Well water for drinking_rainy	Yes	1	>>	>>
			No	2		
Q2116	>>	Bottled water for drinking_rainy	Yes	1	>>	>>
			No	2		
Q2121	>>	Rainwater for	>>	>>	>>	>>

		drinking_dry				
Q2122	>>	Water supply station for drinking_dry	>>	>>	>>	>>
Q2123	>>	Deep drilled well water for drinking_dry	>>	>>	>>	>>
Q2124	>>	River/canal water for drinking_dry	>>	>>	>>	>>
Q2125	>>	Well water for drinking_dry	>>	>>	>>	>>
Q2126	>>	Bottled water for drinking_dry	>>	>>	>>	>>
Q	>>	Storage vessels_drinking[198]	>>	>>	>>	>>
Q2131	>>	Type vessel_rain_drinking	Concrete basin	**1**	>>	>>
			Clay jug(s)	**2**		
			Purifying device	**3**		
			Other(s)	**4**		
Q2132	>>	Type vessel_tap_drinking	Concrete basin	**1**	>>	>>
			Clay jug(s)	**2**		
			Purifying device	**3**		
			Other(s)	**4**		
Q2133	>>	Type vessel_deep drilled well_drinking	Concrete basin	**1**	>>	>>
			Clay jug(s)	**2**		
			Purifying device	**3**		
			Other(s)	**4**		
Q2134	>>	Type vessel_river/canal_drinking	Concrete basin	**1**	>>	>>
			Clay jug(s)	**2**		
			Purifying device	**3**		
			Other(s)	**4**		
Q2135	>>	Type vessel_well_drinking	Concrete basin	**1**	>>	>>
			Clay jug(s)	**2**		
			Purifying device	**3**		
			Other(s)	**4**		
Q213C1	>>	Cover_concrete_drinking	Yes	**1**	>>	>>
			No	**2**		
Q213C2	>>	Cover_clay_drinking	>>	>>	>>	>>
Q213C3	>>	Cover_other_drinking	>>	>>	>>	>>
Q214	>>	location of vessels	Inside the house	**1**	>>	>>
			Outside the house	**2**		
Q2151	>>	Frequency treatment_rain_drinking[199]	Never	**1**	>>	>>
			Sometimes	**2**		
			Always	**3**		
Q2152	>>	Frequency treatment tap_drinking	Never	**1**	>>	>>
			Sometimes	**2**		

[198] The bottled water is not counted as "stored in vessels" water, therefore in the cases where bottled is the only water used, this is left EMPTY.

[199] In all the "frequency of treatment "questions, I do not consider boiling water for making tea as a treatment method.

			Always	**3**		
Q2153	>>	Frequency treatment_ddwell_drinking	Never	**1**	>>	>>
			Sometimes	**2**		
			Always	**3**		
Q2154	>>	Frequency treatment_well_drinking	Never	**1**	>>	>>
			Sometimes	**2**		
			Always	**3**		
Q2155	>>	Frequency treatment_river/canal_drinking	Always	**1**	>>	>>
			Sometimes	**2**		
			Never	**3**		
Q21611	>>	Treatment_rain_drinking_alum	Yes	**1**	>>	>>
			No	**2**		
Q21612	>>	Treatment_rain_drinking_cloth	Yes	**1**	>>	>>
			No	**2**		
Q21613	>>	Treatment_rain_drinking_purifying	Yes	**1**	>>	>>
			No	**2**		
Q21614	>>	Treatment_rain_drinking_boil	Yes	**1**	>>	>>
			No	**2**		
Q21615	>>	Treatment_rain_drinking_disinfect	Yes	**1**	>>	>>
			No	**2**		
Q21621	>>	Treatment_tap_drinking_purifying	Yes	**1**	>>	>>
			No	**2**		
Q21622	>>	Treatment_tap_drinking_boil	Yes	**1**	>>	>>
			No	**2**		
Q21623	>>	Treatment_tap_drinking_disinfect	Yes	**1**	>>	>>
			No	**2**		
Q21631	>>	Treatment_ddw_drinking_alum	Yes	**1**	>>	>>
			No	**2**		
Q21632	>>	Treatment_ddw_drinking_purifying	Yes	**1**	>>	>>
			No	**2**		
Q21633	>>	Treatment_ddw_drinking_boil	Yes	**1**	>>	>>
			No	**2**		
Q21634	>>	Treatment_ddw_drinking_disinfect	Yes	**1**	>>	>>
			No	**2**		
Q21641	>>	Treatment_ river/canal_drinking_ alum	Yes	**1**	>>	>>
			No	**2**		
Q21642	>>	Treatment_ river/canal_drinking_ purifying	Yes	**1**	>>	>>
			No	**2**		
Q21643	>>	Treatment_ river/canal_drinking_ boil	Yes	**1**	>>	>>
			No	**2**		
Q21644	>>	Treatment_ river/canal_drinking_ disinfectant	Yes	**1**	>>	>>
			No	**2**		
Q21651	>>	Treatment_	Yes	**1**	>>	>>

		well_drinking_alum	No	**2**		
Q21652	>>	Treatment_well_drinking_purifying	Yes	**1**	>>	>>
			No	**2**		
Q21653	>>	Treatment_well_drinking_boil	Yes	**1**	>>	>>
			No	**2**		
Q21654	>>	Treatment_well_drinking_disinfectant	Yes	**1**	>>	>>
			No	**2**		
Q217	>>	Preferred water source_drinking	Rainwater	**1**	>>	>>
			Water supply station	**2**		
			Deep drilled well	**3**		
			River/canal	**4**		
			well	**5**		
			Bottled water	**6**		
			Don't know	**9**		
Q217why	>>	Reasoning choice_drinking	Better quality/treated	**1**	>>	>>
			Better taste/smell	**2**		
			Safer/no sickness	**3**		
			Costs less	**4**		
			More convenient	**5**		
			Used to /everyone	**6**		
			No choice	**7**		
Q218	>>	Evaluate quality	Very good	**1**	>>	**ordinal**
			Good	**2**		
			Average	**3**		
			Bad	**4**		
			Very bad	**5**		
Q219	>>	Evaluate taste	Very good	**1**	>>	>>
			Good	**2**		
			Average	**3**		
			Bad	**4**		
			Very bad	**5**		
Q21101	>>	Safe criteria_source	Yes	**1**	>>	>>
			No	**2**		
Q21102		Safe criteria_treatment	Yes	>>	>> >>	>> >>
			No			
Q21103		Safe criteria_clear/unclear	Yes	>>	>> >>	>> >>
			No			
Q21104		Safe criteria_smelly or not	Yes	>>	>> >>	>> >>
			No			
Q21105		Safe criteria_taste	Yes	>>	>> >>	>> >>
			No			
Q21106		Safe criteria_do not know	Yes	>>	>>	>>
			No			

3. Water for daily activities

Name	Type	Label	Values		Missing	Measure
			Survey answer	Numerical value		
Q2211	numeric	Rainwater for daily_rainy	Yes	1	none	scale
			No	2		
Q2212	>>	Water supply station for daily_rainy	Yes	1	>>	>>
			No	2		
Q2213	>>	Deep drilled well water for daily_rainy	Yes	1	>>	>>
			No	2		
Q2214	>>	River/canal water for daily_rainy	Yes	1	>>	>>
			No	2		
Q2215	>>	Well water for daily_rainy	Yes	1	>>	>>
			No	2		
Q2216	>>	Bottled water for daily_rainy	Yes	1	>>	>>
			No	2		
Q2221	>>	Rainwater for daily_dry	>>	>>	>>	>>
Q2222	>>	Water supply station for daily_dry	>>	>>	>>	>>
Q2223	>>	Deep drilled well water for daily_dry	>>	>>	>>	>>
Q2224	>>	River/canal water for daily_dry	>>	>>	>>	>>
Q2225	>>	Well water for daily_dry	>>	>>	>>	>>
Q2226	>>	Bottled water for daily_dry	>>	>>	>>	>>
Q222a	>>	Source for cooking[200]	Rainwater	**1**	>>	>>
			Water supply station	**2**		
			Deep drilled well	**3**		
			River/canal	**4**		
			well	**5**		
			Bottled water	**6**		
Q222b	>>	Source for personal hygiene (bathing, washing hands)	Rainwater	**1**	>>	>>
			Water supply station	**2**		
			Deep drilled well	**3**		
			River/canal	**4**		
			well	**5**		
			Bottled water	**6**		
Q222c	>>	Source for cleaning/washing raw food (vegetables)	Rainwater	**1**	>>	>>
			Water supply station	**2**		
			Deep drilled well	**3**		
			River/canal	**4**		
			well	**5**		

[200] If there is more than one source for each, I select the one which is most frequently (and in all seasons) used. If it is the same, the one with the highest chances of being contaminated.

			Bottled water	**6**		
Q222d	>>	Source for cleaning dishes	Rainwater	**1**	>>	>>
			Water supply station	**2**		
			Deep drilled well	**3**		
			River/canal	**4**		
			well	**5**		
			Bottled water	**6**		
Q223	>>	Storage vessels_daily	Yes	**1**	>>	>>
			No	**2**		
Q2241	>>	Type vessel_rain_daily	Concrete basin	**1**	>>	>>
			Clay jug(s)	**2**		
			Plastic Barrels	**3**		
			Other(s)	**4**		
Q2242	>>	Type vessel_tap_daily	Concrete basin	**1**	>>	>>
			Clay jug(s)	**2**		
			Plastic barrels	**3**		
			Other(s)	**4**		
Q2243	>>	Type vessel_(deep drilled)well_daily	Concrete basin	**1**	>>	>>
			Clay jug(s)	**2**		
			Plastic barrels	**3**		
			Other(s)	**4**		
Q2244	>>	Type vessel_river/canal_daily	Concrete basin	**1**	>>	>>
			Clay jug(s)	**2**		
			Purifying device	**3**		
			Other(s)	**4**		
Q224C1	>>	Cover_concrete_daily	Yes	**1**	>>	>>
			No	**2**		
Q224C2	>>	Cover_clay_daily	>>	>>	>>	>>
Q224C3	>>	Cover_other_daily	>>	>>	>>	>>
Q2251	>>	Frequency treatment_rain_daily	Never	**1**	>>	>>
			Sometimes	**2**		
			Always	**3**		
Q2252	>>	Frequency treatment_tap_daily	Never	**1**	>>	>>
			Sometimes	**2**		
			Always	**3**		
Q2253	>>	Frequency treatment_(dd)well_daily	Never	**1**	>>	>>
			Sometimes	**2**		
			Always	**3**		
Q2254	>>	Frequency treatment_river/canal_daily	Never	**1**	>>	>>
			Sometimes	**2**		
			Always	**3**		
Q22611	>>	Treatment_rain_daily_alum	Yes	**1**	>>	>>
			No	**2**		
Q22612	>>	Treatment_rain_daily_cloth	Yes	**1**	>>	>>
			No	**2**		
Q22613	>>	Treatment_rain_daily_disinfec	Yes	**1**	>>	>>

		tant	No	**2**		
Q22614	>>	Treatment_rain_daily_other	Yes	**1**	>>	>>
			No	**2**		
Q22621	>>	Treatment_tap_daily_alum	Yes	**1**	>>	>>
			No	**2**		
Q22622	>>	Treatment_tap_daily_cloth	Yes	**1**	>>	>>
			No	**2**		
Q22623	>>	Treatment_tap_daily_disinfectant	Yes	**1**	>>	>>
			No	**2**		
Q22624	>>	Treatment_tap_daily_other	Yes	**1**	>>	>>
			No	**2**		
Q22631	>>	Treatment_(dd)w_daily_alum	Yes	**1**	>>	>>
			No	**2**		
Q22632	>>	Treatment_(dd)w_daily_cloth	Yes	**1**	>>	>>
			No	**2**		
Q22633	>>	Treatment_(dd)w_daily_disinfectant	Yes	**1**	>>	>>
			No	**2**		
Q22634	>>	Treatment_(dd)w_daily_other	Yes	**1**	>>	>>
			No	**2**		
Q22641	>>	Treatment_ river/canal_daily_alum	Yes	**1**	>>	>>
			No	**2**		
Q22642	>>	Treatment_ river/canal_daily_cloth	Yes	**1**	>>	>>
			No	**2**		
Q22643	>>	Treatment_ river/canal_daily_disinfectant	Yes	**1**	>>	>>
			No	**2**		
Q22644	>>	Treatment_ river/canal_daily_other	Yes	**1**	>>	>>
			No	**2**		
Q231	>>	Connection to water supply system	Yes	**1**	>>	>>
			No	**2**		
Q231y	>>	Connection how long ago	0-1 years ago	**1**	>>	>>
			1-4 years ago	**2**		
			>4 years ago	**3**		

4. Sanitation and Hygiene

Name	**Type**	**Label**	**Values**		**Missing**	**Measure**
			Survey answer	**Numerical value**		
Q3111	numeric	Handwashing_hard to tell	Yes	1	none	scale
			No	2		
Q3112	>>	Handwashing_dirty hands	Yes	1	>>	>>
			No	2		
Q3113	>>	Handwashing_before eating	Yes	1	>>	>>
			No	2		
Q3114	>>	Handwashing_while cooking	Yes	1	>>	>>
			No	2		
Q3115	>>	Handwashing_after fieldwork/housework	Yes	1	>>	>>
			No	2		

Q3116	>>	Handwashing_defecation	Yes	1	>>	>>
			No	2		
Q3117	>>	Handwashing_other	Yes	1	>>	>>
			No	2		
Q312	>>	Type cleanser_handwashing	Only water	1	>>	>>
			Soap and water	2		
			others	3		
Q321	>>	Type of toilet	No toilet	1	>>	>>
			Hygienic toilet	2		
			Pit latrine	3		
			In the river	4		
			Fishpond toilet	5		
Q323	>>	Disposal of sanitation sewage	In the river	1	>>	>>
			In fishpond	2		
			sewage system	3		
			Private septic tank	4		
			Other / undefined	5		
Q324	>>	Desire/ willing to change sanitation facility	Yes	1	>>	>>
			No	2		
			Do not know	9		
Q325	>>	Constraints in changing	Financial	1	>>	>>
			Not necessary	2		
			other	3		
Q326	>>	Toilet preference	Fishpond	1	>>	>>
			Hygienic	2		
			Easy-access /in the house	3		

5. Health and Diarrheal Disease

Name	Type	Label	Values		Missing	Measure
			Survey answer	Numerical value		
Q41	numeric	Health Insurance type	No insurance	1	none	scale
			Public	2		
			(free) health card	3		
			Private	4		
Q421	>>	Majority of Health expenses	Medicine	1	>>	>>
			Public Care	2		
			Private Care	3		
			Insurance	4		
			Other	5		
Q422	>>	Average monthly health expenses	<100.000	1	>>	>>
			100-500.000	2		
			500.000 – 2m	3		
			>2million	4		
Q43	>>	Distance of closest health care facility	<500m	1	>>	>>
			500 – 1.000m	2		
			1-5 km	3		
			5-10 km	4		
Q511	>>	Water can cause disease	No	1	>>	>>

			Yes	2		
			I don‘t know	9		
Q512	>>	Water associated diseases	Diarrhea	1	>>	>>
			Cholera	2		
			Gastro-intestinal	3		
			Skin disease	4		
			other	5		
			Do not know	9		
Q531	>>	Causes of diarrhea_ dirty /untreated water	Yes	1	>>	>>
			No	2		
Q532	>>	Causes of diarrhea_food	Yes	1	>>	>>
			No	2		
Q533	>>	Causes of diarrhea_other	Yes	1	>>	>>
			No	2		
Q534	>>	Causes of diarrhea_ do not know	Yes	1	>>	>>
			No	2		
Q541	>>	Annual frequency of diarrhea_ respondent	Never	1	>>	>>
			1-3	2		
			3-12 (once per month)	3		
			12-48 (1-4 times per month)	4		
			Do not know	9		
Q542	>>	Annual frequency of diarrhea_ members	Never	1	>>	>>
			1-3	2		
			3-12 (once/month)	3		
			12-48 (1-4/month)	4		
			Do not know	9		
Q543	>>	Duration of diarrhea (days with symptoms)	1	1	>>	>>
			1-3	2		
			>3	3		
			Do not know	9		
Q544	>>	Daily frequency of defecation_ diarrhea	2-3	1	>>	>>
			3-10	2		
			countless	3		
			Do not know	9		
Q551	>>	Symptoms of diarrhea_fatigue	Yes	1	>>	>>
			No	2		
Q552	>>	Symptoms of diarrhea_ dry mouth	Yes	1	>>	>>
			No	2		
Q553	>>	Symptoms of diarrhea_ dry skin	Yes	1	>>	>>
			No	2		
Q554	>>	Symptoms of diarrhea_ stomach cramps	Yes	1	>>	>>
			No	2		
Q555	>>	Symptoms of diarrhea_ watery stool	Yes	1	>>	>>
			No	2		
Q556	>>	Symptoms of diarrhea_ do not know	Yes	1	>>	>>
			No	2		
Q561	>>	First followed strategy in case of diarrhea	Nothing	1	>>	>>
			Clinic or Hospital	2		

			Private doctor	3		
			Pharmacy	4		
			Private Hospital	5		
			other	6		
Q562	>>	Second strategy (in case of persistence)	Nothing more	1	>>	>>
			Clinic or Hospital	2		
			Private doctor	3		
			Pharmacy	4		
			Private Hospital	5		
			other	6		
Q571	>>	Prevention strategies_wash hands	Yes	1	>>	>>
			No	2		
Q572	>>	Prevention strategies_boil water	Yes	1	>>	>>
			No	2		
Q573	>>	Prevention strategies_ no raw vegetables	Yes	1	>>	>>
			No	2		
Q574	>>	Prevention strategies_medicine	Yes	1	>>	>>
			No	2		
Q575	>>	Prevention strategies_other	Yes	1	>>	>>
			No	2		
Q576	>>	Prevention strategies_ do not know	Yes	1	>>	>>
			No	2		
Q58	>>	Cure of diarrhea[201]	ORS/ORESON	1	>>	>>
			Antibiotics	2		
			Dont drink/eat	3		
			Traditional/herbal medicine	4		
			Doctor's instructions	5		
			Take medicine-undefined	6		
			Do not know	9		

Locations:
PD=Phong Dien district, GX=Giai Xuan commune (TG= Thoi Giai, BX= Binh Xuan, AT= An Thanh, TA= Thoi An; hamlets), TL= Truong Long commune (TTA= Truong Thuan A, TT= Truong Thuan, TP= Truong Phu; hamlets)
CR=Cai Rang district, LB= Le Binh ward (YH= Yen Hoa, YB= Yen Binh; Areas)

[201] The firstly mentioned and / or mostly emphasized