Locally Embedded Adaptation Planning
A trilogy of adaptive knowledge of flood-affected people in Jakarta

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Abstract

Floods increase the vulnerability of the residents of flood-prone areas and affect their everyday lives. Minimizing the impact of floods requires an adaptation plan, especially at the community level. Moreover, cities and communities need a synergized response plan. A study based strictly on technical science would not determine the essential meaning of adaptation planning as experienced by a vulnerable people. The planning knowledge of adaptation that is generated by the flood experiences of the urban poor—the most vulnerable group—must be disclosed. We need to know more about the “lived experiences” of people’s adaptation to floods and the meanings that these people ascribe to their everyday lives. Therefore, only a people-centered approach can ascertain how the urban poor adapt to the floods.

Drawing on Schütz’s concept of lifeworld and twelve months of fieldwork in Kampung Muara Baru (KMB) Jakarta, this research investigates how individuals use their lifeworld as a basis for practicing and institutionalizing their community’s planning for adaptation. I begin with the context and locus of the adaptation planning studied in the present research, and I formulate two sub-questions: What kind of planning institutions is constituted in Jakarta? How does KMB represent the interplay between poor residents and regular floods? I then focus on the adaptation practices of the KMB people, especially their perceptions of their own flood-related vulnerability. Second, I identify the meaning of adaptation planning, and I examine the institutionalization and reification of the adaptation plan. I apply the lifeworld analysis to examine the concepts of vulnerability, adaptation, and planning. In addition to examining the secondary data, I collected primary data in the forms of participant observations, in-depth and semi-structured interviews, group interviews, historical transect, and focus group discussions. This research is expected to provide a better understanding of the appropriateness of the lifeworld concept in planning practices and to extend the horizon of phenomenology in planning.

This study found that more than one kind of adaptation planning addressed flooding in Jakarta. At the city level, the plan was to control the floods; at the community level, the plan was to live with them. This divergence was caused by discrete departure points, different planning methods, and varying sources of knowledge. It thus interfered with the institutionalization of planning because the divergent worlds of city and kampung were not connected. The results showed that, as an agglomeration of kampungs, Jakarta should understand the relationship between floods and the urban poor within the kampungs. Even though KMB had the greatest flood risk and id the poorest settlement in the Penjaringan sub-district, the recurrent floods do not discourage migration into and the spread of housing in KMB. Instead, flood incidents have become major inundation events because of KMB’s high-density settlement and poor drainage system.

Based on the in-depth analysis of the lifeworld of the people affected by flooding in KMB, I found that the poor who lived in the flood-prone area were not always vulnerable. Lived experience is an important factor that makes a significant difference between the vulnerable and the adapters. Lived experience is a source of the practical knowledge that is useful in planning. The structure of the lifeworld delineated the zone of planning operations and adaptation practices and thus resulted in short-term perspectives, neighborhood scaling, and problem-solving orientation, rather than long-term, citywide scaling, and visionary planning. The KMB people do not plan to stop or to mitigate the floods but to adjust their houses and surroundings to reduce the consequences of flooding and develop an evacuation pathway based on their lived experiences. Thus, their adaptation planning is locally embedded.

Because the inter-subjectively shared meaning process has produced locally embedded planning, is the findings showed a strong ownership of adaptation planning. The KMB people embodied the plan through the self-interpretation and self-reflection of what their
predecessors and others had shared. Subsequently, they discussed the substance of the planning in order to make deliberate decision about the course of a series of social events, such as *kerja bakti* (working together in voluntary services), *arisan* (regular social gatherings), *pengajian* (routine Muslim praying), and casual events, such as *warung* (small shop) talks and alley chats. Therefore, they arrived at a verbal plan that was never written. They preferred listening to reading and talking to writing. Even though the plan consisted of loose-fitting regulations without clear penalties for violations, they teased and made fun of those who did not accomplish their tasks or broke the oral agreement.

Based on the *lifeworld* analysis of flood-related vulnerability, adaptation, and planning as the embodiment of a people-centered approach, I created a model of locally embedded adaptation planning. This six-step protocol consists of identifying the adapters, compiling precedents, revealing and assessing the locally situated form of knowledge, facilitating the sharing process, establishing the oral consensus, and dividing the tasks and responsibilities. This model contributes to the ongoing debate on adaptation planning in the context of climate change adaptation and disaster risk reduction as an alternative, insightful approach to linking coping strategies to adaptive capacity. In terms of flood management, the model of locally embedded adaptation planning explains the relationship between the flood responses that are needed and those provided by the community. The model thus strengthens the response strategies in flood management to prepare a resilient community. Finally, in terms of planning practices, this model incorporates the humanistic values into adaptation planning through *lifeworld* analysis.

Keywords: flood, vulnerability, adaptation, planning, *kampung*, Jakarta, knowledge
Zusammenfassung


Stichwörter: Überflutung, Schadensanfälligkeit (Vulnerabilität), Anpassung, Planung, kampung, Jakarta, Wissen
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<tr>
<td>AADMER</td>
<td>ASEAN Agreement on Disaster Management and Emergency Response</td>
</tr>
<tr>
<td>AAL</td>
<td>Annual Average Losses</td>
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<td>ACCCRN</td>
<td>Asian Cities Climate Change Resilience Network</td>
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<tr>
<td>ACF</td>
<td>Action Contre La Faim</td>
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<td>ADB</td>
<td>Asian Development Bank</td>
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<td>AICP</td>
<td>American Institute of Certified Planners</td>
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<td>AKP</td>
<td>Adaptation Knowledge Platform</td>
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<tr>
<td>AMS</td>
<td>American Meteorological Society</td>
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<td>APSC</td>
<td>ASEAN Political Security Community</td>
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<tr>
<td>Bappeda</td>
<td>Badan Perencanaan Pembangunan Daerah (Regional Development Planning Agency)</td>
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<tr>
<td>Bapenpas</td>
<td>Badan Perencanaan Pembangunan Nasional (National Development Planning)</td>
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<tr>
<td>BBC</td>
<td>British Broadcasting Corporation</td>
</tr>
<tr>
<td>BLHD</td>
<td>Badan Lingkungan Hidup Daerah (Environmental Management Agency)</td>
</tr>
<tr>
<td>BMKG</td>
<td>Badan Meteorologi, Klimatologi dan Geofisika (Indonesian Agency for Meteorology, Climatology and Geophysics)</td>
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<tr>
<td>BNPB</td>
<td>Badan Nasional Penanggulangan Bencana (National Agency of Disaster Management)</td>
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<tr>
<td>BPBD</td>
<td>Badan Penanggulangan Bencana Daerah (Local Disaster Management Agency)</td>
</tr>
<tr>
<td>BPPT</td>
<td>Badan Penelitian dan Pengkajian Teknologi (Agency for The Assessment And Application Of Technology)</td>
</tr>
<tr>
<td>BPS</td>
<td>Biro Pusat Statistik (Central Bureau of Statistics)</td>
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<tr>
<td>BWPI</td>
<td>Brooks World Poverty Institute</td>
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<tr>
<td>CaR</td>
<td>City at Risk forum</td>
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<tr>
<td>CARE</td>
<td>Cooperative for Assistance and Relief Everywhere</td>
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<td>CBA</td>
<td>Community-based Adaptation</td>
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<td>CBO</td>
<td>Community-based Organizations</td>
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<td>CCA</td>
<td>Climage Change Adaptation</td>
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<td>CCCD</td>
<td>Commision on Climate Change and Development</td>
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<tr>
<td>CDRM</td>
<td>Community-based Disaster Risk Management</td>
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<td>CIP</td>
<td>Canadian Institute of Planners</td>
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<tr>
<td>CoBRA</td>
<td>Community Based Resilience Assessment</td>
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<td>CRisTAL</td>
<td>Community-based Risk Screening for Adaptation and Livelihood</td>
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<tr>
<td>DFID</td>
<td>Department for International Development</td>
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<td>DIBI</td>
<td>Data and Information of Indonesian Disasters</td>
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<td>DJPR</td>
<td>Directorate General of Spatial Planning</td>
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<td>DKI Jakarta</td>
<td>Daerah Khusus Ibukota Jakarta, Special Capital Region of Jakarta</td>
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<tr>
<td>DNPI</td>
<td>Dewan Nasional Perubahan Iklim, National Council of Climate Change</td>
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<td>DRI</td>
<td>Disaster Risk Index</td>
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<td>DRR</td>
<td>Disaster Risk Reduction</td>
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<td>FGD</td>
<td>Focus Group Discussion</td>
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<td>GDP</td>
<td>Gross Domestic Product</td>
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<td>HCMC</td>
<td>Ho Chi Minh City</td>
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<td>IAP</td>
<td>Indonesian Association of Planner</td>
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<td>ICLEI</td>
<td>International Council for Local Environmental Initiatives</td>
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<td>IHDP</td>
<td>International Human Dimension Program</td>
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<td>IISD</td>
<td>International Institute for Sustainable Development</td>
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<td>Acronym</td>
<td>Full Form</td>
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<tr>
<td>IPB</td>
<td>Institut Pertanian Bogor, Bogor Agriculture Institute</td>
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<td>IPCC</td>
<td>Intergovernmental Panel for Climate Change</td>
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<td>IRSA</td>
<td>Indonesian Regional Science Association</td>
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<td>ISSC</td>
<td>IEEE Symposium on Computers and Communications</td>
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<tr>
<td>ITB</td>
<td>Institut Teknologi Bandung, Bandung Technology of Institute</td>
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<td>IUCN</td>
<td>International Union for Conservation of Nature and Natural Resources</td>
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<td>Jabodetabpunjur</td>
<td>Jakarta, Bogor, Tangerang, Bekasi, Puncak and Cianjur</td>
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<td>JCDS</td>
<td>Jakarta Coastal Defense Strategy</td>
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<td>JEDI</td>
<td>Jakarta Emergency Dredging Initiatives</td>
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<td>JICA</td>
<td>Japan International Cooperation Agency</td>
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<td>JICA-RI</td>
<td>Japan International Cooperation Agency Research Institute</td>
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<td>JUFMP</td>
<td>Jakarta Urgent Flood Mitigation Project</td>
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<td>KBBI</td>
<td>Kamus Besar Bahasa Indonesia (Great Dictionary of the Indonesian Language)</td>
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<td>KKB</td>
<td>Kampung Kebon Bawang</td>
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<td>KKM</td>
<td>Kampung Kamal Muara</td>
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<td>KKP</td>
<td>Kementerian Kelautan dan Perikanan (Ministry of Ocean and Fisheries)</td>
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<td>KMB</td>
<td>Kampung Muara Baru</td>
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<td>LEAP</td>
<td>Local Embedded Adaptation Planning</td>
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<td>LECZ</td>
<td>Low Elevation Coastal Zone</td>
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<td>LRAP</td>
<td>Local Resilience Action Plan</td>
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<td>MCI</td>
<td>Mercy Corps Indonesia</td>
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<td>MDG</td>
<td>Millenium Development Goals</td>
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<td>MIT</td>
<td>Massachusetts Institute of Technology</td>
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<td>MOF</td>
<td>Ministry of Ocean and Fisheries</td>
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<td>NCICD</td>
<td>National Capital Integrated Coastal Development</td>
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<td>Non-Government Organization</td>
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<td>PAR</td>
<td>Pressures and Release</td>
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<td>Perda</td>
<td>Peraturan Daerah, Regional Regulation</td>
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<td>PICAS</td>
<td>Planning for Integrated Coastal Adaptation Strategies</td>
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<td>PIK</td>
<td>Pantai Indah Kapuk</td>
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<td>PRA</td>
<td>Participatory Rapid Assessment</td>
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<td>PT</td>
<td>Perseroan Terbatas (Limited Corporation)</td>
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<td>RA</td>
<td>Risk Assessment</td>
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<td>RAD-API</td>
<td>Rencana Aksi Daerah-Adaptasi Perubahan Iklim (Adaptation planning to Climate Change at local level)</td>
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<td>Raskin</td>
<td>Beras miskin (Rice for the poor)</td>
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<td>RPB</td>
<td>Rencana Penanggulangan Bencana (Disaster Management Planning)</td>
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<td>RPJMD</td>
<td>Rencana Pembangunan Jangka Menengah Daerah (Local Mid-term Development Planning)</td>
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<td>RT</td>
<td>Rukun Tetangga (Neighbourhood Association)</td>
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<td>RTRW</td>
<td>Rencana Tata Ruang Wilayah (General spatial planning)</td>
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<td>RW</td>
<td>Rukun Warga (association of RTs, it represents the administrative unit of kampung)</td>
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<td>SATLINMAS PBP</td>
<td>Satuan Perlindungan Masyarakat Penanggulangan Bencana dan Pengungsi (Government protection unit for disaster management and refugees)</td>
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<tr>
<td>SLR</td>
<td>Sea Level Rise</td>
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<td>SOP</td>
<td>Standard of Procedure</td>
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<td>Acronym</td>
<td>Full Name</td>
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<td>SREX</td>
<td>Special Report of the Intergovernmental Panel on Climate Change</td>
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<td>START</td>
<td>Global Change System for Analysis, Research, and Training</td>
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<td>Tagana</td>
<td>Taruna Siaga Bencana, Youth Organization for disaster response</td>
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<td>UKNA</td>
<td>Urban Knowledge Network Asia</td>
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<td>UN DESA</td>
<td>United Nations Department of Economic and Social Affairs</td>
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<td>UN-Habitat</td>
<td>United Nations Human Settlements Programme</td>
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<tr>
<td>UNDP</td>
<td>United Nations Development Programme</td>
</tr>
<tr>
<td>UNESCAP</td>
<td>United Nations Economic and Social Commission for Asia and the Pacific</td>
</tr>
<tr>
<td>UNESCO</td>
<td>The United Nations Educational, Scientific and Cultural Organization</td>
</tr>
<tr>
<td>UNFCCC</td>
<td>The United Nations Framework Convention on Climate Change</td>
</tr>
<tr>
<td>UNISDR</td>
<td>United Nations International Strategy for Disaster Reduction</td>
</tr>
<tr>
<td>UNU-EHS</td>
<td>The United Nations University for Environment and Human Security</td>
</tr>
<tr>
<td>USAID</td>
<td>United States Agency for International Development</td>
</tr>
<tr>
<td>VCA</td>
<td>Vulnerability and Capacity Assessment</td>
</tr>
<tr>
<td>ZEF</td>
<td>Zentrum für Entwicklungsforschung (Center for Development Study)</td>
</tr>
<tr>
<td>Glossary</td>
<td>Definition</td>
</tr>
<tr>
<td>----------------------</td>
<td>---------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Aqua</td>
<td>Water bottle</td>
</tr>
<tr>
<td>Arisan</td>
<td>A form of Rotating Savings and Credit Association in Indonesian culture, a</td>
</tr>
<tr>
<td></td>
<td>form of Microfinance</td>
</tr>
<tr>
<td>Bajaj</td>
<td>Three wheels vehicle, used for transporting maximum only four people</td>
</tr>
<tr>
<td>Bakso</td>
<td>Meatballs</td>
</tr>
<tr>
<td>Banjir</td>
<td>Flood</td>
</tr>
<tr>
<td>Banjir biasa</td>
<td>Rainy flood</td>
</tr>
<tr>
<td>Banjir kiriman</td>
<td>Transferred flood</td>
</tr>
<tr>
<td>Banjir Rob</td>
<td>Tidal flood</td>
</tr>
<tr>
<td>Bedeng</td>
<td>Temporary house or shelter</td>
</tr>
<tr>
<td>Buah</td>
<td>Fruits</td>
</tr>
<tr>
<td>Curhat</td>
<td>Private talk, telling story deeply</td>
</tr>
<tr>
<td>Desa Tangguh</td>
<td>Resilient village</td>
</tr>
<tr>
<td>Dinas Tata Ruang</td>
<td>Urban Planning Department</td>
</tr>
<tr>
<td>Idul Fitri</td>
<td>Eid Mubarak - Traditional Muslim greeting reserved for use on the festivals of</td>
</tr>
<tr>
<td>Gak apa-apa</td>
<td>No problem</td>
</tr>
<tr>
<td>Gang</td>
<td>Alley, small road</td>
</tr>
<tr>
<td>Genset</td>
<td>Generator</td>
</tr>
<tr>
<td>Girik</td>
<td>Evidence of land controlling and tax payment on persil of land and building on it (if any)</td>
</tr>
<tr>
<td>Gorengan</td>
<td>Fried food</td>
</tr>
<tr>
<td>Gotong royong</td>
<td>Mutual aid or cooperation in community</td>
</tr>
<tr>
<td>Hijrah Calender</td>
<td>The lunar year-numbering system that used in the Islamic calendar</td>
</tr>
<tr>
<td>Ibu</td>
<td>Mrs.</td>
</tr>
<tr>
<td>Ibu-ibu</td>
<td>Women</td>
</tr>
<tr>
<td>Indomie</td>
<td>Instant noodle</td>
</tr>
<tr>
<td>Isra Miraj</td>
<td>Moslem day</td>
</tr>
<tr>
<td>Jamu</td>
<td>Traditional herb products</td>
</tr>
<tr>
<td>Jaya</td>
<td>Glory</td>
</tr>
<tr>
<td>Kali</td>
<td>River</td>
</tr>
<tr>
<td>Kampung</td>
<td>Village</td>
</tr>
<tr>
<td>Kampung deret</td>
<td>Kampung readjustment program</td>
</tr>
<tr>
<td>Kanem (java)</td>
<td>The sixth</td>
</tr>
<tr>
<td>Kapitu (java)</td>
<td>The seventh</td>
</tr>
<tr>
<td>Katulampa</td>
<td>A Watergate’s name in Bogor</td>
</tr>
<tr>
<td>Kawolu (java)</td>
<td>The eight</td>
</tr>
<tr>
<td>Kecamatan</td>
<td>Sub-district</td>
</tr>
<tr>
<td>Kelurahan</td>
<td>Village, a part of Regency/City administrative area</td>
</tr>
<tr>
<td>Kentongan</td>
<td>Traditional tool made by wood for indicating the clock or emergency</td>
</tr>
<tr>
<td>Kerja bakti</td>
<td>Voluntary communal work</td>
</tr>
<tr>
<td>Ketua RT</td>
<td>Head of RT</td>
</tr>
<tr>
<td>Ketua RW</td>
<td>Head of RW</td>
</tr>
<tr>
<td>Kotak</td>
<td>Box</td>
</tr>
<tr>
<td>Laut</td>
<td>Sea</td>
</tr>
<tr>
<td>Lurah</td>
<td>Head of Kelurahan</td>
</tr>
<tr>
<td>Maghrib</td>
<td>Praying time for Moslem, usually between 6.00-6.30 pm</td>
</tr>
</tbody>
</table>
Majelis Taklim  Moslem solidarity
Manusia perahu  Boatman
Musibah  Disaster
Musrenbang  Planning forum
Orde Lama  The Old Older (1945-1965)
Pengajian  Al-quran reading
Peraturan Gubernur  Governor Regulation
Perda  Regional Regulation
Perwakilan  Representative
Pronas  National program in the economic crisis era that prohibited people to occupy abandoned land
Rembuk  Meeting, people gathered talking about an issue
Revitalisasi Pantura Jakarta  The planning study for new development of Jakarta coastal area
Rukun Tetangga  Neighbourhood
Rukun Warga  Community Association
Rusunami  Cheap apartment for low-income dwellers
Sasi (Papuan)  Papuan community who use their traditional tenure management system
Sholat  Praying
Sudah dari sononya Naturally, given
Tanggul  Sea dyke
Tenggelam  Drowned
Teras  Terrace, front floor
Universitas  University
Waduk  Reservoir
Warung  Small shop
Warung nasi  Small shop selling food, mainly rice
"ber" and “ri”  Indonesian suffics for months of rainy season
1 Introduction

'People may live differently in this world, but they do not live in different worlds' (Antweiler, 2012: 81)

1.1 Background of the Research

Flooding as a continuous problem in coastal cities

Flooding is the most typical problem in urban development, especially in cities that lie in low-elevation coastal zones (LECZ). The natural characteristics of LECZs have exposed these coastal cities to ocean phenomena such as rising sea levels, high tides, and storm surges. Although they occupy only two percent of the world’s land, coastal cities are the habitats of at least 13 percent of the world’s population or about sixty percent of those who live in urban areas (McGranahan et al. 2007), including with their assets and other supporting infrastructures. A recent study showed that the estimated losses caused by floods in the future would be much higher than the losses of today. In 2005, the average global flood losses were estimated to be approximately US $6 billion. Based on socio-economic projections this figure will increase to US $53 billion by 2050 or more than US $1 trillion per year if climate change and subsidence factors are added to the projection (Hallegatte et al. 2013).

In the last few decades, flood risk has increased because of fast-growing urbanization, climate change, and land subsidence (Hallegatte et al. 2013). Potential risks related to climate change are heightened by the accelerated rise in sea levels, increased sea surface temperatures, intensified extreme events, such as cyclones, extreme waves, and storm surges, altered precipitation patterns, and runoff (Nicholls et al., 2007). In 2007, the Intergovernmental Panel on Climate Change (IPCC) confirmed that several hotspots were situated in major Asian cities located near coastlines, rivers and deltas, which indicated that their population and assets were at risk. Fuchs (2010) predicted that the Asian urban population would increase by 140,000 per day. He also predicted that "it will double from 1.25 billion in 2006 to 2.4 billion in 2030," and much of this growth will take place in coastal zones (see figure 1).

The severity of floods in Southeast Asian cities has been extreme, and in the last two years, three big floods have attracted the world’s attention. First, the Bangkok flood in October 2011 was declared the worst in the last few decades, and it was covered by British Broadcasting Corporation (BBC) news for two consecutive weeks. This flood, which was triggered by heavy monsoon rains that began in July, inundated one-third of Thailand’s provinces, including greater Bangkok, where manufacturing and other economic services
were located. A local analyst estimated that the loss could account for 41 percent of Thailand’s GDP (Harvey, 2011). The second was the Vietnam flood, particularly in Quang Nam province in November 2011, which caused the death of over 100 people (BBC 2011). The third was the Jakarta flood in January 2013, which was also covered by global media. It was reported that fifteen people were killed and 19,000 people were evacuated to shelters. The unusually heavy monsoon rains were also blamed as the main causal factor in the Jakarta flood (Quiano and Mullen 2013). The huge losses and damage caused by this flood were related to climate change and raised the awareness of the inhabitants of coastal cities regarding the importance of preparing for facing extreme flooding. In Southeast Asia, climate change is defined as a "non-traditional security issue" under the ASEAN Political-Security Community (APSC) Blueprint 2009–2015, which calls for strengthening the cooperation under the ASEAN Agreement on Disaster Management and Emergency Response (AADMER) (Lian and Bhullar 2011).

Figure 1.1 Asian Cities at Risk from Sea Level Rise
Source: Fuchs (2010)
Based on the cases of these coastal cities, the present changes to the waterways and drainage are not adequate to collect and channel huge volumes of water from torrential monsoon floods. Jamil and Ali (2013) noted that most plans in Southeast Asian cities tend to focus on immediate disaster relief, but they still face hurdles in implementing the plans at the local level and “in addressing the specific needs of informal settlement” (1). They pointed out that Jakarta and Manila have improper waste disposal systems, which lead to the clogged drains that exacerbate the effects of flooding.

North coastal Jakarta¹, where this research was conducted, “is particularly vulnerable to floods, rising seawater and other natural disasters as well as man-made calamities such as pollution and excessive extraction of groundwater” (Firman et al. 2011, 1). According to the Central Bureau of Statistics (BPS) (2010), the population density in Jakarta reached 1,300 inhabitants per square kilometer in 2010, making it one of the most densely populated cities in the world. The highly dense population exacerbates the flood-related vulnerability of Jakarta, making it one of the most vulnerable cities in Southeast Asia (Yusuf and Fransisco 2009; Fuchs 2010; Firman et al. 2011).

Furthermore, many Asian cities currently are experiencing a trend to the urbanization of poverty (Ooi and Phua 2007). In this third millennium, of the 1.2 billion people in the world who are classified as poor, about 800 million or 60 percent are living in Asia (Laquian 2004). In 2010, around 400,000 poor and 300,000 nearly poor were living in Jakarta (Firman et al., 2011). UN Habitat (2010) predicted that the number of slum dwellers would increase at the same growth rate as urbanization. UNESCAP (2007) brought to the world’s attention that in the coming years and decades, poverty would become a major urban challenge for Asian cities because rural poverty has declined significantly while urban poverty has risen.

**Floods and the Urban Poor**

Around one in seven people of the world’s population lives in informal settlements in urban areas (Satterthwaite 2007). Based on the Global Report on Human Settlement (2003), UN Habitat found that in 2001, the number of slum dwellers had reached 924 million, of which twenty-eight percent were located in Southeast Asian regions. It estimated that by

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¹ North Jakarta city is located in the coastal area, which consists of six sub-districts: Penjaringan, Pademangan, Tanjung Priok, Koja, Kelapa Gading, and Cilincing. The land area is about 600 square kilometers and the sea area approximately 514 square kilometers. The sea area is part of Jakarta Bay, a shallow sea where the depth is generally not more than 30 meters. The area is also a place for the end-flow of three main rivers (Citarum, Ciliwung, and Bekasi) and ten secondary rivers (Damar 2003). Therefore, North Jakarta is recognized as an area of coastal and delta cities as well. The engine of North Jakarta is the worldwide services of the sea harbor Tanjung Priok, supported by the industrial activities of multinational companies and the related activities, such as logistics, trading, offices, fisheries, and other services. About 48 per cent of its area is used as residential area and 16 per cent for industrial zone (Jakarta, 2013). The future of this coastal city still relies on those base economic activities and is planned to expand through developing 12 reclaimed islands in the -8 meter sea depth across the coastal area. The reclamation area is planned to be the place where the new brand of Jakarta as a global city will develop.
2030, the global number of slum dwellers would reach two billion if no proper action were taken (UN Habitat 2013). A study by the Geography of Poverty, Disasters and Climate Extremes, Overseas Development Institute (ODI) reported that in 2030, “without concerted action, there could be up to 325 million extremely poor people living in the 49 countries most exposed to the full extent of natural disasters and climate extremes, in particular to droughts and floods” (ODI 2013, 7).

The IPCC has identified that urban informal settlements\(^2\) are the most vulnerable to climate change (Watson et al. 1996) because many of them are built on hazardous sites inhabited by a predominance of poor and migrant dwellers. Several scholars also pointed out that the impact of climate change has exacerbated existing urban settlements (Alam and Murry 2005; Bank et al. 2011), including informal settlements (CUS 2006). Others also argued that the poor living in various informal settlements are likely to be the most vulnerable because of natural hazards, which are driven by climate change (Moser and Satterthwaite 2009; (Satterthwaite et al. 2009; Adgeret al. 2003; McGranahan et al. 2007). Furthermore, Bosher et al. (2007) argued that key factors relating to poverty, marginalization, and powerlessness have shaped the severity of the effects of climate change. Thus, the presence of informal settlements is used to examine the effects of floods on the urban poor, and vice versa.

UN Habitat (2003) argued that the failure of planning instruments (e.g., housing policies and spatial planning) was the major reason for the expansion of informal settlements in flood prone areas, which are becoming visible. The World Bank (2011) affirmed that the lack of settlement capacity has caused the vulnerability of the urban poor. The absence of functioning storm drains, poorly built houses, and their location on the floodplain area are some of the reasons cited (Satterthwaite, 2007). Urban institutions are usually unable or unwilling to address urban problems, such as floods in informal settlements, because informal settlers have no legal tenancy (Satterthwaite et al. 2009).

Recently, it has been recognized that the involvement of the urban poor should be increased instead of continuing to regard them as objects to be protected. One example is the initiative taken by the Asian Coalition for Community Action (ACCA) in 2009 across 19 Asian nations. This initiative used the model of “community-driven slum upgrading,” in which donor grants support the initiatives of low-income communities to choose their own improvements (IIED 2012). The model is based on the view of urban poor as the key agents

\(^2\)According to UNSTAT as cited in Hofmann et al. (2008), an informal settlement is an area where “groups of housing units have been constructed on land that the occupants have no legal claim to, or occupy illegally; and/or an unplanned settlement and area where housing is not in compliance with current planning and building regulations (unauthorized housing)” (532). Therefore, informal settlement in this research refers to “the dense settlement encompassing poor communities housed in self-constructed shelters and living on public or private land without authorization” (532).
of change. The model places the urban poor at the center of the adaptive capacity of the city. Hence, the presence of the urban poor or slum dwellers is also important in making cities resilient to floods. The contribution of the urban poor in reducing urban vulnerability and increasing the adaptive capacity of cities cannot be overlooked. Therefore, how the urban poor manage floods in a process of environmental change is a key issue in urban development, particularly in Southeast Asian cities.

Given their limited resources, the urban poor usually count on their strong social networks, kinship ties, and active internal leadership (World Bank 2011) in dealing with floods. The practices of an urban community in adapting to floods (Roy et al. 2012) and existing coping strategies at the household level, including those of the poor (UNFCCC, 2010), can be taken into account to optimize the adaptive capacity of cities. I argue that the adaptation plan can be built upon both practices.

**Kampung as the Study’s Focus**

According to Winayanti and Lang (2004, 42), “in Jakarta, the urban poor occupy a large number of spontaneous informal settlements referred to as *kampungs.*” Because the buildings are irregular and the basic infrastructures are poor, the word *kampung* is usually attached to the word *kumuh* or slum. Moreover, if a *kampung kumuh* occupies an illegal plot of land (e.g., disputed land, state land, or private abandoned land), it is defined as *kampung liar* or squatter (Suparlan 2002; Durrand-Laserve 1998). In addition to that meaning, “the national government defines *kampung kumuh* as irregular settlements with substandard infrastructure, small plots of land for each housing unit, low quality of building structure and materials and illegal construction” (Silas 1990, 19).

There are about 600 *kampungs* in Jakarta (*Kompas*, 19 February 2000, cited in Sihombing 2010). Moreover, there are 490 pockets of poverty in Jakarta, which are always connected with the existence of *kampungs* (UN Habitat, 2003). “It is estimated that 20 to 25 percent of Jakarta residents live in *kampungs*, with an additional 4 to 5 percent squatting illegally along riverbanks, empty lots and floodplains” (UN Habitat, 2003). However, because recent documentation is lacking, there are no recent figures for the exact number of *kampungs* or the actual *kampung* population in Jakarta (a census of *kampungs* has never been completed). Some scholars argued that the number of *kampungs* began to increase in the 1980s. About “85 percent of annual housing production in the 1980s…[was] developed by the occupants or residents themselves” (Struyk et al. 1990, 69), but there is no record of whether it was built informally or formally (based on government permits).

*Kampung* and *kota* (city) are two words that cannot be separated in describing the urbanization of Jakarta. In fact, Jakarta is “a result of territorialization of informal and formal land rights without the presence of effective state governance over the rapid urbanization”
(Jieming and Simarmata 2015, 63). Although kampung and kota can be understood as conflicting images, there is a strong interdependency between them (Sihombing, 2010). Wiryomartono used the notion of “kampung-kota” or “urban kampung” to describe “a settlement developed in an urban area without [basic] infrastructure planning or urban economic network” (Wiryomartono 1995, 171). Sihombing (2010) argued, “‘kampung-kota’ shows interdependency in social cultural, social economic, and social political terms.” Thus, he argued that the word should be “‘kampungkota,’ which explains more closely the essence of the interdependency” (313). Therefore, discussions about Jakarta cannot ignore the presence of kampungs.

As an Indonesian urban planner, I am interested in examining the role of planning in providing safer locations for kampungs that lie in flood-prone areas. I am convinced that the urban planning process is imperative to ensure that the development pathway can increase the resiliency of cities. I have followed the work of several international scholars, such as Jöern Birkmann (2008), who deals with the issue of spatial planning and disasters, Hans Füssel (2007), who deals with the issues of adaptation to climate change and planning, and Elizabeth Wilson (2007), whose criticism of the planning profession addresses the issue of adaptation to climate change. In line with their works, I agree that the issues of climate change, especially climate-related disasters, have influenced the discourse of urban planning methods. The issues of scale, actors, and temporal dimension in developing a model of adaptation planning in particular are continuously evolving.

Why do I narrow my research to the community level, particularly to the kampung? There are two reasons: first, because most Indonesian cities were grounded in and formed by kampungs, urban development should focus on managing them. The former governor of Daerah Khusus Ibukota (DKI) Jakarta province, Joko Widodo (the current President of the Republic of Indonesia), once stated that “membangun Jakarta dimulai dari kampung” (developing Jakarta started with the informal settlement) (Kompas 2013). He planned to improve the quality of kampungs at the rate of about 100 units per year (Rulistia 2012). From that standpoint, I suggest that those responsible for urban adaptation should be contextualized in the realm of the urban poor who live in kampungs and the adaptation planning for floods should be built upon the planning knowledge that is embedded in kampungs. Therefore, with regard to the root of urban planning theory, I stand with the progressive mainstream rather than utopian visionaries. A new direction of the progressive movement could “help social structures learn from their experiences (social learning theories)” and seek “incremental changes that in the course of time would result in structural changes promoting equality, participation, and legitimacy” (Stiftel 2000, 9).

The second reason is that informal urban settlements, such as kampungs, provide interesting phenomena for dealing with the flood. I have witnessed that many informal
settlements in Jakarta have occupied flood prone areas for a long time. To date, the number of residents has increased and the informal settlement areas have continuously expanded. The residents are still willing to stay in these areas without showing any intention to move to a safer place. In October 2013 at an international workshop in Manchester, I discussed similar phenomena with the scholars, Anirudh Krishna, Regina John, and Afroza Parvin from global southern cities such as Khulna (Bangladesh), Bangalore (India), and Dar es Salaam (Tanzania). They agreed that the urban poor have their own coping strategies, which help them survive and accept the loss and damage caused by floods. Although floods have inundated their homeland for decades, they refuse to migrate. Therefore, the adaptation of the urban poor community is important to understand in order to know how people may live in ways that counter rationally unacceptable conditions. In my research, I focus on the survival ability of slum dwellers in order to understand how they develop adaptation pathways under the threat of flooding. I am convinced that the urban poor have their own mechanisms to deal with floods, and I consider that informal urban settlements provide the solution to the problem of making cities resilient.

Leaving aside the urban planning discipline for the moment and focusing on the community level, I build my research on the discipline of sociology, particularly microsociology, which concerns the nature of social interaction on a micro scale. I examine the individual characteristics of kampung people and the social interactions that exist in kampungs (see figure 1.2). My research also extends to phenomenological sociology because it examines the structure of the lifeworld of kampung people. As noted by Ritzer (2011), the lifeworld “is an intersubjective world in which people both create social reality and are constrained by the preexisting social and cultural structures created by their predecessors.” Therefore, the kampung is a socially constructed product.

**People as Subjects of Adaptation to Climate Change**

In development studies, the positioning the urban poor as the subject of development is not new, and has continuously evolved. Originating in David Korten’s (1974) notion of people-centered development, this approach “looks to the creative initiative of people as the primary resource and to their material and spiritual well-being as the end that the development process serves” (Korten and Garner 1984, 201). Since the early 2000s, the discourse of people-centered development has entered a transition phase from the third generation that focus on the human rights to the fourth generation that integrate local, social,

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3 I was selected to present a paper at the International Workshop on “Living in Low-income Urban Settlements in an Era of Climate Change: Processes, Practices, Policies, and Politics,” which was held by the Brooks World Poverty Institute (BWPI), University of Manchester in the Chancellors Hotel, 9–10 September 2013.
and global knowledge (Korten 1984). The United Nation of Development Program (UNDP) (2011) reported that the approach of “people-centered development” was promoted through its 129 UNDP country offices. This approach focuses on the assessment of the needs of the people by the people themselves and assists them in addressing those needs. According to the UNDP (2011, 2), “People must be at the center of human development, both as beneficiaries and as drivers, as individuals and in groups.”

Figure 1.2 Focus Area of Study

The emphasis on people as the center of development is also present in the global debate of the periodization of the Earth’s age. The Nobel laureate Paul Crutzen popularized the concept of the Anthropocene to explain the new epoch of human dominance in changing and shaping the ecological system of the Earth. Steffen et al. (2007) argued, “human activities have become so pervasive and profound that they rival the great forces of Nature and are pushing the Earth into planetary terra incognita” (614). Several scholars also have agreed that the phenomenon of climate change in recent years has been induced by human activities, which they named anthropogenic climate change (IPCC 2001). Moreover, the global movement to enhance the human dimension in the development context has been addressed by several international networks, such as the International Human Dimension Program on Global Environmental Change (IHDP), which has the tagline of promoting “human action to global environmental challenge” in order to consolidate the various adaptation initiatives that have been taken by many countries. In this perspective, the
framework of adaptation should be located among the people who live and carry out many practices of adaptation in their everyday lives.

Fifteen years ago, at an event held by the UN International Decade for Natural Disaster Reduction, the shifting focus on the human dimension in climate change adaptation was declared for the first time. The UN pointed out the following:

The approaches to adaptation should move away from the notion of “climate change victims” and support the development of capacities for adaptation by the people, instead of for the people. It also suggested that the approaches to adaptation must learn from experiences in dealing with risk in development, and recognize the highly differentiated nature of adaptive capacity and not prescribe “one-size-fits-all” solutions. [Therefore], the efforts must be concentrated on removing barriers and disincentives to autonomous adaptation to promote locally owned capacity development [processes]. (Christoplos et al. 2009)

Thus, I argue that adaptation efforts must reflect the needs of vulnerable people and that the pathway should be based on the learning processes in which people have tried to or failed to adapt to climate change because those who have lived for decades are actually the real practitioners. To some extent, they have developed capabilities in adapting to flooding. Therefore, the role of flood-affected people is imperative to appreciate the meaning of vulnerability and their adaption to it.

The role of the urban poor as the subject of adaptation depends on the degree to which they can utilize their own potential and capacity. According to Adger et al. (2009), “the poor may still strive to retain vitality and viability to cope with the shocks and/or adapt to the stresses of climate change” (341). It is different for the wealthy and those who can continue to enhance or maintain their current standard of living. Some scholars also pointed out that the local adaptation actions are reactive and only carried out on a short-term basis, unlike national or regional plans that are anticipatory and involve the formulation of policies and programs (Bohle 2001; Burton et al. 2002). They argued that poverty and extreme climate events limit the capacity of the poor to plan their adaptation pathway. In some cases, both poverty and climate extremes may force them to migrate (Brown 2008) or force the government to relocate them.

However, the informal settlements in Jakarta and other global southern cities have exhibited phenomena that differ from those argued for by the scholars mentioned previously. Informal settlements expand and the urban poor still live there without accepting the option of relocation. Thus, a further question is raised: How do the poor, who have become used to flooding and who have stayed for a long time, build their own adaptation pathway? The poor who have experienced floods over time should have valuable knowledge about how to survive in flood situations and to anticipate their future impacts.

This examination of the poor in building their adaptation pathway is expected to strengthen and enrich the role of local knowledge in the debate about the adaptation to
climate change. Local knowledge has been increasingly recognized as the key factor in building the capacity of risk management at the local level. The term “local” varies from the community level to the sub-national level. In this research, I focus on the community of the poor because they have first-hand experience of the floods responses. The effects of flooding influence their everyday lives although they lack the assets and resources to cope with or to adapt to them. I argue that practical and traditional knowledge is produced by and within the community, which enables it to adapt to or cope with environmental changes, including floods. The local experience is a reservoir from which of knowledge about disaster risk management and adaptation to climate change can be drawn (Tapsell et al., 2010).

Localities that grow in the realm of people through various ways influence the production of local knowledge. According to Antweiler and Hornidge (2012, 11), “the environmental changes that are currently being experienced by people across Southeast Asia, have led to a constant increase in uncertainties, insecurities and a lack of safety.” This will lead to a further discussion about how and to what degree different localities are affected and how local people cope with and adapt to changed conditions. The focus on the process of knowing has also emerged because “the knowledgeability is different for the different members of a culture, and it changes, as it is itself a social product” (Antweiler and Hornidge 2012, 62). The meaning of environmental changes may be “different or even rival forms of knowledge” for different individuals. It depends on the content, practical relevance, and centrality of the knowledge. Through a case study of Makassar in Indonesia, it was demonstrated that “there were striking differences between the perceptions of local residents on the one hand and the language and concepts employed in official planning brochures on the other” (Antweiler 2012, 80).

On the methodological level, the recognition of how people adapt to environmental changes includes the understanding of the localities that evolve and are institutionalized in the community. Asking for people’s perceptions through questionnaires and interpreting their responses through descriptive statistical analysis will not obtain the essential meaning. A representation of one phenomenon in society can be achieved, but it fails to explicate the deep values that constitute the social world of a community, especially the poor whose lives are based on informality. This methodology leads to the misinterpretation of the needs of poor people who often covertly adapt because of their lack of resources and high dependency on informal institutions. Consequently, adaptation planning, which is driven by external actors, can be mistaken in its implementation in poor communities. As pointed out by Baum (1980), “most planners do not see the world in which they practice in either political or organizational terms” (296). It thus leads to faulty interpretations of what the poor need and how they plan for the adaptation to disasters such as floods.
I assume that the current process of adaptation planning involves only vulnerable people in order to confirm experts’ assessments of their condition. The process has been conducted in the technical domain of planners. This methodology does not allow adequate time and space for vulnerable people to reveal their knowledge, assess their conditions, and plan their adaptation pathways. In this respect, I suggest that the starting point for building an adaptation pathway should be based on the realm and the needs of the poor. By doing so, the adaptation pathway could be customized to local circumstances and be implemented by local people.

**Planning Knowledge in the Adaptation Practices of the Urban Poor**

Centering the planning process on people has been discussed for decades. People have always adapted to the changes in their lives, and the adaptation creates new knowledge that helps them to be more resilient in uncertain times. Thus, the planning process should consider the individual actors, subjective cognitions, emotions, egoism, and the “subjective logic” of their argumentation (Weichhart 2010, 12). Many planning theorists, such as Friedmann (1969), Dalton (1989), Forester (1989), and Alexander (1992), believe that planning is not limited to and does not belong to planners only. Planning also belongs to people who can frame their own problems and propose reflective actions.

Several studies of community-based adaptation have attempted to develop a planning model that is based on people’s participation. This model applies a certain planning procedure by using the assistance of external parties to facilitate the process, such as non-governmental organizations (NGOs), professional associations, and local governments. The participatory planning model uses the theory of communicative action developed by Jürgen Habermas, a prominent German philosopher. He argued that communicative action “seeks to reach an understanding of the situation and their plans of action in order to coordinate their actions by way of agreement” (Habermas 1984, 86). Hence, by acting communicatively, planners should be able to establish a planning agenda, encourage public participation, and provide alternative solutions for communities. Planners can assist in ensuring that the rationalization process is successful. Therefore, this approach accommodates the voices of the poor and provides technical assistance in order to enrich the knowledge of the urban poor.

Accordingly, planners are predominant in framing the communication process although they accommodate some input from the community. Planners assume that adaptation knowledge is a technical term that pertains to their professional domain. The role of planners as facilitators is to establish the planning process, which then necessitates a high degree of dependency on the presence of the planners. Several initiatives may have been accomplished successfully and consequently strengthened the community, but they
may have lead the people in a "new world" direction, which at times does not fit or reflect their reality.

Victoria Beard (2002) also studied how local people engage in the planning process. She found that planning embodies the desire for emancipation from local perceptions, which she called covert planning. It is likely that informal planning "involves local people planning for them and, in so doing, taking incremental, incipient steps toward altering larger power relation" (Beard 2002, 18). Informal planning transforms individual planning initiatives into community planning through a subtle and nuanced form of collective action.

Nonetheless, few studies have examined "planning that is embodied in the process of subjective human experiences" (Wagner 1970, 13). In terms of adaptation to climate change, little has been done to investigate planning practices in the community. As an urban planner, I am interested in understanding the planning process of the urban poor in adapting to environmental changes. They have demonstrated that they can live in flood-prone areas for decades. Many non-poor people perceive this choice as irrational; however, the urban poor have managed to live continuously in these areas.

However, a planning model that is purposively designed to reveal shared realities in the social world has not yet been developed. The conception of lifeworld is seldom used to define planning processes that are rooted in the realm of people. Habermas used the conception of lifeworld as an object wherein communicative action takes place. Donald Schön (1983), another prominent philosopher, argued that planning could be proceeded by reflecting on actions, or reflective practices. He argued that planning is a universal human activity that depends on “the capacity to reflect on action so as to engage in a process of continuous learning” (Schön 1983, 8). As I understand it, this capacity is related to the concept of lifeworld developed by Alfred Schütz, a prominent Austrian phenomenologist. According to Münch, “the lifeworld is an inter-subjectively shared world, a stock of knowledge, consisting of typifications, abilities, skills, and recipes for observing, interpreting the world, and acting in this world” (cited in Oberkircher and Hornidge 2011).

Schütz’s concept of the individual lifeworld is in line with Schön’s conception of the practitioner’s capacity. According to Schön, practitioners “often reveal a capacity for reflection on their intuitive knowing in the midst of action…” (Schön 1983, 9). A critic of the technical rationality approach, Schön argued that the planning problem needs artistry and a set of skills that go far beyond a theoretical base (McDowell et al. 2007). In terms of creating solutions, planning does not necessarily depend on espoused theories (i.e., research based) but on experiences (theory-in-use) that were embedded in the logic of the action. Therefore, “the reflective practice is about awareness of the knowledge we use, how we use it and how we can improve our action in real time” (McDowell et al. 2007, 10). Schön argued that “planning knowledge is analyzed as a system of knowing-in-practice that includes the
framing of role and situation, and the interpersonal theories of action which the practitioner brings to his practice" (Schön 1983, 352).

Both Schön and Schütz used the argument that knowledge comes from repeated actions or practices by different actors. Schön defined practitioners as professionals and developed a model to increase their capacity (internal use). Schütz defined practitioners as ordinary people who actively practice (routinize) and share the meaning of the phenomenon to simplify everyday life (habitual knowledge) (Schütz 1983). However, Schütz’s *lifeworld* has never been used to examine how planning operates in a community. Therefore, this research demonstrates that the *lifeworld* is a domain to increase the reflective capacity of people in making an adaptation plan. As the American Institute of Certified Planning (AICP) stated, planning is a universal human activity (AICP 2013) and can be derived simply from reflection-in-action (Schön 1987).

In this research, the urban poor were selected because their planning habits have been underestimated in the discussion on adaptation to climate change. Most non-poor people presume that the urban poor have no planning practices in their everyday lives and that planning knowledge belongs only to professional planners. Thus, the primary focus of this research concerns the question of how and what type of planning knowledge is produced from the perspective of urban poor.

In the following chapters, I examine how the urban poor acquire and incorporate reasonable understanding of their adaptation to floods. Despite the social network, I prefer to examine the repetitive or changed patterns of their “habitualized activities” in adapting their lives to the threat of floods and the adaptive actions that help them to cope automatically with repeated flood situations. Because they live in the same place, I presume that they have the opportunity to observe and respond to each other’s practices and to anticipate the habits of others. Over time, these responses and habits are institutionalized, enacted, and controlled until it is forgotten that such institutions were human-made.

Using the *lifeworld* of flood-affected people to develop a planning model will contribute to the discourse on phenomenology in planning. Sudaryono, an Indonesian professor of planning, argued that modern planning practices in Indonesia tend to "consider that the truth of procedural aspects has only produced the text, without context" (2012, 6). He suggested using “Husserl’s lived experience” or “Schütz’s" *lifeworld*" to examine the planning process so that planners could observe a real world. Hence, the role of planners should shift from guardians of the truth who apply deductive positivism to truth diggers who apply inductive-explorative research (Sudaryono 2012, 10). Compared to Habermas’s theory of communicative action, which focuses on differentiation between system and *lifeworld*, Sudaryono’s approach will help the researcher to gain first-hand experience in the operation of the planning process.
1.2 Problem Definition and Research Questions

Adaptation planning belongs to not only professional planners and planning experts but also common people. Planning is a universal human activity that involves reflecting on past experiences (precedent world) and future expectations (subsequent world). The intention to create a planning model that can facilitate a socially reflective action has never been applied to investigate adaptation at the community level. Laukkonen et al. (2009) recommended the development of a methodology and tools to help individuals and communities in the planning process not only to encourage them to participate but also to embed their knowledge and actions in the adaptation planning process.

Vulnerable communities that have been frequently affected by floods know that they can adapt to severe conditions from time to time. They may not know that their reflections on past experiences and future actions are actually a form of planning knowledge. However, reflection could be used to develop a model of adaptation planning. Moreover, the planning knowledge that depends on local perceptions and institutions is already embedded in the community. We simply do not know what the process will be and how it will take place. Research is needed on how people plan in their everyday life, particularly the type of planning that exteriorizes local adaptation pathways and their way to institutionalize the plan.

At present, the research on adaptation planning in Jakarta has focused almost exclusively on integrating technical climate indicators or scenarios of planning processes that are performed by professional planners. At least four planning activities have been conducted at the city level: 1) the Detailed Spatial Planning of the Penjaringan Sub-District; 2) the Re-planning North Coastal Jakarta by the Government of DKI Jakarta in 2011; 3) Jakarta Climate Adaptation Tools and the Jakarta Coastal Development Strategy in 2011 conducted by the Royal Haskoning MSC, which was donated by the Government of The Netherlands (Elings 2011). The fourth activity was the Jakarta Emergency Dredging Initiative (JEDI), and the Alliance of Green Delta City Defense Planning through major storm, water drainage, and canal systems, which was funded by the World Bank in 2009 (Prasad et al. 2009). At the community level, most of the initiatives attempted to combine technical and local knowledge. For example, the first initiative was the Community-based Disaster Risk Management, founded by Action Contre La Faim (ACF) in 2008. The second initiative was the Mercy Corps program, Stakeholder Coordination, Advocacy, Linkage, and Engagement for Resilience (SCALE) project, which was followed by the Asian Cities Climate Change Resilience Network (ACCCRN) program in 2011.

Furthermore, the participatory planning approach has been applied in the practice of adaptation planning at the community level. This planning process places the experts and
the community on the same level, but it does not position people as main actors in the process. It often happens that the planned adaptation, as viewed only from the professionals' point of view, might not be congruent with perceptions of vulnerable people. Thus, a study based only on technical rationality would not uncover the essential meaning of adaptation planning as experienced by vulnerable people. We need to learn more about the "lived experiences" of individuals in adaptation planning and the meaning that they ascribe to their everyday lives.

The main research question asks how individuals, based on their lifeworld, practice and institutionalize adaptation planning in their community. To answer this question, I need to address first the context and the locus of the adaptation planning taking place. Thus, there are two sub-questions: What kinds of planning institutions are constituted in Jakarta? How do kampungs represent the interplay between the urban poor and regular flooding? The following questions focus on the kampungs; each question consists of three sub-questions. The first question concerns vulnerable people's perceptions of a flood: Who is vulnerable and why are they vulnerable? How do they define vulnerability? In addition, how do they define adapters? The second question is related to the meaning of planned adaptation: How do they practice adaptation? What are their experiences in planning adaptation? What meanings do they assign to those experiences? The third question concerns the institutionalization and reification process: How did they organize and implement the plan? How did they institutionalize it?

1.3 Objectives and Purpose

Based on Schmutz's lifeworld and Schön's reflective practices, I intend to examine the adaptation planning process of the urban poor. The process is personal and tacit because they live in informal settlements. A planning model that reflects the past experiences (precedent world) and future expectations (subsequent world) of the urban poor uses the geographical setting of the urban poor, who have practiced adaptation in their everyday lives, and it utilizes locally embedded knowledge.

The purpose of this research is to understand the institutionalization process of climate-adaptation planning from the perspectives of individual lifeworlds in the local community through identifying vulnerable people who have experience in planned adaptation. I wish examine adaptation planning based on their perceptions and to explain the process of the institutionalization and the reification of adaptation planning in this social world.

On the societal level, this research intends to provide new findings that will help meet the challenge of institutionalizing adaptation-planning practices in Indonesia. It will benefit
local governments through creating an enabling environment for communities that have taken initiatives to develop their own adaptation strategies. The research is also expected to promote a new approach to institutionalism in planning practices.

On the scientific level, the aim of this research is to enrich planning theory and the practice of accommodating the dimensions of adaption to climate change, to investigate the appropriateness of the lifeworld concept in planning practices, and to provide lessons learned about institutionalization in the theory of planning as a social phenomenon. The research is also expected to extend the horizon of phenomenology in the field of planning and to contribute to previous phenomenological research and qualitative methods. It is also expected that the research will be published as a doctoral dissertation and in other scientific publications in both the Indonesian and English languages.

1.4 Rationale and Theoretical Contribution

There are at least four reasons that this research is needed. First, adaptation planning cannot depend only on climatic proofing because in practice, climatic data is still lacking in terms of types and depth of scale, and climate modeling is still weak in providing accurate future scenarios, which makes it difficult to conduct meaningful assessments of the effects of climate (Firman et al., 2011). Second, participatory planning has shown weaknesses in providing the space and time required to investigate the endogenous and intentional motives of local people and to allow them to articulate and decide their own actions. The agenda setting of third parties (e.g., NGOs, donors, or other organizations) is inevitable. Third, the integration of local and scientific knowledge in adaptation planning requires synchronizing tools to connect the different experiences of local people and scientific experts who derive variables from their understanding. Fourth, as suggested by Antweiler (2004), the citizens in Indonesia could be positioned as experts in generating urban knowledge. Local knowledge is “a locally situated form of knowledge and performance which comprises skills and acquired intelligence responding to constant social and environmental changes” (Antweiler 2004, 1). Therefore, a localized approach to creating adaptation planning is necessary.

The research attempts to contribute to the sociology of knowledge about the human-environmental interrelationship, not only in Indonesia and Southeast Asia but also in the further development of planning theories. It will provide findings that link the lifeworld and planning theory. It will contribute to the development of phenomenology in planning, especially empirical practices in adaptation planning as well as meaningful interpretations of the experiences of people who practice adaptation planning and social institutions that embody the adaptation planning process. Furthermore, the micro-sociology perspective
used in this research is also expected to contribute significant and robust knowledge to the linkage of planning and adaptation to climate change.

The contribution of this research to the theoretical development of the institutionalization process of locally embedded adaptation planning is identified as follows:

1. This research applies the lifeworld approach in conceptualizing vulnerability to climate change. Previous studies of vulnerability emphasized regional and socio-spatial approaches without paying much attention to the identification of vulnerable people. This current study aims to provide information from a perspective that shifts from regional to personal approaches.

2. This research also provides Indonesian perspectives on how a vulnerable community plans to adapt to environmental changes. The study can enrich the results of previous studies regarding community-based adaptation planning to climate-related floods in developing countries, such as UNDP (2013), ADB (2013), and International Institute for Sustainable Development (IISD) (2012). The uniqueness of the Indonesian kampung can provide a different view of how community-based adaptation planning is conducted in several developing countries.

3. This research applies the lifeworld approach to planning theory and practice. Previous studies on self-reflective action in planning have focused on industrialized countries such as the US. Moreover, the experiences of developing countries can examined as a discourse that provides the underlying context in which the boundaries of planning are established.

4. This research adds the perspective of the sociology of knowledge to the debate of a place- and people-based approach to the adaptation to environmental changes. This study is expected to provide empirical evidence that people in vulnerable places know how to adapt to changes. It thus aims to strengthen the emergence of a people-centered approach in urban development studies.

5. This research focuses on developing a micro-sustainable development pathway that will provide suggestions about how localities in the community need to be considered in the policy-making for citywide development, especially urban poverty and climate-related disasters.

This research is also expected to help urban and planning theorists, academics, and researchers to develop a better understanding of locally embedded adaptation planning and how it is institutionalized in informal urban settlements, such as the kampungs in Indonesia. To a lesser extent, the findings of this research could also be used as a conceptual resource for urban policy makers and practitioners in Indonesia to strengthen micro-level policy and planning strategies that deal with environmental changes in the unique urban settlements in Indonesian cities.
1.5 Structure of the Book

This book is divided into two main parts. The first part describes the context and design of the research. It consists of the introduction (chapter one), conceptual framework (chapter two), and methodology (chapter three). These chapters present the position and contribution of this study to phenomenology in planning. The second part focuses on the empirical research, which consists of three findings, followed by a discussion. The first finding is the divergence of planning institutions in adapting to floods in Jakarta (chapter four). The second finding, kampungs as the locus of the interplay between floods and the poor, is then discussed (chapter five). Both chapters aim to emphasize the need to shift the focus of the planning process from climate-proofing approaches to using the locally embedded knowledge of vulnerable people. In the three remaining empirical sections, which are based on the case study of Kampung Muara Baru (KMB), will provide discussions on the differentiation between vulnerable people and adapters (chapter six), the meaning of locally embedded adaptation planning (chapter seven) and the institutionalization process of planning that might occur in the kampung (chapter eight). The final chapter concludes and provides recommendations (chapter nine). Most of the content is based on papers that were presented at international conferences and/or articles published in internationally recognized journals. The chapters are organized to address the three interconnected themes in question: flood-related vulnerability, adaptation planning, and the institutionalization process of adaptation planning (see figure 1.3).
Chapter 1 provides the background of this study, the research questions, the rationale, its expected contribution to the development discourse, recommended policies, and the structure of the dissertation. The background includes the emergence of planning theories and practices that deal with the issue of environmental changes, such as climate-related disasters. Based on this discussion, I will state my position of using the
phenomenology of planning to express the rationale for and contributions of this research. I emphasize that the lived experiences of vulnerable people are appropriate assets for the adaptation planning process at the community level. I then will present my research problem, research questions and sub-questions, and the rationale for selecting the kampung in Jakarta as the setting of this research. I will also explain the importance of this research to academic discussions and policy recommendations. I end this chapter by providing an outline of the dissertation.

Chapter 2 discusses the theoretical framework. I would like to position my research in the recent debate of phenomenology in planning. My research aims to examine the linkage between knowledge and action, particularly in the process of adapting to environmental change. I rationalize the application of Schütz’s lifeworld theory in three intersecting areas: 1) the lifeworld perspective in identifying vulnerable people; 2) the structure of the lifeworld to generate the meaning of locally embedded adaptation planning; 3) the analysis of lifeworld to explain the institutionalization process of adaptation planning.

In chapter 3, I explain the methods that are used to conduct the study as well as the protocols and limitations encountered in conducting the fieldwork. I will explain that this study uses an argumentative-exploratory approach by combining quantitative and qualitative methods. Qualitative phenomenological research is used to explore and reveal the lived experiences of vulnerable people, whereas the quantitative method is used to identify the location where the phenomenological research is conducted.

In chapter 4, I discuss the contextual features of adaptation planning in Jakarta. I explain the planning institutions that are constituted in Jakarta regarding flood management, and how government regulations and the initiatives of other stakeholders work to take responsibility for the effects of floods. I found that although different planning approaches have been taken, which focus mainly on flood infrastructure development at the city level, they have not been coordinated effectively. Next, I argue that urban adaptation planning in Jakarta should focus on community empowerment and rely on the local knowledge that is embedded in each community. The different realms of planning would produce inefficient and ineffective adaptation and potentially create other new problems. This chapter is a detailed version of a paper that I presented at the 2012 IRSA Conference in Banjarmasin, Indonesia and at the 2013 ICLEI conference in Bonn, Germany.

Chapter 5 mainly discusses the history of flooding in the coastal city of Jakarta and the reason that kampungs are important in the context of flood management. This is an analytical description of the nexus of the urban poor and the floods that are perceived as a major problem in urban development both globally and locally. I focus on Southeast Asia where informality plays a significant role. I also discuss the reasons that KMB was selected to provide a clear picture of the phenomena of floods in a poor settlement.
Chapter 6 mainly discusses flood-related vulnerability based on the perceptions of the vulnerable people of KMB. I start by describing the perceptions of social culture, livelihood, settlement conditions, and flood history. I follow up the discussion by analyzing the perceptions of three main elements of vulnerability: exposure, sensitivity, and adaptive capacity. I examine how these elements are used to identify the vulnerable and the adapters. I end the discussion by arguing that they have generated their own criteria to define flood-related vulnerability and to identify vulnerable groups. An earlier version of this section was submitted as a chapter in the book, 2015 Urban Knowledge Network Asia (UKNA), which was published by VU Amsterdam Press.

Chapter 7 elaborates the relationship between the perception and the meaning of the production of adaptation. I examine the meaning that is produced in the locally situated knowledge of the people of KMB in taking action to adapt to floods. The discussion focuses on the lived experiences of individuals and groups in planning their housing management, evacuation and shelter strategy, flood infrastructure provision, and income generation. I also discuss the shifting meanings of flooding, from opponent to friend, which has transformed the people’s planning goals and adaptation options to “live with floods.” An earlier version of this section was presented at the BWPI-Manchester University International Conference on “Living in Low-income Urban Settlements in an Era of Climate Change: Processes, Practices, Policies and Politics” in September 2013.

To support the discussion about individuals who use locally embedded adaptation planning, chapter 8 explores how their planning activities become habitualized actions and how they reciprocally typify their planning. This chapter discusses the presence of informal planners who transmit planning knowledge through several non-formal events in the community. The unwritten communication has played a significant part in producing the planning knowledge. An earlier version of this section was submitted to the 2015 UNISDR report under the title, "State of DRR at the Local Level." Finally, chapter 9 concludes by considering the interrelation between the results of the empirical findings and the phenomenology in planning. I argue that locally embedded adaptation planning is planning knowledge that is produced by socially reflected adaptive practices through the shared meaning of lived experiences.
2 Conceptual Framework

The conceptual framework is “primarily a conception or model of what is planned to be studied, and of what is going on with these things and why—a tentative theory of the phenomena that you are investigating” (Maxwell 2004, 33). The framework will also be useful “to assess and re-fine goals, to develop realistic and relevant research questions, to select appropriate methods, and to identify potential validity threats to your conclusions” (34). Therefore, “the theoretical framework is but a theory that serves as a basis for conducting research” (Khan 2007).

As I explained in the previous chapter, I apply the people-centered approach, which is used in development studies, to examine the adaptation pathway of the urban poor in Jakarta. As defined by David Korten (1990), development is “a process by which the members of society increase their personal and institutional capacities to mobilize and manage resources to produce sustainable and justly distributed improvements in their quality of life, consistent with their own aspirations” (Korten 1990, 67). Therefore, the people-centered approach “looks to the creative initiatives of people as the primary development resource and to their material and spiritual well-being as the end that the development process serves” (Korten and Garner 1984, 201).

In the planning discipline, the importance of centering people in the planning process has been recognized since the early 1990s. According to John Friedmann, humanist philosophies evolve in planning practices. He argued that the planning discipline has adopted philosophical and social values such as “advocacy of the poor and other marginalized people, citizen participation, inclusiveness, and the right to housing” (Friedmann 2000, 7). At the operational level, Friedmann (1984) developed the concept of a territorial unit to define inclusive development strategies based on the principle of self-reliance. In his case study, he defined an individual as the member of a territorial unit that could extend from neighborhood to a nation. The territorial unit is based on residential place rather than temporary economic utility. In line with Friedmann, Korten argued, “the well-being of all its members in perpetuity is a main concern when delineating the territorial jurisdiction” (Korten 1984, 210). Therefore, by adopting the territorial unit in the planning discipline, people can express and share the knowledge learned from their lived experiences.

The wide spectrum of the planning field, which ranges from technical design to public policy, has led to several discourses on how planning can be useful to and owned by people. In his Cities for People, Jan Gehl, a popular Danish architect, recalled the importance of the scale of people in planning the city (Gehl, 2011). He suggested that planners should shift to a plan-by-people perspective for the good of people. In the socio-political context, planning
has already brought people into the planning process because they have rights and knowledge. John Forester’s *Deliberative Practitioner* and Susan Fainstein's *The Just City* are examples of progressive planners’ acknowledgement of the role of community deliberation to make planning socially accepted. Therefore, I argue that making people central to the planning process brings human values into the planning practices.

The location of people in the anthropogenic landscape varies from one region to another. As part of Southeast Asia, Indonesia is an archipelagic country of various cultural and traditional values. In the context of urban settlement, the presence of *kampungs* is a unique characteristic of Indonesia’s urban development. Although the definition of the *kampung* as a slum⁴ is still debated, most Indonesian scholars emphasize that the *kampung* is a traditional form of urban settlement (KBBI 1991) where residents live in the same way as in their original villages (Wiryomartono 1995). According to Mielke (2007, 13), who has discussed the multitude of local conceptions in defining the village in Kunduz province, Afghanistan, “the local concepts of village are quite different from the western idea and that they area contested.” Localities such as the *kampung* are present in other parts of Asia (Marcussen 1990), such as the *bustee* in India, a type of officially authorized slum (Kundu 2003) and the *katchi abadis* in Pakistan, “a sub-standard settlement that generally occupied government land with no legal property rights” (Fernandes 1994, 51). Most of those scholars argued that the absence of the governmental management of such localities has produced these informal settlements. Therefore, it is imperative to consider the specific locality of communities during the planning process.

As a self-constructed settlement, the *kampung* represents the Indonesian spirit of *gotong royong* (mutual self-help and exchange), which differentiates it from other types of urban settlement. Jelinek (1999, 267) argued, “mutual self-help whose physical fabric has evolved organically–creating a sense of place.” In the everyday life of the *kampung*, *kerja bakti* can be translated as the embodiment of *gotong royong*. It includes “traditional institutions” (Wilhelm 2011, 123), “collective activity” (Lont 2005, 42), and “duty work” (Perkasa and Hendytio 2003, 130).

I argue that the *kampung* should not be perceived merely as an urban problem but as way to make cities resilient. The residents of the *kampung* are the subjects of the kind of adaptation pathway that they have built today and will build in the future. How they define

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⁴ *Kampung* is associated with slums and squatters because the dwellers are low-income people. According to Suparlan (2004), slums are identified by impropriety, irregularity, communality, social economic stratification, and informality. Squatters are the denizens of slums that are illegally built in prohibited locations and public spaces. The recognition of the *kampung* as a slum appeared through the Kampung Improvement Program (KIP) in early 2000, which was supported by the World Bank and UNCHS (World Bank, 1999). Both agencies denoted the *kampung* as a slum because it had the same typologies as slums or squatter settlements, which are irregular, self-made residences on land unsuited for residence, such as floodplains, swamps, riverbanks, toll roads, and railway areas.
vulnerability and identify vulnerable people and adapters, how they practice adaptation and reflect those practices, and how they institutionalize the latter in the community will be discussed in the following sections. Therefore, the *kampung* should be viewed as a research laboratory that produces deeper knowledge about urbanization (Hornidge and Antweiler 2012).

In this research, I develop a framework that links the conceptions of vulnerability, adaptation, and planning (see figure 2.1) from a people-centered perspective. I analyze the social construction of reality. I use Schütz's *lifeworld* theory to reveal the lived experiences of *kampung* residents and examine the relationships among those concepts. By using *lifeworld* to analyze the trilogy of vulnerability, adaptation, and planning, this research will determine the adaptation pathway of the *kampung*.

![Figure 2.1 Conceptual Framework](image)

This figure is a trilogy that shows the linkage between vulnerable, adaptation, and planning. The vulnerable people use lived experiences to adapt and therefore to be adapters. The adapters apply self-reflective practices to plan their adaptation pathways. They institutionalize the knowledge of planned adaptation within their community. This knowledge will help vulnerable people to adapt to future floods. This trilogy provides a robust thesis on how adaptation planning can proceed and be institutionalized at the local level without the label of "climate proofing", but based on individuals' practices.

I conceptualize the flood-related vulnerability based on the everyday lives of the urban poor who live in the *kampung* to identify the vulnerable and the adapters. Next, I explore the practices of the adapters in the context of adaptation to regular floods, which is rooted in climate change adaptation and disaster risk reduction. I want to know the meaning
of what they have practiced to date and how they prepare for future floods. I examine the processes using reflective practice theory. Lastly, I disclose the way they institutionalize their adaptation to develop a planning model that is appropriate to the localities that participate in the planning process at the community level.

Before I elaborate these concepts, I reiterate that this research is rooted in the concept of phenomenology in planning, and it can be placed in the debate of people-centered and place-based planning. This debate is ongoing because although the approaches are different, they complement each other. This debate emerges from the endeavor of planning theorists to transform their ability to understand the real world. Friedmann (2008) argued that planners have the cognitive limitations of scale, complexity, and time. After reading Friedman’s essay and reflecting upon my 12 years of professional practice, I agree that the planning discourse will continue to evolve in its understanding the changing world in order to create a better place in which to live.

There are two kinds of planning (see table 2.1). Place-based planning perceives urban planning as territorially bounded because the urban space is multi-scale. The scale of urban space can be mapped. The planning map is the representation of reality from time to time and provides a simplistic model of urban complexity. It involves technical contributions from other experts, such as geographers, economists, engineers, and even sociologists. Therefore, the academic and professional learning process is imperative in producing the knowledge of planning.

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<tr>
<td>Knowledge</td>
<td>Technical</td>
<td>Experiential</td>
</tr>
<tr>
<td>Main issue</td>
<td>Spatial dynamics</td>
<td>Human right</td>
</tr>
</tbody>
</table>

Source: Author

The people-centered approach perceives that planning is rooted in the realm of the people who live in the city. Beginning with Jane Jacobs’, The Death and Life of The Great American Cities (1960), several planners have tried to make their paradigm people-centered. Susan Fainstein’s The Just City (2000) and Jan Gehl's Cities for People (2011) demanded that the paradigm of planning shift to accommodate “a human-centered philosophy” (Friedmann 2008). Fainstein (2005) suggested, “planning theory needs to consider under
what conditions conscious human activity can produce a better city (region/nation/world) for all its citizens” (127).

As suggested by John Friedmann, planning theory is “a work of translation that raises the horizon (of planning) to include the vast field of human knowledge or perhaps, of the knowledge in the plural” (Friedmann 2008, 29). This research is a voyage taken to discover the concepts and ideas in the sea of Schütz’s lifeworld, which I translate into the language of planning when I return to my work as an urban planner. I search for planning knowledge that is embedded in the realm of the urban poor who experience regular floods and who are neglected in the discourse of adaptation planning. The practical knowledge of situational planning requires quick and practiced adaptation, and it can be learned by rote. According to Scott (1992, 315), it is “a metîs, a contour of practical knowledge that can be acquired only by local practice and experience.” A metîs of planning is subjective, contextual, particular, and often consists of tacit knowledge, therefore differing from planning science, which is impersonal, universal, and concerned with certification process (Scott, 1992). Therefore, the “knowledgeability of individuals” (Antweiler and Mersmann 1996, 13) plays a key role in this research.

2.1 Vulnerability and Vulnerable people

The term vulnerability originates in the Latin word vulnerabilis, which means “being wounded.” In the last decade, in the context of climate change adaptation and disaster risk reduction, concepts of vulnerability have evolved in terms of epistemological orientation, analytical framework, and methodological practices. Several social scientists have contributed to the shifting orientation of vulnerability, from exposure-oriented sources that require a physical system of protection to affected social entities that emphasize adaptation. According to Birkmann et al. (2010), early disaster risk reduction in the 1970s was still dominated by hazard perceptions, but in the 1980s, it was challenged by the vulnerability paradigm, which views vulnerability as the susceptibility and ability of both people and communities (Bankoff 2004) and the intrinsic predisposition to be susceptible to damage (Cardona 2004). Therefore, vulnerability is viewed not only as a given condition caused by disasters or climate change, but also as “the propensity of exposed elements to suffer adverse effects when impacted by hazard events” (IPCC 2012, 69).

In relation to climate change adaptation, the concept of vulnerability is based on how climate change affects communities and societies in different geographical regions (Bogardi et al. 2005). According to the Intergovernmental Panel on Climate Change (IPCC), vulnerability includes three elements: the sensitivity of a system to climate change, its adaptive capacity in relation to such changes, and its exposure to climatic hazards (IPCC
2007). Several scholars added the social dimension to define vulnerability in climate change adaptation. For example, vulnerability is “the predisposition of society and individuals towards a stressor or hazard to be harmed” (Wisner et al. 2004, 11). Furthermore, “the human system as an object of interest is vulnerable due to its own properties and stressors from nature, but also due to stressors from the human system itself” (Cutter 1996, cited in Fekete 2010, 18). Thus, according to Bengtsson et al. (2007), each social group has its own vulnerabilities, which “depend on people’s interpretation through their personal life histories and experiences of daily interactions with the local environment” (Kuruppu and Liverman 2011, 658). Bankoff (2004) added that the subjective and inter-subjective interpretation and perception of disaster events could determine the construction of the vulnerability of the city’s inhabitants. In the 2013 World Social Science Report: Changing Global Environment, local knowledge was suggested for inclusion in policy-making.

It is important to go beyond the seeing is believing attitude typical of current evidence-based approaches to policy making. The accounts of the people who face environmental problems directly should also be accepted as valid. (Rajao) (ISSC 2013, 21)

Based on these concepts, we can understand that the level of vulnerability depends on how people perceive the impact on themselves and their properties. What they perceive is certainly specific and related to the kind of changes that they experience. The role of the affected people then is very important in understanding the meaning of vulnerability. Therefore, vulnerability not only positions human beings as the objects of vulnerability but also concerns who is vulnerable and how vulnerability is defined. The simple understanding that suggests that people who live in a vulnerable area are identical in their vulnerability is not relevant. The vulnerable area is derived from the conceptions of space and place, which delineate a certain location that is assessed to be sensitive, exposed, not adaptive, or mal-adapted. Moreover, vulnerable people are defined by the people-centered approach. Thus, it is important to differentiate vulnerable areas and vulnerable people (figure 2.2).

Two epistemological orientations form a spectrum of the complexity of vulnerability. At one end of the spectrum is the assumption that vulnerability can be reduced to its determinant factors through a causal relationship. At the other end of the spectrum is the belief that vulnerability should be viewed in a holistic manner. Fekete (2010) argued that reductionists analyze vulnerability using only one dimension, meanwhile the holistic version synthesizes multi-variables of vulnerability. Both views are very useful in identifying the object of interest. IPCC (2012) suggested that there are at least three objects: human beings, livelihoods, and assets. The characteristics of each object represent different conditions that are affected by hazard events. Therefore, a specific framework is required to define and measure vulnerability.
Figure 2.2 Vulnerability and vulnerable people

Source: Author

According to Birkmann (2005), vulnerability studies have evolved through the following: the sustainable livelihood framework (Chambers and Conway 1992), the double structure of vulnerability (Bohle 2001), natural hazard and risk (Bollin et al. 2003), the nexus of economic and social spheres (Turner et al., 2003), the pressure and release model (Wisner et al., 2004), the sustainable development agenda (UNISDR 2004), and the holistic approach to risk and vulnerability (Birkmann 2006; Cardona 2004). The many approaches of vulnerability studies indicate that an integrated and cross-disciplinary perspective could be used to overcome the complexity of vulnerability.

According to Damm (2010), in methodological practices, vulnerability assessment is categorized into three groups: place-based vulnerability, which argues that vulnerability is determined by social and biophysical dimensions; multi-dimensional vulnerability, which argues that vulnerability is shaped by at least four dimensions—physical, environmental, social and economic factors; and social-ecological vulnerability, which uses the interaction of social and ecological sub-systems in defining vulnerability. Those concepts are derived from the holistic point of view of human–nature relationships.

The integration of the notion of social dimensions into the discourse of vulnerability also has emerged in climate change adaptation and disaster risk communities. Many scholars in various disciplines have discussed the social construction of vulnerability in order to arrive at a common and better understanding of who the vulnerable are and the kinds of adaptation options that should be provided. One determinant of vulnerability that has been discussed recently is adaptive capacity. Both climate change adaptation and disaster risk communities take into account causal relationship between vulnerability and adaptive capacity.
The present definition of vulnerable people takes into account the socio-spatial approach and begins by defining a vulnerable area. This approach considers social drivers, such as social norms, capital, or networks, in defining a vulnerable place. It identifies the households or groups that are located in the vulnerable place as vulnerable, in which age, wealth, gender, and social inequalities are recognized as differential factors (Christmann et al. 2012). However, socio-spatial approaches take into account the perceptions of the affected local people because they know their capacity to adapt to the stress and shock resulting from extreme climate events by using values and actions to increase or even decrease the sensitivity of their places and based their practices on their experiences of the exposure to climate related disasters. Their everyday lives represent “a reality as interpreted by people and subjectively meaningful to them as a coherent world” (Berger and Luckmann 1967, 19).

**Vulnerability and Adaptive Capacity**

Adaptive capacity “plays a pivotal role in the progressive emergence of the vulnerability paradigm within the scientific realm” (Gaillard 2010, 223). The IPCC Special Report of 2012 indicates two ways of looking at the relationship: 1) vulnerability is the result of a lack of adaptive capacity, among other things; and 2) vulnerability is the opposite of adaptive capacity. The debate depends on which discipline and domain is used to examine the relationship. From the perspective ecological anthropology, which focuses on how cultural norms and practices reinforce human adaptation to the environment and how people utilize their cultural belongings to manage their environment, this relationship can be investigated in the realm of the local people who have lived experiences of environment changes, both gradual and rapid. I argue that the state of vulnerability can be viewed from the perspective of the population groups that experience adverse outcomes (exposed people), some of whom have the ability to adjust to environmental change (adaptive people). Therefore, the relationship between vulnerability and adaptive capacity should be explored from the point of view of individuals, not external experts.

Because it focuses on revealing individual experiences, the analysis of this relationship is better employed at the community level where the documentation of local people whose experiences and potential wisdom to decrease their state of vulnerability is easily found. Maguire and Cartwright’s conception of the community includes three dimensions, which are considered in this research: a territorially bounded, socially connected, and/or shared interest group of people (Kumar 2005; Kelly 2000; Maguire and Cartwright 2008). Given the uncertainty of environmental change, communities that understand and respond to environmental changes will contribute to an inclusive and
institutional mechanism of adaptation. However, the challenges in applying the findings need comprehensive generalization and detailed interpretation (Adger and Kelly 1999).

There are two views of the relationship between vulnerability and adaptive capacity. Some scholars have argued that adaptive capacity is a determinant of vulnerability. They positioned capacity under vulnerability, which is interpreted as a negative contributor (Davis et al. 2004). Other scholars assume that capacity means that vulnerable people are not powerless (Bohle 2001; Gaillard 2010). Second, some scholars have argued that vulnerability is dynamic and determined by numerous factors. Therefore, it cannot be understood that low vulnerability is automatically reflected in high capacity (Alwang et al. 2001). This group tends to view capacity as the opposite of vulnerability.

According to this point of view, the relationship is socially constructed and leads to a further discussion of who is defined as vulnerable. Is everyone living in an affected area considered vulnerable? How do the affected people differentiate the vulnerable from the adapters? What kind of capacity is important for them? Those questions need to be answered by those affected by climate events. The examination of local people who experience the effects of climate change could elucidate this relationship, especially in communities in hazardous areas. These people certainly know how to survive under frequent occurrences of extreme climate events and disasters because they have lived there for a long time. This local knowledge needs to be revealed because it is essential to understand whether their ability to survive has transcended the state of vulnerability, which they define themselves. This clarification could resolve the shifting focus of adaptation policy by either reducing vulnerability or increasing adaptive capacity.

Theoretically, in order to define people who are vulnerable to floods, three conceptions derived from the vulnerability framework should be applied. The first is exposure, which means individuals or groups that could be threatened by floods. The second is sensitivity, which are the situations or conditions that render individuals or groups unprotected against floods. The third is adaptive capacity, which comprises the potential abilities of people or groups, which can be used to adapt to the changes caused by floods. At the conceptual level, the exposed population consists of individuals or groups who live in floodplains, low-coastal areas, riversides, and land subsiding areas that are inundated. These people tend to be poor, disabled, and elderly. Adaptive people have the technical skills, experience, and resources to adapt to floods.

Consequently, if we take into account the perceptions of these individuals and groups, we may conclude that unlike invulnerable people, vulnerable people are exposed, sensitive, and not adaptive. From the conceptions, we can assume that the capacity of people is crucial in determining whether someone is vulnerable. The centrality of capacity is the key factor in managing the negative changes that come from both the outside (exposure)
and inside (sensitivity). If people do not want to be exposed, they should be able to move or to build defenses. If people want immunity (are not sensitive), they ought to have the capacity to strengthen themselves through frequent practices or other measures. Hence, adaptive capacity can prevent or remove vulnerability if people overcome their exposure and sensitivity. Adaptive capacity is used not only to mitigate hazards and their magnitude in terms of disaster management or to protect people against the effects of climate change but also to address the multi-dimensions of vulnerability in the context of sustainable development.

Therefore, the points of view of vulnerable people are an important starting point in adaptation planning, where the focus is not only on reducing vulnerable areas but also on increasing the adaptive capacity of vulnerable people. We need to shift the focus of vulnerability assessment in order to define both vulnerable regions and vulnerable people. In global discourses, many vulnerability studies are based on socio-spatial concepts rather than on human capacity. The state of vulnerability needs to be assessed based on the experiences of the people who are exposed, sensitive, and not adaptive to environmental change. Other interests should not influence the label of vulnerability.

The definition of vulnerable people can be traced to discussions of the vulnerability framework (see table 2.2), which began in the 1990s. Chambers and Conway (1992) used the sustainable livelihood framework to analyze social sustainability in a rural area, especially how farmers coped with shocks and stress. These two scholars focused on livelihood assets that were affected by shock or seasonality changes, and they found that governmental intervention was important in increasing social sustainability. Subsequently, Bohle (2001) examined the role of the “social assets” of vulnerable households or groups in coping with risks and shocks. Wisner et al. (2004), with Press and Release (PAR), developed a three-level model of vulnerability that included root causes, dynamic pressures, and unsafe conditions. They argued that people would become vulnerable if they lacked access to power, structures, resources and were marginalized politically and economically. In the second level, vulnerability occurs when there is a lack of local institutions and when macro forces pressure people to adapt. In the third level of this model, people have unsafe physical and social relationships, a weak local economy, and unstable public institutions. Using the disaster risk index (DRI), the UNDP (2004) tried to evaluate vulnerable people using the ratio of the number of the exposed population to the frequency of physical exposure. The World Bank (2004) released a “hotspot” index that generalized the number of people at risk based on mortality, economic loss, and GDP proportion as determinants of vulnerability (Bogardi et al. 2005). In conclusion, these authors described vulnerable people as a group, but not as individuals. They attached multi-dimensional conditions to vulnerable people but not the endogenous capacity of the individuals.
Table 2.2. Identification of vulnerable people in vulnerability frameworks

<table>
<thead>
<tr>
<th>Framework</th>
<th>Main factors of Vulnerability</th>
<th>Main factors of Adaptive Capacity</th>
<th>Pertaining of Vulnerable People</th>
<th>Authors/Supporters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sustainable livelihood framework</td>
<td>Livelihood assets, shocks, trends and seasonality</td>
<td>Government system; power relation</td>
<td>(Rural) community and society</td>
<td>Chambers and Conway (1992); DFID (2005); de Haan and Zoomers (2005)</td>
</tr>
<tr>
<td>Duo-systems</td>
<td>Internal factors (coping capacity) and external factors (risks and shocks)</td>
<td>Government policy and community responses</td>
<td>Households and groups</td>
<td>Bohle (2001); Cannon et al. (2003); Van Dillen (2004)</td>
</tr>
<tr>
<td>Pressures and Release (PAR)</td>
<td>Progressive interrelation among root causes; dynamic pressures; and unsafe condition</td>
<td>Politic and economic system</td>
<td>National and local entities</td>
<td>Wisner et al. (2004)</td>
</tr>
<tr>
<td>Human and Environmental Linkages</td>
<td>Exposures: coping, impact, adaptation responses</td>
<td>Institutions; political economy; transitions</td>
<td>Global, national, and local institutions</td>
<td>Turner et al. (2003)</td>
</tr>
<tr>
<td>Disaster risk management</td>
<td>Physical, social, economic, and environmental factors</td>
<td>Physical planning; social and economic capacity; and management</td>
<td>General society</td>
<td>Davidson (1997); Bollin et al. (2003); UN/ISDR (2004)</td>
</tr>
<tr>
<td>Holistic approach (BBC framework)</td>
<td>Mortality and economic losses and damages</td>
<td>National and global cooperation</td>
<td>Countries</td>
<td>UNDP (2004); World Bank (2004)</td>
</tr>
</tbody>
</table>

Source: Author, based on Birkmann (2010)

These authors tended to use social-spatial global and local entities to assess the role of adaptive capacity in reducing vulnerability. Turner et al. (2003) stressed the roles of institutions, political economy, and the transition from global to local entities. According to Bogardi, Birkman, and Cardona’s (BBC) framework, vulnerability reduction is a dynamic condition of social, economic, and environmental dimensions in different times and institutions within a feedback loop system. Therefore, being proactive before a disaster is as important as is being capable in managing emergency responses and recovery phases (during and post disasters).

However, the focus of those assessments is not on the people who have lived through the disaster events or have adapted to climate change. The original picture of vulnerability should be derived from the people who have lived through disaster or adjusted to environmental changes. The first enabling source of adaptive capacity is the locally situated knowledge gained from that experience. Moreover, adaptation should depart from previous definitions of what people need to improve their lives. Thus, the paradigm of people-centeredness includes vulnerability and adaptation and examines the nexus of vulnerability and adaptation.
Furthermore, Birkmann (2005) suggested that vulnerability studies should be placed in the context of development to improve adaptation. In this research, I use Korten's view, which focuses on creativity and initiative, to define adaptive capacity. I assume that people who are exposed and sensitive to disaster would become vulnerable if they lacked adaptive capacity. In contrast, people who optimize their capacity would reduce their vulnerability. Therefore, I argue that vulnerable people should be viewed as not only victims but also sources of creativity for developing their own adaptive capacity. They are the actors “who define the goals, control the resources, and direct the processes affecting his or her life” (Gran 1983, 176). Thus, I aim to develop a phenomenology of vulnerability in the paradigm of people-centered development. This paradigm will bring an alternative approach to the assessment of vulnerability and the provision of adaptation options. It shifts the focus of vulnerability assessment from the environment to the lived experiences of humans (table 2.3).

**Table 2.3 Approaches to vulnerability**

<table>
<thead>
<tr>
<th>Vulnerability Elements</th>
<th>Eco-place based approach</th>
<th>Socio-spatial based approach</th>
<th>People-centered approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposure</td>
<td>Floodplain area; river banks; etc.</td>
<td>Fishermen village; farmers village;</td>
<td>Poor; women; children; etc.</td>
</tr>
<tr>
<td>Sensitivity</td>
<td>Ecosystem services; coastal area; etc.</td>
<td>Slum area; dense settlement</td>
<td>Individuals, households and groups</td>
</tr>
<tr>
<td>Adaptive capacity</td>
<td>Urban system; rural system; etc.</td>
<td>Social institutions; local markets; power relation; etc.</td>
<td>Experiences; local innovation; creativity; self-reliance</td>
</tr>
</tbody>
</table>

Source: Author

People should build their own adaptation pathways to transform passive masses to proactive citizens. The plan occurs on a small scale, perhaps using a technology suited to their culture. Through the assistance of an alert citizenry, self-organizing systems could be developed through people-scale organizational units and self-reliant communities in adapting themselves and their area to environmental changes. As argued by Bob Doppelt, who is in the resource innovation group, “if we focus on experiences, people will be in a setting where they can grasp the idea of interdependency and reciprocity” (Garrison Institute 2013, 14).

### 2.2 Adaptation and planning

Adaptation to environmental change is as old as the human presence on Earth (Smithers and Smit 1997) although new needs have arisen in climate change adaptation. These needs include responding to changes and adapting successfully in the future. According to Lisa Schipper (2007, 4), “adaptation to climate change can be imposed based
on premeditated planning or it can take place without specific policy framework to implement
it." Therefore, the discourse on adaptation planning has entered the realm of sustainable
urban development, and it has involved many development agencies.

In 2010, at Changwon, Korea, UN Habitat held a meeting of regional partners in Asia
Pacific countries in to discuss the “Cities in Climate Change Initiative.” UN Habitat declared
the importance of strengthening cities’ responses to climate change, especially for
vulnerable youth and women, in addition to strengthening responses to local climate change
through the integration of community involvement, private sector participation, and changes
in laws and regulations (UN Habitat 2010). These responses should be on the agendas of
both cities and communities. However, there have been “few concerted efforts to develop
dedicated adaptation plans or to set adaptation initiatives in motion” (Carmin et al. 2012).

Unlike climate change mitigation, international protocols have not involved adaptation
planning procedures at the municipal level, so some cities have initiated their own
adaptation plans (Carmin et al. 2012; Granberg and Elander 2007; Schreurs 2008) with the
support of international donors. For instance, in 2009, the World Bank released the Climate
Change Adaptation Handbook for the Mayor; and the Rockefeller Foundation that applied
resilience concepts to planning practices in the Asian Cities Climate Change Resilience
Network (ACCCRN) program (2009–2011). The World Bank’s adaptation planning process
is similar to a risk reduction program (Thakoerdin 2009). ACCCRN identified four key
elements of adaptation planning: exposure, systems, agents, and institutions. It
recommends that the planning process should integrate local knowledge and scientific
knowledge (Moench et al. 2011).

I argue that adaptation planning proceeded in three modes, first is focusing on
sectoral issues, second is incorporating the adaptation into statutory planning, third is
conducting a specific purpose planning for adaptation. The first mode uses a strategic
approach to accommodate sectoral needs, such as water management, poverty reduction,
disaster preparedness, and city planning (Fussel 2007). Fussel believed that the benefit of
adaptation planning is to fill “the gap between expected (assume only autonomous
adaptation) and residual impacts (assume autonomous and feasible planned adaptation)
rather than potential (no adaptation) unavoidable impacts (perfect adaptation)” (269). He
argued that adaptation planning concerns “making recommendations about who should do
what more, less, or differently, and with what resources” (Fussel 2007, 268).

The second mode suggests that climate change assessment should be incorporated
into city planning although some scholars have complained of insufficient data and
techniques, as well as unsystematic incorporation. As suggested at the 2010 Cities at Risk
(CaR) II Conference, “there are current information/knowledge gaps and future research
opportunities for addressing climate change related risks and vulnerability in Bangkok,
HCMC, Jakarta, Manila and Mumbai” (Snidvongs 2010, 17). Furthermore, this approach should address “the need of institutional linking mechanism, assess the role of civic society groups and address deficiencies in existing planning instruments, in incorporating climate change risk and vulnerability” (18).

This problem also has emerged in developed countries such as Sweden. The use of climate knowledge in urban planning has already appeared in several projects, but there is a need to increase planners’ knowledge and skills. There are still many barriers to doing so, such as the uncertainty and lack of arguments, communication problems between climatologists and planners, fear of complaints by other stakeholders, and the expense of climatic investigation (Elliasson 2000). The literature on this scenario of climate change, however, still needs long, intensive processes to inform “the totality of knowledge about city’s vulnerabilities and strengths” (World Bank 2009, 8). Furthermore, the “current scientific (climate) information to develop better methods and procedures for designing the urban form” (Blakely, 2007) should be factored into the planning process.

The third mode argues that adaptation planning depends on who or what is being adapted (Nelson et al. 2007). Thus, adaptation planning is applied on different scales. At the city level, using the examples of Durban and Quito, the cities’ actions “were driven by internal goals and aims, rather than being pressured by mandates or agendas of external parties” (Carmin et al. 2012,10). At the community level, “some societies may strive to adapt to climate change while maintaining a current standard of living—whereas others may aim to adapt simultaneously with improving the standard of living of their citizens” (Adger et al. 2009, 341). At the individual level, it could be someone who needs to retain the vitality and viability required to cope with the shock and/or adapt to the stresses caused by climate change. Therefore, the scales of space and time in adaptation planning differ at regional and individual levels, and they depend on who and what is involved in the adaptation process.

For both individuals and communities, adaptation planning does not have to depend on scientific climate proofing because little climatic data is available at the micro scale. Moreover, it is difficult to conduct any meaningful assessment of changing climate conditions because climate modelling is still inaccurate (Firman et al. 2011). Therefore, the experiences of local people in changing climates are important in planning.

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5 The Special Report on Emission Scenario (SRES) includes four types of storylines and scenario families (IPCC 2000). In Indonesia, SRESA1B is seen as the most suitable scenario because it implies that countries will balance their technological sources between fossil-intensive and non-fossil energy sources (Heru Santoso, Interview, 20 August 2012). However, the global circulation model (GCM), which represents physical processes in the atmosphere, ocean, cryosphere, and land surface, is the most advanced tool currently available for simulating the response of the global climate system to increasing greenhouse gas concentrations. To date, the GCM has succeeded in explaining the climate change phenomenon on regional and national scales, but it is limited in its application at the city and community levels.
The Vietnamese who planted mangroves to prevent storm surges in the Mekong Delta (UNDP 2008) shared their insights with adaptation planners in Vietnam. The Papuan community that used their traditional tenure management system, known as sasi, conserved local biodiversity (McLean 2009). The residents of Toineke Village in West Timor, Indonesia have “adaptation strategies embedded in traditional practices and local knowledge” used those strategies to maintain their livelihood (Hornidge and Schotes 2012, 9). Hence, sharing information about planned adaptation practices should be socially constructed in order to disseminate the lessons learned. Laukkonen et al. (2009) recommended a methodology and an instrument to help individuals and communities in the planning process not only to gain their participation but also to embed their knowledge and actions into adaptation planning.

Attention to adaptation practices at the community level began several years ago. In 2012, IPCC’s Special Report of the Intergovernmental Panel on Climate Change (SREX), noted the consensus and robust evidence for the inclusion of local knowledge in preparing adaptation policy. The community’s knowledge and experiences should be integrated into the technical knowledge of climate change adaptation and disaster management. Some international donors have supported such initiatives, especially in poor communities (see UNDP 2012; CARE 2010; Mercy Corps 2011). They have developed several participatory models to conduct assessments and planning, most of which were intended to reduce vulnerability.

From the Community to People-based Adaptation Planning

As a planning practitioner, I argue that community-based adaptation (CBA) is a new issue in the planning literature. In 2004, the UNDP reported that decentralized disaster risk planning in Haiti could be implemented feasibly and sustainably because the community-based mechanism already existed (UNDP, 2004). Since then, the bottom-up approach to building systemic resilience to climate change through community-based adaptation programs has become imperative (UNFCCC 2009). The UNDP (2009) argued that CBA should be driven by community priorities, respond to location-specific needs, and offer lessons learned for the modified replication of best practices. In addition, the UNU-EHS suggested that “planning for meeting the requirements for the specific vulnerability groups and addressing contextual vulnerability at the local scale, rather than following top-down scenario based impact models, are also essential” (UNU-EHS 2010, 59).

It is not surprising that the subsequent initiatives of many community-based organizations (CBO) and non-governmental organizations (NGO), supported by international donors and development banks, have organized projects on community-based adaptation planning. ADB (2011) supported a field test that integrated local knowledge and engaged four vulnerable communities in the Cook Islands to formulate adaptation plans. The Mercy
Corps (2010) used a Vulnerability and Capacity Assessment (VCA) of disaster preparedness and then incorporated it into a sub-district plan. In both cases, the role of planners in community-based adaptation planning mediated the discussion between community groups and climate experts and connected local to scientific-technical knowledge.

The UNDP (2008) introduced Community-based Resilience Assessment (CoBRA), which integrates climate change risk management into MDG-focused initiatives. CARE (2010) also developed a toolkit for organizing community-based adaptation planning projects that result in climate-resilient livelihoods. The Pacific Institute (2012) developed an eight-step community-based research process that emphasizes the importance of recruiting and training participants. The IIID (2012) developed the Community-based Risk Screening for Adaptation and Livelihood (CRiSTAL) a user manual and computer software program that produces planning scenarios based on climate-sensitive and/or natural resource-dependent livelihoods. Those initiatives plan Community-based Adaptation (CBA) based on scientific climatic information that is confirmed by local or traditional knowledge. The facilitator is the liaison between the experts and the community. Some toolkits for professional planners have also been developed. The Canadian Institute of Planners (CIP) (2011) published the Adaptation Planning Handbook. USAID (2009) published a guidebook for development planners on adapting to coastal climate change.

Most of these studies concentrate on rural areas, and they range from micro to macro levels. Such agencies use the sustainable livelihood framework and take a participatory approach to organizing planning projects. Most projects are designed to reduce vulnerability and improve relations between the community and the local government. However, to achieve a better understanding of the discourse of community based-adaptation planning, the scholarly literature requires other approaches and foci, especially urban areas where the vulnerable poor are concentrated.

Inspired by the notion of vulnerable place, most previous studies have used a place-based approach to investigating the adaptation to climate-related disasters. Many planning scholars, such as Hewitt (1997), Bahrainy (1998), Geis (2000), Birkmann (2005), and Blakely (2007), developed spatial planning models of reducing disaster risks. Hewitt (1997) linked land use, urban form, and urban design to the effects of natural disasters. Bahrainy (1998) developed a model of urban planning and design in a seismic region. Geis (2000) proposed an urban planning and design model by adding the notion of safe community but focused on to location of the community. Birkmann (2005) and Blakely (2007) addressed the dimension of the risks and resiliency of the community in spatial planning.

However, the discourse on the people-based approach still lacks empirical evidence of its contribution to making cities resilient. As stated by Geis (2000), "the only way to reduce the growing human and property losses from [s]evere flooding is rooted … in how we design
and build our communities in the first place in these hazard prone areas” (153). The main issue concerns the kind of planning to be done. In 2009, the Commission on Climate Change and Development (CCCD) recommended the principles of human dimension in climate change adaptation for and beyond COP 15 Copenhagen. The CCCD (2009) argued that adaptation should consider human-based perspectives and apply them to the interfaces at local, national, and global levels in order to assess risks effectively. This change in perspective emphasizes the need for local adaptation strategies for engagement with learning gained in past experiences, the development of adaptive capacity by the people, the promotion of local capacities, the development diverse solutions, the promotion of the importance of ecosystem services, and the provision of public funding support for the poorest in society (Christoplos et al. 2010). Therefore, there is a need for adaptation planning that is driven by the local people who are directly affected by climate change.

2.3 Phenomenology in Planning

Planning theories and practices cannot be separated from the social realm. Based on the history of planning in the US, social science emerged in the era of the Great Depression and urban stagnation. Since the 1960s, the rise of social activism has both strengthened and challenged social science. The increase in the number community voices and social protests, in addition to political actions for reformation and transformation, has dominated the discourse of planning. Since the 1980s, in the era of retreat and policy privatization, the post-modern critique of rationality has stressed interaction, communication, and process. It shifts the planning paradigm from the voices of communities to the communities with voices (AICP 2013). Therefore, the linkage between knowledge and action has defined planning outcomes. American Institute of Certified Planners (AICP) divided planning into several branches of theory, which the present research takes into account (see table 2.4). This research is positioned in the branch of phenomenology in planning.

Donald Schön (1978) introduced reflective practice to explain the relation between thought and action. This concept was developed to improve education in professional schools, including planning schools. Schön presented reflective practice as a response to technical rationality (McDowell et al. 2007). He argued that planning needs artistry and skills that go far beyond the theoretical base. It does not depend on espoused theory (research-based) but on the experiences (theory-in-use) that are embedded in the logic of the action for creating solutions. Therefore, “reflective practice is about awareness of the knowledge we use, how that use is, and how we can improve our action in real time” (McDowell et al. 2007, 10). The reflection on knowing-in-action is the key to developing a planning process.
In 1978, Aagrys and Schön proposed the learning loop framework, which could also be used to increase adaptive capacity (Pahl-Wost 2009; Flood and Romm 1996).

Table 2.4 The diversity of planning theory

<table>
<thead>
<tr>
<th>Linkage Between Knowledge and Action</th>
<th>Desired Outcome</th>
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<tr>
<td></td>
<td>System Improving</td>
</tr>
<tr>
<td>Cognitive Reality</td>
<td>Synoptic rationality</td>
</tr>
<tr>
<td>Procedural Rationality</td>
<td>Incrementalism</td>
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<td></td>
<td>Comprehensive planning</td>
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<td>Communicative Rationality</td>
<td>Traditional Planning</td>
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<tr>
<td>Self-Reflective Action</td>
<td>Phenomenology</td>
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<td></td>
<td>Social Learning</td>
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<td>Moral Philosophy</td>
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Source: American Institute of Certified Planners (AICP), 2013

Planning theorists and practitioners, such as Friedmann (1987), Forester (1989), Alexander (1992), and Fainstein (2003), believed that the planning process is not exclusive to planners. Others also use this process to explain their problems and propose reflective solutions. Specifically, planning should consider individual actors, subjective cognitions, emotions, egoism and the "subjective logic” of their argumentation (Weichhart 2010,12) so that the outcome serves the actors' interests (Briassoulis 1997). Therefore, planning is not expected to produce texts that do not consider the local context (Sudaryono 2012).

Covert planning focuses on how local people engage in the planning process. Proposed by Victoria Beard in 2002, it draws on Friedmann's theory of planning as social mobilization. Covert planning thus embodies the desire for emancipation from local perceptions. It is more likely to be an informal planning that “involves local people planning for them and, in so doing, taking incremental, incipient steps toward altering larger power relation” (Beard 2002). It transforms individual planning initiatives into community planning through a subtle and nuanced form of collective action. Nonetheless, few studies have examined the embodiment of planning in “the process of subjective human experiences” (Wagner 1970, 13) or its process in individual reflective practices, especially in relation to climate change adaptation.

As a new dimension of planning theories and practices, adaptation to climate change can be seen as a new problem that should be incorporated into the planning process. At regional and city levels, most adaptation plans work using the espoused theory. Although professional planners have incorporated adaptation into planning, they have not had to adapt it to a flood. They use climate modeling data and the technical advice of experts and resource persons who know about floods. Such data and information are elaborated to produce planning conceptions without considering people's participation.

However, at the community level, participation has been recognized as an important factor. Many initiatives have used participatory planning as the theoretical framework. This
framework is used to explain communicative actions of the community and external actors, such as NGOs, the role of each actor, and the degree of participation in the adaptation planning process. However, this framework does not include the endogenous knowledge that may have accumulated in the realm of flood-affected people because NGOs have their own ways of orchestrating the planning process.

Where do the flood-affected people fit? They are the real experts in adapting to floods because they have done so for decades. Hence, they are knowledgeable. How do they frame the flood problem that they hope to solve? What steps do they enact when they plan the adaptation? A theory-in-use should be embedded in the logic of their adaption pathway. Therefore, the reflection on past experiences in adapting to floods is the main source of an adaptation plan. Based on that reflection, they create solutions and achieve capabilities in planning the adaption.

Phenomenology in planning is concerned with people’s understanding of planning practices. It is derived from the criticism of planning practices that they are not located in and connected to the real world (Baum 1980). John Forester said that such practices would continue to separate planners and those for whom they plan. According to Forester (cited in Hummel 1982), three issues need to be addressed in the phenomenology of planning:

A critical theory of planning practice calls our attention (1) empirically to concrete communicative actions and/organizational and political economic structures; (2) interpretively to the meanings and experiences of persons performing or facing those communicative actions; and (3) normatively to the respect for or violation of fundamental social norms of language use, norms making possible the very intelligibility and common sense of our social world. (Forester et al. 1980, 337).

Therefore, phenomenology in planning focuses on the intentionality of human acts. Its function is that of validation by placing “what is” in a context of meaning. It provides a domain for people’s actions in making plans for their own reasons.

Phenomenology is the technical bridging of subject-object, reason-practical reason and fact-value dichotomies that alienate human beings from their own potential (self-) knowledge. Phenomenology becomes the tool of a determined effort to find new ways of knowing as a prelude to new ways of deciding and new ways of acting. (Denhardt 1981, 100).

In people’s adaptation to floods, their motives, processes, and institutionalization are the main phenomenological concerns in planning.

2.4 Lifeworld as the Domain of the Institutionalization of Adaptation Planning

Planning processes should consider contexts, multiple disciplines, and organizational knowledge. Planning can be effective if we “understand about an institution in general and know their specific institutional contexts in particular” (Alexander 2005, 210). Institutions can provide the context and framework in which planning operates (Verma 2007). However, the institutionalization of planning takes place in the social world where people are
knowledgeable about their actions and interests. Teitz (2007) argued that the key issue is the aggregation of individual preferences and collective decisions. According to Healey (2007), institutions are a kind of “soft infrastructure of the governance of social life” (Healey 2007, 65). Furthermore, “Institutions structure the interactional process through which preferences and interests are articulated and decisions made” (64). Therefore, the outcomes always have difficulty in achieving social acceptance if the planning is not embedded in institutions. Legitimation is lacking when the theme of planning falls outside "norms, rules, and practices" (Giddens 1984; DiMaggio and Powell 1991, cited in Healey 2007). Several scholars have argued that informality has become a way of life in third-world countries (Sayyad 2004; Hasan 2004; Bayat 2000; Moser 1978).

Briassoulis identified two dimensions of planning: formal and informal. “[F]ormal planning is crystallized in rules and norms received through academia and legitimized by state legislation” and “informal planning is a universal human activity, not limited to the public sector, and thus not necessarily (formally) institutionalized” (Briassoulis 1997, 105). The two types of planning are combined (Hodgson 2006). Therefore, planning does not depend on or consider formal and informal institutions. The human factor is essential to planning. If the needs of the people are not recognized or if they have no access to the formal planning process, they can use their own knowledge of the past to proceed with their own planning. How they do this is worthy of study.

The theory of communicative action proposes that lifeworldly communication enables planning to achieve mutual understanding. Habermas (1987) argued that understanding is possible if the representatives of interest groups are ready to relinquish power and initiate “an exploration mutual argumentation for basic understanding and values upon which to build consensual planning decision” (Mäntysalo 2004, 10). In his theory, Habermas divides society into system and lifeworld. System is the realm of power and money, and lifeworld is the realm of cultural production and the reproduction of values (Mäntysalo 2004). Habermas placed media as a "subsystem" of lifeworld that emerged from the lifeworld and began to dominate society.

Mäntysalo (2004) argued that Habermas's idea met with some criticism, especially by Foucauldians who argued that power is not an “outer distortion” of the lifeworld but is embedded in and has deeper effects on the bureaucratization and commodification of society. Power is thus seen as a constructive force that shapes the individual's understanding and perception. However, for Habermas, the cultural and the social are included in the “power-free” lifeworld. Furthermore, the debate raises the issue of self-clarity in the institutionalization of planning. Following Fay's (1987) argument that self-clarity is problematic, Huxley (2000) argued that it is difficult because different customs and traditions
are situated and embedded in the realm of individuals. Therefore, self-knowledge must be revealed.

Alfred Schütz (1899-1959) linked the phenomenology of Edmund Husserl to the sociology of Max Weber. In Schütz’s lifeworld, planning is personal and based on inner experience. Schütz saw the lifeworld (Lebenswelt) as consisting of life forms and structures that refine meaning, action, and inter-subjectivity. Münch (2003) explained, “lifeworld is inter-subjectively shared world, a stock of knowledge, consisting of typifications, abilities, important skills and recipes for observing, interpreting the world and acting in this world” (Münch 2003, cited in Oberkicher and Hornidge 2011, 398). It is a lived world of everyday life, a structure in which the provinces of realities with finite meaning-structures are consciously constructed from the lived experiences of individuals.

Spatial, social, and temporal arrangements constitute the lived world and delineate the zone of operation (Wirkzone) of individuals, which depends on the cumulative past, completed experiences, and relatively open expectations for the future (Adomßent 2004, 10, cited in Oberkicher and Hornidge 2011). Figure 2.4 shows that the individual’s provinces of reality are structured by four worlds: “the individual’s immediate environment (Umwelt), the surrounding world (Mitwelt), the world of predecessors or precedent world (Vorwelt), and the world of successors or subsequent world (Folgewelt)” (Schütz and Luckman 1974, 59). The everyday lifeworld is the “reality” of people. Furthermore, Schütz argued that the social world is the sum of many individual lifeworlds. In other words, a lifeworld is based on each person’s social and cultural experiences and their associated meanings, which depend on and are determined by the person’s position in time and space (Schütz 1967; Schütz and Luckmann 1973).

![Figure 2.3 Illustration of Lifeworld Concept](image)

Source: Authors, based on Schütz and Luckmann (1973)
The social world can be defined through the socially constructed symbolic system developed by Berger and Luckmann in 1984. According to this system, there are three kinds of construction processes: externalization, objectification, and internalization. These processes take place through typification, institutionalization, legitimization, and reification. Typification consists of the shared habitual processes that lead us to typify and categorize what we observe in our surroundings through individual interactions. Institutionalization occurs if all members of a society share knowledge through a set of rules or legal institutions. Each rule will be accepted and passed on from generation to generation in processes of legitimization. When the institutions are no longer questioned, and they are accepted as social facts, the reification phase begins (Hornidge 2011). In reification, the objectivity of the social world has taken place, which then confronts humans as something outside themselves. Reification implies that “man is capable of forgetting his own authorship of the human world, and further, that the dialectic between man, the producer, and his products is lost to consciousness” (Berger and Luckmann 1967, 89).

A *lifeworld* analysis offers a social reality that “is not replaced by a fictitious, non-existent world constructed by some scientific observer” (Flick, von Kardoff, and Steinke 2004, 69). In several case studies, the *lifeworld* produces meaning from individual experience, which later can be applied to planning. Meaning is “the product of active local interests and social communities and constitutive of their interests” (Heelan 2002, 7). It does not mean that meaning is without truth, but it is the place where truth makes meaning appear (Heelan, 2001). For example, Veronica Strang revealed that “the broad themes of meanings encoded in water are similar in substance, providing important undercurrents of commonality” though culturally specific and diverse in form (Strang 2005, 115). The *lifeworld* has also contributed to explaining the “processes of perceiving and interpreting water and... [its] influence on water use based on farmer’s perspectives in Khorezm, Uzbekistan” (Oberkicher and Hornidge 2011, 397). The meanings of water can actually tell us about community members’ perceptions of the phenomenon.

Several scholars in *Zentrum für Entwicklungsforschung* (ZEF), where I work, have applied Schütz’s *lifeworld* to the field of disaster risk studies and climate change adaptation. For example, they have revealed the practices of flood utilization for livelihoods of Vietnamese farmers in the Mekong delta region (Ehlert 2012), investigated the local knowledge applied in the adaptation strategies to cope with drought and flooding in Toineke Village in West Timor, Indonesia (Hornidge and Schotes 2011), and examined the role of religious values in the water management implemented by Khorezm’s farmers (Oberkicher and Hornidge 2011). Therefore, the *lifeworld* is suited to examining the lived experiences of people with regard to a phenomenon.
In phenomenological sociology, Schütz’s *lifeworld* provides an analytical explanation of intentional, conscious actions taken to discover social existence. It is used to examine the institutionalization of adaptation planning as a social construction because the *lifeworld* provides the context and the domain of adaptation planning processes. Schütz’s *lifeworld* can also be used to explain the role of consciousness and actions of people in transforming subjective knowledge to the social stock of knowledge.

In the phenomenology of planning, Schütz’s *lifeworld* can be used to operationalize Schön’s reflective practices in the sociological dimension. For example, those who have practiced adaptation for decades could replace Schön’s reflective practitioners. Moreover, the capacity of practitioners could be defined by the zone of operation of individuals in the shared subjective meaning of adaptation itself. Therefore, reflective practice happens when individuals reflect on their world and its surroundings to arrive at a plausible reason for projecting their future actions in adaptation. This will generate a stock of knowledge based on the experiences of the people.

As argued by Michael Barber, “in planning some actions to be recognized in the future, one trusts reflective acts of projection, like those found in reflective memory, only now oriented in a future as opposed to past direction” (Barber 2014 4). Through such reflectivity, one can establish the “in-order-to motive of one’s action.” Therefore, this research requires a phenomenological empirical study to discover the structure of *lifeworld* of the *kampung* people who endure regular floods in order to interpret the meanings and experiences of those adapting to the flood situation and to understand their social world through institutionalization.
3 Methodology

3.1 Research Design

Because this is an argumentative-exploratory study, it combines quantitative and qualitative methods (Creswell 1994). The quantitative method will be used to select a *kampung* that best represents the interplay between the poor and the floods described in the previous section. In this chapter, I describe the preparation of the qualitative research design, which in this case is a phenomenological study. According to Creswell, “a phenomenological study describes the meaning of the lived experiences for several individuals about a concept or the phenomenon” (Creswell 1998, 51). Thus, this combined approach will be used to explain adaptation planning and present a detailed view of the perception, meaning, and institutionalization of locally embedded adaptation planning through the example of the *kampung* in Jakarta.

This research is conducted in a natural setting without the application of controls to the situation of respective *kampungs*, which, according to Patton (1980, 42), contrasts “experimental research where the investigator attempts to completely control the condition of study”. The natural setting provides a holistic and in-depth perspective and a unique case orientation. I analyze the data inductively without a static hypothesis by considering continuously evolving facts that have context sensitivity until I find the answers to the three research questions. As the researcher, I maintain a non-judgmental bias in observing and describing group patterns, similarities, and differences.

Phenomenological research explores a shared experience among people who experience the same phenomenon in order to know its meaning. What is experienced and how people experience it are the main research questions that can lead to understanding the “real meaning.” Mishler (2000, 10) argued, “Meaning should be perceived within the social context in which it occurs.” Therefore, in this study, the challenge is to minimize multi-interpretations by either myself, the researcher, or by the people in the *kampung*, who are the participants in study.

I base this phenomenological research on Schütz’s theory of the *lifeworld* to understand how people in *Kampung Muara Baru* (KMB) perceive and respond to floods. The *lifeworld* comprises experiences shared by individuals through their own knowledge and actions in adapting to stress or shock caused by floods. The *lifeworld* can explain both individual experience and the universal nature of floods in the *kampung*. Thus, the present study is a narrative that tells not only an individual’s life story but also the meaning of the lived experiences of KMB's people.
3.2 Field Work Procedure

Before conducting the fieldwork, I prepared to make it as easy as possible. I set up my desk in my department in the Universitas Indonesia, recruited research assistants, and contacted the government of DKI Jakarta about the fieldwork. I conducted the fieldwork in KMB from mid-April 2012 to the end of March 2013 (Appendix 1). I collected data and information concomitantly with the secondary data collection in several local and national government institutions and related agencies. I received a small grant for the fieldwork under the joint cooperation of the International Secretariat of Global Change System for Analysis, Research, and Training.

Before arriving in Jakarta, I designed my fieldwork plan by considering the factors that could influence the data collection, especially community meetings. The first factor was the election of the governor of DKI Jakarta, which prohibited meetings during campaigns and on election days. The second factor was the fasting month and Idul Fitri (Eid Mubarak day), which were not the best times to talk to people about floods. The third factor was the prediction of big floods in late 2012 in early 2013, which could be suitable for participant observations. In the field, most plans worked well, except some unexpected adjustments necessitated by the second round of the election and the fasting month in September 2012. However, these changes did not affect the overall plan.

I recruited two research assistants (one male and one female) for four months to help with collecting basic data and conducting workshops and meetings. Both were university students with a background in geography. In order to collect good data, I always briefed them before we visited the kampung area and engaged with the kampung dwellers. I emphasized the importance of exploring and recording the local language during interviews and group discussions.

To support the data collection, I used my office in my home institution’s postgraduate program in urban studies as the base where I organized the fieldwork. I also rented a one-room apartment in the KMB neighborhood to support the participant observations. With the interviewees’ permission, I used a voice recorder to record the interviews, a laptop-camera to shoot the group discussion activities if it was convenient, and a camera to take some photos. This logistic support was provided by grants from START and IAP.

I started my fieldwork by introducing myself to the head and secretary of KMB, explaining my activities, and asking him for a list of the head of Rukun Tetangga (RT) (smaller units constituting an Rukun Warga (RW)). I also interviewed them separately. My assistants and I then verified the maps and statistical data related to KMB by conducting field observations there. We conducted semi-structured interviews with the heads of the RTs, asking them about their area, population, flood history, and about the people who had the most and the least experience of floods.
I used this information to choose three neighborhood units that represented the flooded area but were in different geographical locations in order to explore the lived experiences of flood-affected people. I selected them based on my judgment and the aim of this research (Greg and Taylor 1999; Schwandt 1997, cited in Groenewald 2004). I looked for people who had experiences relating to the flood phenomenon. The first was RT 21, which is next to Jakarta Bay, the fisheries harbor, and the water pump. The second was RT 7, which is in the middle and surrounded by factories and warehouses. The third was RT 15, which is next to Sunda Kelapa harbor. I began a snowball survey, starting with the person who had been recommended by the head of RT. Snowballing is a method used to expand the sample by asking one informant or participant to recommend others (Babbie 1995). When I found someone who had a good memory, I followed him/her up by tracing the oral history or conducting an in-depth interview.

In each RT, I conducted several group meetings on different topics and with different aims. I elicited their perceptions of the floods and the extent of their flood losses and damage. I then asked how they had coped with and adapted to the flood situation, especially in relation to themselves, their families, and their houses. I provided RT maps to assist them in identifying shelter points and evacuation routes. I did not help them to draw on the map but let them visualize their experiences on the map. Next, I asked them how they came together to help each other find the neighborhood adaptation pathway.

Next, I interviewed some neighbors who had not attended the group discussion, including shopkeepers and factory and warehouse workers. After they became comfortable with me and I had obtained the information that I needed, I returned several times when I need to clarify unclear or incomplete information. I observed the participants in each RT. I was there when KMB was flooded in January 2013. For two weeks, I observed the situation and how the locals interacted with outsiders, such as the kelurahan (the smallest government unit) officers, the police, and business owners (warehouses and the fisheries port) while they adapted to the flood. I gathered the information that I had needed to confirm their stories. It was an invaluable experience, and it generated rich data for my research.

I also had conversations when I met people in the alleys of warungs (small shops). I attended social meetings, such as Rembuk RW, Arisan off-talk, and pengajian (religious group discussions). The Rembuk RW is an annual community meeting with the government to identify problems, needs, and solve problems based on the priorities of the kampong. The Arisan is a form of rotating savings association that meets once a month. It can be based on gender, social group, or hobby. In KMB, most arisans are for housewives. The arisan often coincides with pengajian (Quran reading). Therefore, in KMB, the arisan is motivated by economic need and social and religious interests.
An alley chat is a casual conversation between neighbors. Because the alleys are only 1.2 to 1.5 meters wide, it is very easy to talk to the person living opposite. Men usually have these conversations on their way to work in the morning or in the evening after dinner. Women have these chats on their way home from the market in the morning or in the afternoon when they bring in their laundry. The neighbors talk about activities in their daily lives and about managing their living places. It is also an effective means of sharing news because they stand in front of their houses and can directly observe the new adapted form.

Warung talk is a casual conversation in the kampung. A warung is a small shop attached to a house where necessities, such as soap, oil, medicine, book, candies, and even cigarettes are sold. In the neighborhood, there are seldom warungs that serve only food, but some warungs in the kampung are an exception. Both men and women visit the warung on a daily basis and it is a meeting point. A warung conversation about the latest news can be informative, and these conversations are open to everyone.

Under the Indonesian Association of Planner (IAP), this research considered the issue of confidentiality and the informed consent of respondents. I told my interviewees that their responses were being collected for academic reasons. I also explained to them that the data would be confidential, and I asked for their permission to use their names if the research was published. Some of them gave their approval, such as the Izhar Chaidir (government), Gustara (the head of KMB), Konedy (Secretary of KMB), and some heads of RTs. However, informants RT 19, RT 21, and RT 15 did not give their consent. I promised anonymity to those who did not want their names to be used. In many cases, the interviewees, such as the Secretary of RW 17 and the heads of RTs were not comfortable being recorded or photographed. With their permission, I took written notes of my interviews with them.

My assistants and I informed the respondents about the purpose and the outline of the research. We then asked for their informed consent to conduct interviews, group discussions, and take oral histories. Consent was given in writing or orally (Appendix 3). I also promised to give them a summary of the research upon request at the completion of the study.

3.3 Steps in the Data Processing

I stored the data in the forms of audio and video recordings and field notes. I recorded interviews only with the interviewee’s permission. I labelled each interview with codes, such as "participant, 13 July 2012." For participants who were interviewed more than once, I added a number on the code, such as "Participant-1, 13 July 2012." I made notes and transcribed keywords, sentences, and phrases to document the original language of the
KMB people. In addition, I stored the data in the field notes to avoid losing or forgetting important information. Field notes are important in recalling data in qualitative research (Lofland and Lofland 1999). I had kept types of field notes. The observational notes recorded my activities when I observed KMB and interviewed people if they did not want to be audio-recorded. I also summarized my findings. The other type was a methodological note that recorded self-instructions or briefs for the assistants before and after gathering data. Both field notes included my interpretations but not categorizations. I wrote those field notes to clarify the data from each interview (Groenewald 2004; Caeli 2001).

I then categorized the data based on my main research questions. I did three rounds of data processing: conceptualizing flood-related vulnerability; process tracing to construct locally embedded adaptation planning; and analyzing the lifeworld to explain the institutionalization process.

Defining vulnerable people was the key to beginning the research. Based on previous research that identified the Penjaringan sub-district as a most vulnerable area, its residents were selected as the most vulnerable people. Based on the definition of vulnerability discussed in the previous chapter, data were collected in Penjaringan, including slum and squatter settlements, demographic profiles, and climatic and physiographic conditions related to the flooded area. These quantitative data were gathered from the secondary data of the Jakarta Provincial Government, particularly the spatial planning division and statistical office. The data included social demography, land use and housing, livelihoods, and basic settlement infrastructure (see Appendix 2).

The spatial data were digitized and projected on the geo-reference maps and analyzed to determine the vulnerable areas. At this stage, the effects of climate change that were assessed were the rise in sea level, high tides, heavy rains, and river overflows that flooded the KMB. In order to confirm the information, qualitative data were gathered at the sub-district level through newspapers, recent studies, and government reports and at the RT/RW level through historical transect mapping and semi-structured interviews with the heads of RTs, the government officers of DKI Jakarta (head of the sub-districts and head of the planning division), NGOs with projects in DKI Jakarta (Mercy Corps, Action Contre La Faim, and the World Bank) and professional consultants who had conducted planning in Penjaringan. The historical transect focused on the chronology of floods, the frequency and locations of disasters, and the short- and medium-term adaptation measures taken by the poor. Combined, this information produced a map of vulnerability that later became the base map for conducting transect walks with the heads of RTs and RWs for the clarification and verification of the affected houses. The interviews with the heads of RTs were conducted to confirm the history, the time, the area, and the impact of floods. Based on these data, the internal and external perceptions of the flood area were juxtaposed.
In addition to the flood map and history, I interpreted the interviewees’ statements and opinions with attention to clarification and elaboration, and I asked for facts, feelings and perceptions (Mielke 2011) of institutions, planning processes, involvement of vulnerable people, community profiles, and best experiences. All qualitative data were assessed using interpretative analysis (hermeneutics) in order to understand what they intended to have meaning with symbols on their own maps and cultural expressions in their texts and the connections among them (Bernard 2006). The results of this analysis provided a general picture of the umbrella institutions of KMB and the discourses of adaptation planning.

In the next step, I profiled the identified RTs and discussed the flood experiences with the heads of these RTs. Through RT meetings (group interview), I elaborated households’ perceptions of vulnerable people and described the RTs as the focus area in the third phase of analysis. In these RTs, I elaborated the interviews based on the recommendations of the heads of the RTs, who were the gatekeepers of their neighborhoods. According to Neuman’s (2000, 352) definition, a gatekeeper is someone with the formal or informal authority to control access to a site.

I then defined the adaptation planning. Using information obtained from the gatekeepers, I explored the data collected from the flood-affected people. In addition to the in-depth interviews, I conducted social and resource mapping and group discussions to determine the planned adaptation that had already been conducted, was being conducted, or would be conducted based on their experiences, knowledge, and perception. The social mapping focused on the location of the vulnerable groups, their shelters, and their planned escape routes. In addition, the resource mapping focused on the distribution of public facilities and their assets. Both were used to explore the spatial and temporal dimensions of the people’s reality (Kumar 2002).

I conducted participation observations in order to learn more about the community and its daily activities. I observed and participated in a small-scale social setting, usually in the researcher’s home culture (Neuman 2006). In this stage, the researcher becomes an observer participant because he/she needs to be closer to the people who have covertly designed an adaptation plan or have participated overtly in formal planning. I wanted to learn about their cultural backgrounds, stories, and variations of life, components of action, and exceptions (Dewalt and Dewalt 2002).

Quantitative data were needed to help the mapping process of both the kampung selection and group discussions in the selected kampungs. In the fieldwork, maps provide initial information about roads, coastal lines, and rivers, which could be used later by the vulnerable people to compare with their own understanding of the places, various adaptations, and their planning. This spatial information revealed the shared symbols that
the informants might use in mapping adaptation plans. During the mapping, I observed their way of communication, the local words used in dialogue, and the agreed-upon symbols.

The qualitative data were gathered through in-depth interviews, participant observations, and field notes. The interviews were conducted privately in a confidential atmosphere. Field notes were used to record dialogues or events that were relevant to the study. These included a compilation of maps, photos, audios, other handwritten documents, and an inventory file, which were consolidated later to organize the data, track the progress of the fieldwork, and communicate with my supervisor. The data were explicated using a phenomenological methodology based on Schütz’s lifeworld. According to Vanderberg, Schütz said, “the human world comprises various provinces of meaning” (cited in Groenawald 2004, 4). Therefore, an iterative process is used to deepen the understanding of the lifeworld. This process was useful in producing meanings.

In the next step, I constructed the institutionalization of adaptation planning. The hardest part was to recognize the participants’ activities in relation to planning. Having identified the people who had experienced planned adaptation, I observed them in meetings and group activities in the RT/RW/kampung to learn how they communicated with their friends in the community. In my field notes, I listed the people who had experienced floods and any group activities that related to their adaptation. In addition, I conducted in-depth interviews with people who had been affected by, observed, or remembered past floods. I used storytelling, which is a way of organizing information, conveying emotions, and building community (Sturm, 2007), to interview the elders and/or community leaders who knew the history of the kampung, including the norms, the influencing actors, and community groups that had planned adaptation. In addition, I conducted serial focus group discussions (FGD) in order to understand the institutionalization processes of planned adaptation in the community at the present time, particularly the rules, actors, and (authoritative) resources. I assumed that the rules (procedures that people follow in their social lives) were produced and reproduced by KMB dwellers in their practices. The FGD included eight to ten participants who had made a practice of making rules or providing resources and access, especially in relation to floods. I gathered data on opinions, attitudes, and discussions about adaptation planning. I examined the FGD data using the narrative analysis of framing to discover regularities in how people told stories about adaptation planning. Framing is utilized to elaborate the social process phenomenon, which is a part of the construction of meaning by participants and opponents (Snow and Benfort 1988).

The last phase of data processing involved the explicitation of the data. According to Hycner (1999), this phase consists of five steps: “(i) bracketing and phenomenological reduction, (ii) delineating units of meaning, (iii) clustering of units of meaning to form themes, (iv) summarizing each interview, validating it, and where necessary modifying it, and (v)
extracting general and unique themes from all the interviews and making a composite summary" (Groenewald 2004, 17).

In bracketing and phenomenological reduction, I separated my personal views on the flood phenomenon from those of the KMB dwellers. I avoided including preconceptions in my interpretation. Phenomenological reduction is a deliberate and purposeful opening by the researcher of the meaning of a phenomenon in its own right. Therefore, I had to familiarize myself with the words of the interviewees by listening to the audio records several times and/or reading their words recorded in my field notes. I paid the most attention to the unique experiences of the KMB people in adapting to floods.

Similar to Hycner (1999), I used bracketing to delineate units of meaning. I considered the verbatim content, the number of times that a meaning was mentioned, and how it was stated (verbally or non-verbally). The same unit of meaning could have different weights or chronologies of events. I explicated the data by carefully extracting each interview or discussion of KMB's dwellers and consciously bracketing my presuppositions. Next, I examined the list of non-redundant units of meaning. To avoid overlapping clusters, I defined central themes through the cross-examination of the meaning of the clusters. The central themes "express the essence of these clusters" (Hycner 1999, 153).

The following steps summarize the units of meaning by incorporating all the themes extracted from the data, validating them by returning to the interviewees' words to determine whether the essence of the interview had been correctly captured, and modifying it if necessary. These steps depend on the validity check process. In the final step, I generalized the themes that were "common to most or all the interviews as well as individual variations" (Hycner 1999, 154). I wrote a composite summary that reflects the context or "horizon" from which the themes emerged to conclude the explicitation process. The summary is a narrative of how vulnerable people institutionalize adaptation planning to develop the "essential structure" of their social world. This conclusion is followed by the implications of the findings for both science and policy-making.

3.4 Research Constraints

I encountered several difficulties in conducting this research, especially during the fieldwork. These included time-survey constraints, socio-political conditions, and problems in processing the data. As previously mentioned, my fieldwork was interrupted by the gubernatorial election. Because it lasted two rounds, there were about 30 days when I could not interview anyone. During this time, If the KMB people had met with an outsider, they would have assumed that he/she was campaigning for one of the candidates. Because the floods have been seen as a political issue, their answers would reflect "the truth" of their
opinions. The supporters of the incumbent tended to be defensive in their answers. They often said that the flood infrastructure had reduced the frequency of floods. The opponents of the government were more likely to complain. In order to overcome the time constraints, I reviewed my interviews (see Appendix 4) before and while gathering the secondary data (see Appendix 2) from the government office. With regard to the socio-political constraints, I emphasized at the beginning of interviews, or during the interviews, that my focus was on learning about their actions, opinions, and resources in adapting to floods. I shifted the direction of the discussion if he/she was for or against the government. However, after the new governor was elected in October 2012, I returned and tried to elicit their opinions about the government programs.

In the data processing, it was difficult to bracket my personal view of KMB because I had lived in a kampung. On one hand, I had the advantage of understanding it, but on the other hand, my interpretation might have been biased. In my interviews with the KMB dwellers, I tried to avoid links or words that that I had used in my own kampung, even the same words. Thus, I kept asking them to elaborate. Even though absolute objectivity was impossible, I was always aware of the potential biases in my research, and I tried to compensate for them.
4 Planning Institutions of Adaptation to Flood in Jakarta

4.1 Planning for Flood in Jakarta: Infrastructure-driven Approach

The planning policies and programs for managing floods in Jakarta have changed since the period of Dutch colonialism ended in 1945. These policies and programs have been linked to institutional changes in Jakarta. The discourse of flood management planning can be divided into five periods: pre-independence, *Orde Lama* (1945–1965), *Orde Baru* part one (1965–1985), *Orde Baru* part two, and reformation (since 2000). Each period has specific problem diagnostics, regulations, planning knowledge, leadership, and funding resources. Consequently, the ever-changing planning institutions have slowed the implementation of planning for floods (see table 4.1).

**Table 4.1 History of Flood Management Planning in Jakarta**

<table>
<thead>
<tr>
<th>Period</th>
<th>The main flood plans</th>
<th>Regulation</th>
<th>Leaders</th>
<th>Resources /partners</th>
<th>Planning area</th>
<th>Causal factors</th>
<th>Big flood events</th>
</tr>
</thead>
<tbody>
<tr>
<td>19th -1945</td>
<td>Infrastructure drainage rescue + an-healthy planning</td>
<td>Van Breen Plan 1922</td>
<td>General Governor of Batavia</td>
<td>Dutch Colony</td>
<td>Old Batavia (central and west part)</td>
<td>Overflow rivers and high precipitation</td>
<td>1671, 1699, 1711, 1714, 1854, 1921</td>
</tr>
<tr>
<td>1945 - 1965</td>
<td>Infrastructure planning + tourism development (promenade)</td>
<td>Pluit Polder Plan 1957</td>
<td>Governor of DKI Jakarta (Sudiro)</td>
<td>City budget supported by National Budget</td>
<td>North Jakarta</td>
<td>Increased rainfall was not stored by drainage system</td>
<td>1956</td>
</tr>
<tr>
<td>2000- 2013</td>
<td>Comprehensive, integrated to spatial planning</td>
<td>Perda 1/2013 regarding the Spatial plan of DKI Jakarta 2013-2023</td>
<td>Sutiyoso and Fauzi Bowo (Governor of DKI Jakarta)</td>
<td>Supported by Worldbank and JICA</td>
<td>Greater Jakarta</td>
<td>Complex, inter-regional problem</td>
<td>2013</td>
</tr>
<tr>
<td>2013-now</td>
<td>Master plan of NC/CD – national capital integrated coastal development</td>
<td>On going, probably Presidential Regulation</td>
<td>Boediono(vice President RI) and Joko Widodo (Governor)</td>
<td>Dutch Government</td>
<td>Coastal and sea area</td>
<td>Complex, exacerbated by climate change and land subsidence</td>
<td></td>
</tr>
</tbody>
</table>


The shifting diagnostics of the causes of floods have made planning interdisciplinary. In the Dutch colonial era, the flood infrastructure was designed only to reduce the effects of the floods on public health. The plan now capitalizes on the flood infrastructure for economic
reasons, such as using a sea wall as a pedestrian walkway, including floodwaters in the water supply, and adding recreational functions to the retention pond. Planning knowledge has also moved from physical drainage systems to a comprehensive plan that incorporates land and water management. It has also affected the adaptation planning for flood events.

The only similarity between the planning of the past and the present is infrastructure. For many decades, flood management in Jakarta has been dominated by the flood infrastructure. The leading government agency is still the department of public works. However, the scale of planning has grown from the municipal to the regional, and the institution responsible is now the National Ministry of Public Works.

For more than a hundred years, the national and city governments have been implementing flood management plans, but flooding remains unpredictable. Although planning processes have involved many international experts, and they have been supported by numerous donors and international agencies, floods remain a chronic problem in Jakarta. Several experts have stated that Jakarta will be destroyed unless there is stronger control over land development. The destruction of Jakarta has been under public discussion since 2010 (see table 4.2).

<table>
<thead>
<tr>
<th>No</th>
<th>News title</th>
<th>Newspaper</th>
<th>Time</th>
<th>Groups of actor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Krontjong Toegoe, Tafsir Jakarta Tenggelam</td>
<td>Kompas</td>
<td>20.01.2014</td>
<td>Experts (Archeologist)</td>
</tr>
<tr>
<td>2</td>
<td>Jakarta diramalkan tenggelam karena punya patahan aktif</td>
<td>Vivanews</td>
<td>18.01.2014</td>
<td>National Government</td>
</tr>
<tr>
<td>2</td>
<td>Hampir separuh wilayah Jakarta bakal tenggelam di 2050</td>
<td>Kompas</td>
<td>26.12.2013</td>
<td>Journalist</td>
</tr>
<tr>
<td>3</td>
<td>27 Januari, Jakarta &quot;Tenggelam&quot;?</td>
<td>Kompas</td>
<td>20.01.2013</td>
<td>Scientist (Hydrology)</td>
</tr>
<tr>
<td>4</td>
<td>Jakarta &quot;tenggelam&quot; sudah di depan mata</td>
<td>Kompas</td>
<td>27.09.2010</td>
<td>Scientist (Geodetic Engineer)</td>
</tr>
<tr>
<td>5</td>
<td>Jakarta Tenggelam</td>
<td>Kompas</td>
<td>18.09.2010</td>
<td>Public figure (Former Minister)</td>
</tr>
<tr>
<td>6</td>
<td>Menteri PU: Jakarta terancam tenggelam</td>
<td>Kompas</td>
<td>31.07.2010</td>
<td>National Government</td>
</tr>
<tr>
<td>7</td>
<td>WALHI: Tahun 2050 Jakarta tenggelam</td>
<td>Kompas</td>
<td>13.02.2009</td>
<td>NGO</td>
</tr>
</tbody>
</table>

Source: Author, based on newspaper clipping

The possible destruction of Jakarta by flooding has motivated the government to plan a flood control system. The government spends much energy on flood infrastructure development on the mainland, such as the a canal system, river dredging, water ponds, and drainage improvement, as well as the development of sea walls. Even though several experts have found that the root of the flood problems is the public compliance with the land
use planning in both downstream and upstream areas, the government has maintained its focus on the flood protection system in the Jakarta area. Moreover, climate change has provided an additional reason for improving and enhancing the flood control system.

Jakarta will be thoroughly inundated by 2050, and the height of water could reach 50 cm [over the land surface] and it only comes from the global warming impacts, not considering storm surges and spring tide activities. Kecamatan Penjaringan, Pademangan, Cilincing, and Tanjung Priok will be the most vulnerable. (Safwan Hadi 2010)

The planning institution for flood management was incorporated into the Presidential Regulation Number 54 Year 2008 regarding the spatial plan of Jabodetabekpunjur, which includes Jakarta, Bogor, Tangerang, Bekasi, Puncak, and Cianjur. This planning umbrella promotes and accelerates inter-city cooperation, especially neighboring cities such as Depok, Bogor, and Tangerang. Therefore, the planning for flood management has shifted from inter-sectoral cooperation to multi-level governmental collaboration.

Infrastructure-driven planning of flood management, which has progressed from the local to the regional scale, is apparent in the mid-term development plan of DKI Jakarta Province (RPJMD DKI Jakarta). In the period from 2007 to 2012, the plan promoted cooperation with the neighboring cities of Bogor, Depok, and Tangerang through the East Canal development, which connects the drainage systems of Bekasi and Jakarta and the normalization of the Ciliwung River, which crosses Bogor-Depok-Jakarta. In the present period from 2013 to 2018, RPJMD DKI Jakarta has included the development of polders, retention ponds, a greening program, and infiltration wells in Bogor, Cianjur, and Depok. The content of this mid-term development planning evidences that flood management planning for Jakarta has extended to neighboring cities.

In spatial planning, the issues of climate change adaptation and disaster risk reduction have influenced infrastructure-driven planning. The increasing flood risk caused by climate change, such as rising sea levels, high tides, and heavy rains, has transformed the land use planning and zoning regulations of the coastal area of Jakarta. The integration of island reclamation and sea wall developments has been proposed as a solution to flood management. At the beginning of 2014, the Government of Indonesia initiated the Master Plan of National Capital Integrated Coastal Development (NCICD) and established the Project Management Unit to develop an integral solution to the problem of flood management.

The recent infrastructure-driven planning of Jakarta shows that government agencies still concentrate on preventing the flooding of Jakarta. Although governments have planned many flood infrastructures over centuries, floods still inundate Jakarta. This contradictory

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6 cited in Republika Online, 25 September 2010; translated by the author
picture has certainly led to different perceptions of floods. The public discussion still centers on how Jakarta could live without floods. Nonetheless, the concentration on protecting Jakarta has influenced urban stakeholders’ adaptation to floods. Furthermore, flood issues have moved from urban environmental concerns to the political agenda. The government has shifted the infrastructure plans from protecting the coast to developing sea reclamation.

Figure 4.1 Illustration of the future vision of North Jakarta Development
Source: Kemenkoeko (2014)

4.2 Shifting macro-adaptation planning: From River to Sea and from Defense to Development

The long experience of flooding has shaped the perceptions of Jakarta’s urban stakeholders. As a capital city where national treasures are located, as a megacity that is the headquarters of multi-national companies, and as a giant city with more than 10 million residents of all income levels, Jakarta has become a witness to and an object of numerous flood initiatives. All stakeholders have their own realms of interest according to which they decide what adaptation options they support.

According to the Intergovernmental Panel on Climate Change (IPCC), “adaptation is the adjustment in ecological, social or economic systems in response to actual or expected climatic stimuli and their effect” (IPCC 2001). Adaptation consists of the development of technology or infrastructural changes that maintain livelihoods and the actual behavioral adjustments to adapt livelihoods to new climatic conditions. Some solutions may only be
short-term and are limited by their lack of flexibility, and some others have long-term goals. Therefore, adaptation must be planned.

How macro-adaptation is planned depends on the needs and the capacity of the urban stakeholders. For the government of DKI Jakarta Province, an adaptation plan is needed to outline the annual programs and to estimate the budget. The government agencies are then able to identify funding sources and provide mechanisms to defray the adaptation costs. However, in making the plan, the government excludes non-state actors who may have interests in or have already conducted an adaptation. For example, some new town developers have protected their environment from floods by building their own dykes, water pumps, and drainage systems. These developers have even recruited international experts to formulate an adaptation plan, and they have invested their capital in building the required flood infrastructures. However, urban stakeholders, especially urban poor who lack the capacity to adapt their settlements and livelihood to flood, had not been taken into account (JICA-RI 2011). In many cases, they have already conducted adaptation planning because they have experienced floods, and have incorporated their experiences into the planning of macro-adaptation.

The government regards a flood as a preventable disaster. Numerous studies of flood impacts and risk assessments have been conducted to improve the rigorousness of urban development planning. Therefore, both the national and DKI Jakarta provincial governments have prioritized strategies for adaptation to floods through the development of a system that protects Jakarta against floods. At least four planning documents focus on the adaptation to floods in the coastal area: Rencana Tata Ruang Wilayah (RTRW) DKI Jakarta province (spatial planning); Revitalisasi Pantura Jakarta (planning study for new development of Jakarta coastal area); Rencana Aksi Daerah-Adaptasi Perubahan Iklim (RAD-API) DKI Jakarta province (action planning for climate change adaptation); and Rencana Penanggulangan Bencana (RPB) of DKI Jakarta province (disaster management planning).

RTRW 2010-2030 supports the adaptation to floods in coastal Jakarta by integrating the flood infrastructure into the water resources infrastructure. RTRW classifies the infrastructure as water conservation, water utilization, and water-damaged power control. RTRW also defines the coastal area as a provincial strategic development area with regard to environmental concerns. Article 77 states that coastal development is driven by sea dykes and island reclamation (Jakarta 2011). Thus, further detailed spatial planning is required.

The national government has been planning Jakarta’s coastal development since 1995. However, because of the 1997 economic crisis and the Ministry of Environment’s rejection of reclamation planning in 2003, the reclamation program has been delayed (see table 4.3). The planning of coastal Jakarta was resumed in 2010. The national government
has implemented new laws and regulations, ensured the commitment of private developers, taken into account global and local environmental challenges, and promoted a new vision of Jakarta as a service city. This re-planning of north coastal Jakarta has integrated sea reclamation with the revitalization of the mainland and the conservation of the Kepulauan Seribu district.

Table 4.3 History of Coastal Reclamation Planning

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>• Held seminars and conferences both national and international</td>
<td>• Governor presentation to the President of Republic of Indonesia</td>
<td>• Vacuum due to economic crisis of 1997</td>
<td>• Environmental Impact Assessment, Economic Feasibility Assessment</td>
</tr>
<tr>
<td>• Assisted by Dutch and Australian technical Consultant</td>
<td>• Coordination with the Ministry of Home Affairs and related government agencies, regarding the institutional arrangement</td>
<td>• The Regulation of Governor of DKI Jakarta Province Nr. 138/2000 regarding guidance of reclamation</td>
<td>• The Decree of Supreme Court reg no. 12PK/TUN/2011 regarding re-granted the reclamation of Jakarta</td>
</tr>
<tr>
<td></td>
<td>• Presidential Decree Nr. 52 / 1995 regarding land reclamation</td>
<td>• Decree of Ministry of Environment Nr. 14 / 2003 regarding Unfeasibility of coastal reclamation of Jakarta</td>
<td>• Principle Permit of reclamation for central and west zone</td>
</tr>
<tr>
<td></td>
<td>• Regulation of Government of DKI Jakarta Province Nr. 8 / 1995 regarding spatial planning</td>
<td></td>
<td>• Regulation adjustment to new law regarding spatial planning and decentralization</td>
</tr>
<tr>
<td></td>
<td>• The Regulation of Governor of DKI Jakarta Province Nr. 973 / 1995 jo. 220/1998 regarding Acting Agency of Coastal Jakarta development</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Feasibility study and Partnership cooperation with private developers</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: the author

In 2008, a national seminar on north coastal Jakarta was held at the University of Indonesia. The governor of DKI Jakarta claimed that the re-planning of coastal Jakarta had a threefold goal. At the global level, the goal was to increase Jakarta's competitiveness as a service city and place it on par with other global cities. At the regional level, the re-planning aimed to reduce the urbanization of the upstream area (Bogor/Depok), build a new growth center for megacities such as Jakarta, and overcome the bottleneck of a watershed system. At the local level, the re-planning aimed to improve the environmental quality and social welfare of North Jakarta, reduce the traffic in the city center, and develop a new image of Jakarta. The vision of the new Jakarta through the re-planning of the north coastal area implied that the government had transcended the problem and offered new hope to Jakarta's
people. The governor predicted the re-birth of a glorious Jakarta (Jayakarta; jaya means glory).

*Rencana Penanggulangan Bencana* (RPB) is a disaster management tool that is required at the national, provincial and city levels. It reflects a dual shift in the focus of disaster management from recovery to prevention and from government to governance (Simarmata and Suryandaru 2015). It is based on the Presidential Regulation Nr. 21/2008 and is part of development planning (Article 6). Based on this regulation, the government of DKI Jakarta province was facilitated by *Badan Nasional Penanggulanan Bencana* (BNPB) or the National Agency of Disaster Management to produce the *Rencana Penanggulangan Bencana* (RPB) in 2011. Subsequently, the government of DKI Jakarta province arrange RPB for its cities and districts. However, at present, the RPB of North Jakarta City is still being conducted. In relation to floods, the RPB of DKI Jakarta province consists of two objectives: 1) the distribution of flood risk areas in the Jakarta region; and 2) management planning to solve the problem.

The *Rencana Aksi Daerah-Adaptasi Perubahan Iklim* (RAD-API) DKI in Jakarta province enables stakeholders to integrate and synergize adaptation in short and long terms in order to achieve resilience (de Boer 2013). RAD-API consists of five sectors: energy, public health, infrastructure and settlement, ecosystem services, and slum and coastal areas. In relation to floods, the RAD-API DKI predicts that because of rising sea levels, the areas inundated by floods will increase (see figure 4.2). Therefore, RAD-API recommends the same flood infrastructure plan that was proposed by *Rencana Tata Ruang Wilayah* (RTRW). In the health sector, RAD-API also plans to reduce potential vector-borne diseases that could be triggered by climate change. In the ecosystem services, RAD-API plans to rehabilitate catchment areas and improve natural ponds and rivers.
In addition to this flood mitigation plan, RAD-API describes several plans related to institutional arrangement that need to support the development of flood infrastructure, such as strengthening flood control regulations and promoting the research and development of science and technology for climate adaptation. Moreover, RAD-API included the need to increase the knowledge capacity of slum dwellers and coastal communities in managing climate risks.

Although the four plans have different recommendations for adaptation, the planning goals have the same long-time perspectives and common interests in protecting the urban space (table 4.4). Based on the planning documents, the government has not concentrated on the population that is vulnerable to floods. The government assumes that by reducing or eliminating the flood hazard, people can live safely. Therefore, they prioritize physical engineering solutions to reduce inundation and to predict future floods.

Table 4.4 Planning related to flood of Government of DKI Jakarta Province

<table>
<thead>
<tr>
<th>Planning goal</th>
<th>RTRW DKI Jakarta</th>
<th>Re-planning pantura Jakarta</th>
<th>RPB DKI Jakarta</th>
<th>RAD API DKI Jakarta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning horizon</td>
<td>20 years</td>
<td>20 years</td>
<td>20 years</td>
<td>20 years</td>
</tr>
</tbody>
</table>

Figure 4.2 Flood areas due to Rising sea level
Source: de Boer, 2013
### Planning approach

<table>
<thead>
<tr>
<th>Relation to the adaptation to flood</th>
<th>Spatial analysis</th>
<th>Multi-sectoral integration</th>
<th>Four-disaster cycle management</th>
<th>Climate trends analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Defining flood-plain zone</td>
<td>• Identifying coastal defense strategy</td>
<td>• Mapping the flood risk area</td>
<td>• Identifying climate change impact both slow onset and rapid changes</td>
<td></td>
</tr>
<tr>
<td>• Promoting or controlling the development rights of land and water bodies.</td>
<td>• Regulating the coastal reclamation development</td>
<td>• Identifying the prevention, emergency response, raising awareness, and recovery and reconstruction program.</td>
<td>• Offering adaptation options to those impacts</td>
<td></td>
</tr>
<tr>
<td>• Identifying flood mitigation infrastructure</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Statutory

<table>
<thead>
<tr>
<th>Peraturan Daerah DKI Jakarta province Number 1 / 2013 (Province Regulation)</th>
<th>Peraturan Gubernur (Governor Regulation)</th>
<th>Peraturan Gubernur (Governor Regulation)</th>
<th>Peraturan Gubernur (Governor Regulation)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dinas Tata Ruang (Urban Planning Department)</td>
<td>Bappeda (Planning board)</td>
<td>BPBD (disaster management agency)</td>
<td>BLHD (environmental management agency)</td>
</tr>
</tbody>
</table>

### Lead organization

| Source: the author |

The government’s reasons for prioritizing the physical infrastructure were confirmed in a high-level policy dialogue held by the Indonesian Association of Planners (IAP) in November 2011. The forum highlighted the importance of the program to protect national vital objects, such as power plants, fuel logistics depots, and other public assets from the threat of rising sea levels and tidal floods. The presenter from the government of DKI Jakarta province and the head of the Department of Public Works argued that the government had extended the height of the sea wall from 0.8 meters to 2.5 meters for a distance of 32 kilometers *(Kompas 2011)* and prepared the development of a giant sea wall which was scheduled for construction in 2015 to protect those public assets. In addition, the national government, which was represented by *Badan Perencanaan Pembangunan Nasional* (Bappenas) or the National Development Planning Agency, stated that the losses and damage caused by the 2007 floods reached IDR 5.2 trillion,\(^7\) not including the economic losses of private companies and insurance companies that were estimated at IDR 3.6 trillion\(^8\) during the seven to ten days of the flooding. Sarman Simanjorang, Vice President of the Chamber of Commerce and Industry of DKI Jakarta Province stated that the daily losses caused by the 2014 flood in Jakarta were about IDR 100 billion\(^9\) *(Toyudho 2014)*.

Considering these facts, I concede that the Jakarta adaptation plan, especially with regard to flooding in North Jakarta, has captured national attention. In January 2013, Dewan Nasional Perubahan Iklim (DNPI), or the National Council of Climate Change, invited me to

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\(7\) IDR 5.2 trillion = 346.7 million Euro (1 euro = IDR 15,000)  
\(8\) IDR 3.6 trillion = 240 million Euro  
\(9\) IDR 100 billion = 6.7 million Euro
a meeting to discuss the coastal development of Jakarta. The presenter from the coordinating Ministry of Economy introduced the broadened development of the giant sea wall by adding further island reclamation to accommodate the high demand for global properties and national infrastructure. As shown in figure 4.1, the adaptation planning for North Jakarta has integrated the new giant sea wall with the reclamation land not only to protect this vulnerable area but also to implement new standards of Jakarta development. The strategy to capitalize on the risky area of North Jakarta gave the impression that the modernization of Jakarta would take place by simultaneously securing and developing the city.

We therefore infer that the adaptation planning for floods in Jakarta has become less defensive and more aggressive. The government of DKI Jakarta Province has shifted the locus from the land-based defense of rivers, canals, water pumps, and lakes to sea- and land-based protection, including reclamation, pond retention upstream and downstream, and the sea wall (see figure 4.3). However, the shift from defense to development has overlooked the presence of the vulnerable urban poor. The government seems to want to respond to the global challenges and intense competition by transforming the image of Jakarta’s north coast. In other words, the government of DKI Jakarta prioritizes the adaptation of the city structure and the protection the residents from floods instead of improving the human capacity to adapt. Sea reclamation is perceived as a rational response to the rapid urbanization that burdens the upstream and downstream watershed areas.

Figure 4.3 Shifted Planning Concept of Flood Control

Source: Bowo, 2008
The government of DKI Jakarta province considers the expansion of urban slums and squatters on the riverside, lakeside, and coastal area a significant cause of floods. The informal settlers have significantly reduced the amount of land previously used for a green open space included a retention pond and absorbed rainfall water. The huge volume of garbage that the settlers generate has lowered the capacity of the rivers and the retention pond. This uncontrolled spatial development is a determining factor in Jakarta’s floods (Brinkmann 2012; Firman et al. 2011). Therefore, moving the slum dwellers from the area is part of the government’s plans to make the urban structure resilient to floods.

As explained by the officer of Spatial Planning Department of DKI Jakarta Province, providing affordable housing for slum dwellers is currently the best option because land tenure prevents the consolidation of this area. However, the government of DKI Jakarta admitted in an interview, “relocating the urban slum dwellers is not an easy task.” Land tenure and the housing regulation are major problems in managing the slum area, which was emphasized in an interview with Izhar Chaidir, Acting Secretary of Spatial Planning Department:

The land problem... [It is a complex problem]. One of the causal factors is the pronas (national program in the economic crisis era [1999], which prohibited people from occupying abandoned land). It had become an interstice for certain people to certify the land, later generating the problem of double certificates... [It was also problematic at the first time since] there was a precedent that the land had been illegally rented by several tenants and housekeepers and was becoming a business commodity. (Interview with Izhar Chaidir, Acting Secretary of Spatial Planning Department, May 2012, translated by the author)

[In order to overcome this problem], we began to build cheap apartments to attract people to move. It worked to some extent. In the past, we had rusunami [cheap apartments for low-income dwellers], but it failed because they used them as a business commodity. No more rusunami, it is a rent-house now. [However], there is still a precedent that the housing units have been illegally rented by several tenants and housekeepers. So, we realize that the target group should be rotated, from one slum area to another, interchangeably... We give the incentive fully, free one-year lease, fully furnished.... There is progress. More people are willing to live in cheap apartments. (Interview, Izhar Chaidir, Acting Secretary of Spatial Planning Department, May 2012, translated by the author)

When I met him again in August 2013, he reiterated that moving slum dwellers into affordable apartments was better than letting them struggle in their current location. When I asked whether there were opportunities for a kampung, with its original sea-based culture, to have a legal space in Jakarta Bay and be integrated into the new island reclamation program, he replied that it was not suited to the spatial law and was inconsistent with the new vision of Jakarta Bay. The newly elected governor of DKI Jakarta province had launched the kampung readjustment program (kampung deret), but it only applies to kampungs that have a clear land status. Therefore, I concluded that the government has two plans for the adaptation pathway of the kampung: developing a flood infrastructure and then relocating the kampung to cheap apartments in safer places on land and the flood plain zone.
When I traced the references used by government(s) in prioritizing the adaptation plans, I found that the sources were donors and academics. The latter have conducted several studies\(^{10}\) over the last ten years. From the donors’ perspective, Jakarta lacks the infrastructure to absorb, store, and channel water when heavy rainfalls are exacerbated by high tides. They blame Jakarta’s floods on the poor synchronization of planning and implementing institutions (see Figure 4.4).

Based on studies conducted from 2007 to 2009, the Jakarta Emergency Dredging Initiatives (JEDI) and the Jakarta Urgent Flood Mitigation Project (JUFMP) recommended the enlargement of two canals, the normalization of 13 rivers, and the improvement of the drainage system. From 2010 to 2014, through the Jakarta Coastal Defense Strategy (JCDS), the Dutch government emphasized that the flood hazards caused by the sea were exacerbated by the land subsidence caused by groundwater abstraction. The JCDS recommended three stages of planning, all of which focused on the development of a defensive infrastructure. In the first stage, sea and river dikes, retention ponds, and pumping stations would be reinforced. The second and third stages would be concerned with the combination of the infrastructure with the reclamation program and the utilization of the sea dike as transportation infrastructure. Hence, "defense" has been replaced by "development." This planning concept suggested that Jakarta should build a flood infrastructure to protect the city and reduce the vulnerability of North Jakarta, which covers a double sea dyke, canal, river dredging, water ponds, and a reclaimed island (see Elings 2011; Prasad et al. 2009).

Donors have been instrumental in shaping Jakarta’s adaptation planning. The knowledge transmitted by these donors is based on the macro-view of floods, in which both donors and the government perceive that the adaptation pathway on Jakarta flood should depart from the hydrological problem. Such adaptation requires the improvement of the structure of watershed management based on an integrated engineering solution. This transmitted knowledge also appears in the shift of adaptation planning from a defensive strategy to a development strategy, which requires technological tools. The knowledge was transmitted from abroad because Indonesia still does not have the modern technology to protect against floods. Lastly, the history of development partnership in the flood management sector shows the dependency of the Indonesian government on international agencies. The government of DKI Jakarta and the national government had signed several memorandums of understanding (Droesch et al. 2012) or partnership agreements with donors, foreign governments, and international NGOs (i.e., World Bank, JICA, and the Dutch government).

Partnerships with donors and NGOs in adaptation planning are not new. A global survey conducted by MIT in 2012 showed that the adaptation planning in many cities consisted of forming not only advisory groups but also partnerships with NGOs, other cities, businesses, and community groups. Figure 4.4 shows that “Asian cities appear to frequently seek out partnerships, while they are generally uncommon in Australia and New Zealand” (Carmin et al. 2012, 18). Therefore, it is not surprising that Jakarta seeks the advice of donors and international organizations.
4.3 Micro-adaptation Planning for Floods: Strengthening the Role of the Community

The problem of Jakarta’s floods should also be seen from a micro-perspective. Because of the differences in flood magnitude and frequency in several parts of Jakarta, floods have varying levels of significance. The coastal communities are the first to be flooded. They have their own adaptation plan, but they still need support from the government. The government must consider its adaptation pathway. The World Bank (2010) indicated that the government of DKI Jakarta has much to consider in addition to the construction of a flood infrastructure. It also has to plans for climate-related disasters within communities. The World Bank Indonesia recommended strengthening local institutions by understanding the adaptation actions taken by the urban poor and community because “there is a wealth of knowledge and many strong existing social networks within the community.
vulnerable communities of Jakarta” (World Bank 2010). These could be accessed by empowering community-level administrators, such as Lurah, heads of RTs, and heads of RWs in organizing community-level activities and by learning what RTs and RWs have done and what they need in order to continue their program. However, some RTs and RWs are stronger than others are.

The Ministry of Ocean and Fisheries (MOF) supports the empowerment of villages. The MOF has endorsed Desa Tangguh or “resilient village” development in 6,640 villages, and in Jakarta, where two of fifteen villages are supported. The program focuses on five dimensions: human resources, natural resources, livelihoods, infrastructure and environment, and awareness of disaster and climate change. However, NGOs influence the adaptation process at the community level. Therefore, participative planning has become the main tool used for the adaptation planning by NGOs.

Mercy Corps Indonesia (MCI) is an international NGO that is concerned with climate change adaptation (CCA) and disaster risk reduction (DRR) in many Indonesian cities. It has created a Local Resilience Action Plan (LRAP) “to stimulate actions at the local level and initiate a better dialogue between community, sub sub-district (kelurahan), provincial level government and other stakeholder to implement the plans” (Shah and Ranghieri 2012, 34). MCI uses a trans-disciplinary approach to develop methods for making LRAPs, which consists of sensitization, technical analysis, stocktaking and assessment, option identification and program prioritization, and plan creation. Thus, LRAP is a climate change participatory planning document formulated by community and kelurahan (local government).

Even though the World Bank financially assists these tasks, the respective communities are expected to own the LRAP. In 2010, MCI developed LRAPs in three kelurahans in Jakarta: Pluit, Kapuk Muara, and Pademangan Barat. MCI formed a working group of kelurahan officials, informal leaders, youth groups, community organizations, and women’s organizations. MCI aims for LRAPs to function as a reference for the implementation of climate change adaptation activities by local stakeholders and other parties in the respective kelurahans. LRAP is also expected to stimulate actions at the local level and initiate a dialogue among communities, kelurahan, provincial level governments, and other stakeholders (Mercy Corps Indonesia 2010).

However, this goal may not easy to achieve. Pramita Harijadi, the task leader of Mercy Corps, conducted different vulnerability and capacity assessments (VCA) in order to determine the usefulness of LRAPs for the communities. The current LRAP is one of the pilot studies she organized in addition to the ACCCRN program in Lampung and Semarang. According to Pramita Harijadi, LRAP Jakarta needs to combine the results of VCAs, which were conducted by experts, and the results of the FGD of the risk assessment (RA) carried out by communities. Community participation in the working group was needed to confirm
the experts' work. However, the combination of VCA and RA faced difficulties in addressing different scales and methods. The community relied on a trial-and-error process while the experts and government depended on the risk assessment method.

When asked about the scale of VCA and RA, Pramita Harijadi mentioned factoring the human dimension into the assessment method. She said that the experts seldom think about the human dimension. Moreover, she found in the field that many local people adapt by trial and error:

It would be more interesting to make a vulnerability assessment if you used one criteria that is seldom used...the human dimension.... If social factors [links to] institution, economy [links to] income...the but human dimension?.... [I]t may be survival capacity and permissiveness... they just accept it in any case....For example, in the flooded area, one family still stays and lives there even though the floor is frequently inundated and his house is half-left.... When we asked the children whether anyone still lived there, they said yes...the parent live there, and they stay temporarily with their friends.... So, the question now, is it an adaptive capacity or a forced situation? Or something else? It is interesting to examine. (Pramita, 26 June 2012)

Unlike the Mercy Corps, which places flooding in the framework of the integration of climate change adaptation (CCA) and disaster risk reduction (DRR), Action Contre la Faim (ACF) puts it in the context of disaster management ACF operated a community based disaster Risk Management (CDRM) program in Jakarta in 2003 and 2004 and from 2007 to 2009. In the latter period, ACF focused on community empowerment and local actors through the strengthening of capacity in the preparedness and response to flood emergencies. ACF also consolidated the integrated local management of floods. According to Rama Furry, a spokesperson for ACF, the people living in north Jakarta's flood-prone areas do not know when flooding might occur. He argued that the Met Office (BMG) has frequently released flood warnings, but the residents of Muara Baru do not have access to them (Jakarta Post, 2009). Thus, it is important to strengthen the local system.

ACF has worked closely with the Satuan Perlindungan Masyarakat Penanggulangan Bencana dan Pengungsi (SATLINMAS PBP), which is the government protection unit for disaster management and refugees. According to the Letter of Decree of Governor of DKI Jakarta Province No. 96 Year 2002, SATLINMAS PBP is a joint organization of kelurahan, the lowest level of government unit, and a community stakeholder in disaster management. According to Andre Napitupulu, a humanitarian specialist who worked for ACF in Penjaringan, the first program focused on facilitating the development of flood prevention facilities, but in the second phase, they changed the program setting to strengthen the organizational capacity of SATLINMAS PBP. The CDRM program of ACF used participatory rapid assessment (PRA) through community needs identification, community mapping, and calendar mapping in order to identify the kind of capacity building and training activities that were needed by the community, especially vulnerable people.
As an NGO, ACF has intervened in the community organization by establishing functional units. One is Tagana (the Indonesian acronym for the youth organization for disaster response). ACF recruited members of this community youth organization, trained them in quarantine and disaster emergence response skills, such as search and rescue, and encouraged them to train their colleagues. This organic unit is expected to be in continuous operation and to preserve the knowledge and skills learned from ACF. However, based on the story of Mr. Napitupulu, the project officer of ACF, I interpreted that the program has not been fully successful because it stopped the implementation without monitoring and evaluating the programs. He was not even sure that Tagana was still active. This example indicated that introducing a new program into local institutions requires preparation time and control tools.

In his work on CDRM, Andre was convinced that the community already knew that they lived on the flood plain and a risky riverbank. The residents knew that the flood only lasts for six days a year, so they still had almost 360 flood-free days. They also knew that they could expect assistance during the flood. He added that the head of the kampung was the liaison between external parties and the community. This person had access to government facilities, launched the strategic planning process, and rallied participation in public meetings or activities. Therefore, the government and NGO recognized the importance of heads of neighborhood associations in policy and program implementation. (Interview with the author, 06 October 2012)

Another worthwhile micro-adaptation program is the Planning for Integrated Coastal Adaptation Strategies (PICAS) for North Jakarta security, which was organized by the Indonesian Association of Planners (IAP). In 2012, IAP conducted qualitative community-based adaptation planning in Kampung Kamal Muara (KKM) and Kampung Kebon Bawang (KKB). IAP used critical cause analysis to identify the flood problem and conducted participatory planning through a series of focus group discussions in order to identify the community’s adaptation plan. According to the project manager of PICAS, Dhani Muttaqin, IAP is concerned with community adaptation because the poor settlers in North Jakarta are the most vulnerable to climate change because of their low incomes and lack of education. Therefore, he argued that the self-empowerment of these people should be through capacity building. (Interview with the author, 09 September 2012)

Another planner who worked on the PICAS project, Raka Suryandaru, insisted that the impact of climate change would only worsen the social problems of the most vulnerable groups. He thought that community participation could lead to new insights and data to adaptation planning. The PICAS project recognized that the best solutions for disasters related to climate change would come from the communities. However, those community solutions will need to be incorporated into the city development and spatial planning. He
argued that risk management performed by the people of *Kampung Kamal Muara* (KKM) and *Kebon Bawang* (KKB) would be sustained only if the government accommodated those activities. Therefore, PICAS provided a rationale for the integration of the activities into formal spatial and development plans (Raka Suryandaru, interview, 20 October 2012).

Based on several community initiatives in Jakarta, the NGOs recognized that the “climate proofing” conducted by experts might not offer convincing data or reliable climate projection. At the micro level, the experiences of people should not be used merely to confirm or validate vulnerability assessments but also to be integrated into the analytical process. The NGOs realized that people’s experiences in adapting to climate change comprise a key variable at the community level. The ACF’s case study found that the adaptation plan could not be institutionalized because the NGO brought new knowledge that required time for the community to internalize, even though it had already adopted participatory planning. According to Sagala and Damayanti (2010), most community-owned initiatives were not communicated through planning processes. In other words, the value of adaptation planning at the community level is yet recognized.

### 4.4 Concluding Discussion

Theoretically, there are three options in adapting to floods: protecting the area, relocating the settlement, and living with the hazard. Based on the planning initiatives and practices in Jakarta, it seems that from the Dutch colonial period onwards, the objective of the government has been to protect the coastal area. The planning has gradually evolved in response to the current situation and future challenges. The government is expected to continue protecting the city from floods by developing flood infrastructure. However, other stakeholders have chosen different objectives while they await the results of the government’s adaptation plan.

This research found that the domains of the planning process differ. These various departure points have created a gap that could be overcome by integrating both perspectives into the adaptation planning process. The background of the actors determines the form of the space where the dialogue about planning ideas and concepts takes place. At the micro level, most of the discourses center on living with floods, without considering that the flooding could be disappeared. At the macro level, the discourse is focused on how the flooding could be reduced and how the city could be protected.

The second divergence was found in the adaptation planning process itself. Numerous studies and practices in Jakarta reveal two types of processes. The first type, community-based planning, emphasizes the interaction of experts and community; the second type depends on experts to assess the vulnerability and select adaptation options.
The two types have different drivers, actors, goals, data, methods, and knowledge (see table 4.5). The first type is associated with NGOs, whereas the second type is associated with government institutions. However, in some cases, the donors have supported both.

Table 4.5 Typology of processes of adaptation planning in Jakarta

<table>
<thead>
<tr>
<th>Elements of planning</th>
<th>Type 1 Community-based</th>
<th>Type 2 Climate-proofing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drivers/Actors</td>
<td>Facilitators of CSO/NGO in CCA, DRR, and/or sustainable development</td>
<td>City planner/professional who has a competence on CCA and/or DRR</td>
</tr>
<tr>
<td>Goals</td>
<td>Increasing coping capacity to flood</td>
<td>Reducing vulnerability to flood</td>
</tr>
<tr>
<td>Data</td>
<td>Climatic and non-climatic data/information</td>
<td>Climatic and non-climatic data/information, and experts’ justification</td>
</tr>
<tr>
<td>Methods/Approaches</td>
<td>Participatory planning</td>
<td>Rational comprehensive planning</td>
</tr>
<tr>
<td>Types</td>
<td>Prioritized actions</td>
<td>Systematic response</td>
</tr>
<tr>
<td>Level</td>
<td>Community to sub-district level</td>
<td>District/city to national level</td>
</tr>
<tr>
<td>Source of knowledge</td>
<td>Modules/guidance</td>
<td>Theories/practices</td>
</tr>
</tbody>
</table>

Source: the author

The micro perspective sees people’s experiences as a source of knowledge; therefore, it depends on traditional and tacit knowledge. This perspective is embodied in the realm of the people who experience the phenomenon. In contrast, the macro perspective considers quantitative analysis and expert opinion. Transparent and accountable processes, with certain limitations in assessing flood-related vulnerability, are typical of the macro perspective.

Traditional knowledge is usually derived from the experiences of local people who are vulnerable to the effects of climate change. Such knowledge is a key information source for the planning process. Based on several cases of MCI, ACF and IAP, the communities in Jakarta have adapted to floods. In Vietnam, the people who plant mangroves to prevent storm surges in the Mekong Delta (UNDP 2008) could provide insights into local adaptation planning practices. The Papuans who use their traditional tenure management system, known as sasi, conserve local biodiversity (McLean 2009). Similarly, the people in Toineke Village, who have adaptation strategies that are embedded in traditional practices and local knowledge, support their livelihoods (Hornidge and Scholtes 2011). If all the mechanisms of information sharing among residents’ planned adaptation practices are socially constructed, lessons could be learned. Laukkonen et al. (2009) recommended that the development of a methodology and tools to help individual residents and their communities in the planning process are required not only to gain their participation, but also to embed their knowledge and actions in adaptation planning.
The use of traditional knowledge in adaptation planning can be successful through building connections between informal communities and formal institutions, as well as through collaborative planning among stakeholders. To build such connections, planning actors should facilitate the transmission of the knowledge of adaptation planning. Transmission is the way in which knowledge alters local behaviour (Carmin et al., 2012). External factors, such as professional networks and associations, NGOs and consultants, often transmit ideas and knowledge to the local actors in cities. These ideas, however, are not easily transferred to the individuals at the community level because technocratic language must be translated into a language that community residents will understand. In Jakarta, linking community-based adaptation with the urban development plan is challenging. The codes and sectoral approaches of governmental bureaucracy need to be synchronous with the adaptation plan formulated by the kampung people.

The adaptations of the community and the Jakarta government to floods rely on different pathways and sources. People of the kampung still rely on traditional knowledge and actions, which should be integrated into the governmental processes. According to Rabe (2011, 37), “Indonesia needs to harness its long tradition of community participation and self-help to come up with innovative local solutions to integrate poverty reduction with climate change actions.” He suggested that engaging the community in an early stage generates relevant information and knowledge. Moreover, the capacity building of the vulnerable group is central in adaptation planning. Without the disclosure of the community’s adaptation planning, there will be no connections among planning outputs. Nonetheless, the city government has yet to understand these differences and to integrate the community’s planning into a city plan. Therefore, institutionalization is difficult.

Several cases of adaptation planning in Jakarta revealed that the divergent worlds of adaptation planning interfere with institutionalization. The different realms of planning produce inefficient and ineffective adaptations and potentially create new problems. Climate proofing does not solve the problems at the community level, and community adaptation planning is not recognized at the city level. The NGO’s involvement in participatory planning does not bring experts and vulnerable groups together. It makes up for the existence of those realms at different levels but not as structurally connected frames. These realms will still produce ineffective adaptation if the local institutions cannot bridge the knowledge gap among the actors. Not only scenario planning based on climate proofing but also the lived experiences of vulnerable groups should be integrated with city development planning. The bridging processes will streamline the institutionalization of adaptation planning, which will eventually lead to strong institutions of adaptation to climate change.

These processes underline the emergence of people-centered planning. This kind of adaptation planning should rely on the local knowledge embedded in each community. The
shift in focus in the planning process from climate proofing to locally embedded knowledge of vulnerable people will facilitate the connection between the macro and micro perspectives on flood. Therefore, planning institutions should provide an enabling environment for convergent and loop connections (see figure 4.5). Such an environment could be formed through collaboration among stakeholders to ensure that in the future, planning will belong to the people, and it will be implemented by them. It cannot be institutionalized in a single process of adaptation planning that is limited to experts and governments.

Figure 4.6 The mainstreaming process of adaptation planning from community to city level
5 Interplay between the Floods and the Poor

5.1 Understanding Coastal Floods in North Jakarta

More than half of the population of Indonesia, which is one of the fastest urbanizing countries in Southeast Asia, now lives in urban areas. It has been predicted that eight of ten Indonesians will live in cities by 2050 (Bahasa, Directorate General of Spatial Planning [DJPR] 2013). Fifty percent of all cities in Indonesia, or about 47 cities, are coastal. Sixty-two percent are secondary cities, and only five cities, including Jakarta, are metropolitan. In coastal cities, floods are serious problems, in addition to coastal erosion and seawater intrusion (DJPR 2013; Bahasa, Ministry of Ocean and Fisheries [KKP] 2011). According to the National Agency of Disaster Management (BNPB), in 2014, there were 131 floods in Jakarta and 22 floods in North Jakarta in the rainy season (see figure 5.1).

![Figure 5.1 Number of Floods In Jakarta](image)

Source: the author, based on BNPB (2014)

Since the 17th century, when it was Batavia, Jakarta has faced floods (Soehoed 2004). Kompas daily news on September 14, 1998 reported large floods in 1671, 1699, 1711, 1714 and 1854 (as cited in Julianery, 2007). According to Soehoed (2004), the flood was caused not only by the overflow of river run-off but also by heavy precipitation. Precipitation is still one of the main causes of floods. The data on major floods in 2002 and 2007 gathered by MGK (bahasa acronym for the Meteorology Office of Indonesia) shows that the total volume of rainfall affects the water level in Manggarai and flood level at Bukit Duri (see table 5.1). Rainfall intensity, not the number of rainy days, tends to be a cause of major floods.
Table 5.1 Rainfall during two major floods of Jakarta

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Total rainfall for five station (mm)</td>
<td>7100.0</td>
<td>7484.0</td>
</tr>
<tr>
<td>Maximum rainfall upstream (mm/day)</td>
<td>168.1</td>
<td>247.0</td>
</tr>
<tr>
<td>Maximum rainfall downstream (mm/day)</td>
<td>172.0</td>
<td>234.7</td>
</tr>
<tr>
<td>Average rainfall for five station (mm/dy)</td>
<td>21.1</td>
<td>25.8</td>
</tr>
<tr>
<td>Average rainfall upstream (mm/day)</td>
<td>20.6</td>
<td>24.8</td>
</tr>
<tr>
<td>Average rainfall downstream (mm/day)</td>
<td>21.9</td>
<td>27.3</td>
</tr>
<tr>
<td>Percentage of days with rainfall</td>
<td>69.9</td>
<td>67.0</td>
</tr>
<tr>
<td>Duration of event (days)</td>
<td>121.0</td>
<td>88.0</td>
</tr>
<tr>
<td>Water level at Manggarai (cm)</td>
<td>1050.0</td>
<td>1061.0</td>
</tr>
<tr>
<td>Flood level at Bukit Duri (m)</td>
<td>2.3</td>
<td>3.4</td>
</tr>
</tbody>
</table>

Source: World Bank, 2010

In period from 1980 to 2012, the data showed a fluctuating pattern of rainfall (figure 5.2). Although the slope line tends to be stable, there was much more rainfall in 1996 (2,400 mm), 2007 (2,000 mm), and 2010 (2,200 mm). In these years, several large floods occurred in Jakarta. Therefore, the climate change in Jakarta is not simply a matter of more rain but the uncertainty of heavy rains. Instead, the mean of the rainfall tends to decrease slightly. Thus, the trend in the rainfall pattern is unrelated to the level of floods, but heavy rainfall is the major cause.

Figure 5.2 Observed rainfall in the period 1980–2012

Source: the author, modeled by Sutikno

The intensification of rainfall and alterations in seasonal cycles also significantly influence the risk of flooding. Climate change is predicted to result in an increase in annual rainfall by two to three percent in Indonesia (Ratag 2001). Climate change also affects the duration and occurrence of La Nina and El Nino, which later influence the rainfall and other patterns. During La Nina, Indonesia has more rainy days in a year; during El Nino, there is
drought or a shorter rainy season (fewer rainy days in a year). In addition to heavy rains, the slow onset phenomenon that contributes to floods is sea level rise (SLR), which is influenced by the combination of melting of glaciers and polar ice caps and the thermal expansion of ocean water that inundates low-lying coastal areas (PEACE 2007; Muhammad 2011). In 1990, the ITB research team found that the SLR in Jakarta was 4.38 cm per year. In 2007, based on data collected in the period from 1984 to 2006, the SLR was 7.00 cm per year (Aldrian 2007). In 2010, Plamonia calculated that the mean SLR increase in Jakarta Bay was 5.75 centimeters (cm) per year. SLR is found in coastal Jakarta. The widening gap between the static surface of the sea and land has increased the velocity of seawater infiltration, which is exacerbated by heavy rainfall.

Another sea phenomenon that contributes to flooding is the anomalous tidal levels caused by the earth's gravity and the ocean's circulation. In Jakarta, most people call these banjir rob or tidal floods. They usually occur in the rainy season and in the seasonal transition period, particularly during the full and new moons (Hiladaliyani 2011). In the last seven years, there has been no clear pattern of these periods or the frequency of tidal floods. The biggest repetition occurred in 2009 when there were seven tidal floods, but there have been at least three per year since then. The only similar pattern is repeated location, such as Muara Baru, Tanjung Priok, and Penjaringan, which experience periodic tidal floods. There have been no occurrences of tidal floods in the same month or on the same days in each year (see Appendix 5).

The Jakarta Coastal Defense Strategy of Jakarta (JCDS) argued that tidal floods happen "when the Java Sea rises during the monthly lunar tidal cycle" (Prameshwari 2009), which is an 18.6-year cycle (astronomic tide). The peak of the next tidal cycle is expected in 2025 (Brinkmann, 2012). The JCDS predicts that the area will be at the mercy of an upswing in the tides unless a sea defense system is built by 2020. In the 2007 flood, huge amounts of water blasted inland and inundated most of the North Jakarta area. Moreover, the tidal flooding is worse if the rain-induced flood is accompanied by high spring tides. The flood could last for three days (Kompas, 2012).

Figure 5.3 Illustration of tidal floods
Source: Brinkmann, 2012
The low elevation of coastal North Jakarta also contributes to tidal flooding. Lying under the sea surface ranging from -1 to -3 meters (Abidin et al. 2009; IPB 2010), the coastal area is vulnerable to high spring tides (Brinkmann 2012; BMKG 2010) and rising sea levels. By 2050, the average inundation will range from 0.28 to 4.17 centimeters. There are 24 inundated areas, which comprise about 30 percent of the coastal area, while half this area complicated by water scarcity caused by seawater infiltration (Meliana 2005).

The occurrence of natural factors, heavy rains, SLR, and tidal floods confirms that the coastal flooding of Jakarta is caused by climate change. Lobo (2008) found that the contribution of high precipitation and rising sea levels was significant in increasing the proportion of flooded areas in Jakarta. He predicted that the inundated area of Jakarta would increase 50.21 percent by 2035; half of Jakarta will be inundated. Many scholars have argued that the North Jakarta municipality is vulnerable to climate change, such as “high tides coupled with growing rising sea water” (Firman et al. 2011; Susandi 2009), rainfall (Yusuf and Fransisco 2009); and rising sea levels in addition to land subsidence (Ward et al. 2010). Therefore, the *Dewan Nasional Perubahan Iklim* (DNPI) claims that Indonesian coastal cities will continue to experience the effects of climate change in at least these four major ways: increased sea surface temperature and rising sea level, increased frequency, and intensity of extreme weather; changes in seasonal cycle and rainfall pattern (cited in Muhammad, 2011).

In addition to these climate factors, manmade factors have raised flood levels. The main factor is the land subsidence caused by ground water. According to Ward et al. (2010, 7), “there is a strong indication that land subsidence in Jakarta is highly correspondent with the high volume of groundwater extraction from the middle and lower aquifers.” It has been reported that the rate of groundwater extraction rapidly increased by 40 percent per year from 1998 to 2007 (*Kompas*, 27 September 2010). Between 1982 and 1997 (15 years), land subsidence reached 0.2 meters although the first notice was recorded in leveling surveys conducted in 1926 and 1927 (Abidin 2008).

In another study, Colbran (2009) found that from 1993 to 2005, the land in the north coastal area was reduced by -0.57 meters. Priyambodo (2005) predicted that the rate of land subsidence per year was about 0.8 centimeters. The excessive use of groundwater and the volume of groundwater extraction have already exceeded the land’s capability to recover (Samsuhadi 2009). It will affect the lower land surface of Jakarta, mainly on the coastal side. Gumilar et al. (2009) argued that the land subsidence could cause tidal flooding, tilt houses and other buildings, and at worst, cause gas pipelines to explode.

According to Abidin (2008), the load of construction (i.e., settlement of high compressibility soil) and the natural consolidation of alluvium soil are the main factors that trigger the ground water extraction. The extensive physical development caused by
uncontrolled rapid urbanization has stressed Jakarta’s carrying capacity, including its ground water resources. Furthermore, uncontrolled urbanization has disrupted land use patterns. Many floodplain areas have been occupied by both formal and informal settlements. The expansion of the informal settlements often intrudes upon riverbanks, lakeside, and green open spaces. Other water catchment areas channel an overflowing river to another area. In addition, real estate companies have reclaimed land from the sea in areas such as Pantai Indah Kapuk (PIK) and Taman Impian Jaya Ancol. It is obvious then that floods in coastal Jakarta are exacerbated not only by climate change but also by human activity.

Regular coastal flooding has adversely affected the economic and social life of Jakarta residents. The flood risk constantly increases because the flood-prone areas continuously expand and interfere with the economic activities of Jakarta. Hallagate et al. (2013) estimated that by 2050, the annual average losses (AAL) of Jakarta would have increased by 54 percent from 2005 or about 0.22 percent of Gross Domestic Product (GDP), even with stringent adaptation planning. This figure is higher than predicted for Bangkok (0.09 percent of GDP) and lower than that predicted for Ho Chi Minh City (0.83 of GDP). An estimated 98,877 people were evacuated in 2002, and 17,000 were evacuated in 2007 (Rujak Center 2011). Two thousand were evacuated in the most recent flood in 2013 (Reviyanur 2013). These events brought urban activities to a halt for days. The floods have caused water scarcity, disease outbreaks (Haryanto 2009), and dozens of deaths. Furthermore, most victims of these events are among the urban poor.

According to the government’s statistical data, in North Jakarta, which has approximately 1,645,659 inhabitants or about 17.13 percent of total population of Jakarta, 27 percent are poor (BPS 2010; DKI Jakarta 2010). Figure 5.4 shows the distribution of poor households in Jakarta. Based on the poverty data released by the Central Board of Statistics (BPS) in 2008, North Jakarta and Eastern Jakarta have the most concentrated areas of the poor. The total population of the poor in DKI Jakarta province is about 400,000. In 2010, the near-poor population was about 300,000 (Firman et al. 2011). In 2011, the World Bank noted that the homes and livelihoods of the poor are the most vulnerable to floods.

The North Jakarta city has six kecamatan\textsuperscript{11}: Penjaringan, Pademangan, Tanjung Priok, Koja, Kelapa Gading, and Cilincing. Kecamatan Penjaringan is the most vulnerable to floods induced by rising sea levels because it has the highest concentration area of poor and nearly poor, who are vulnerable to becoming poorer if there is a disaster (Firman et al. 2011). In the next section, I will explain the relationship between floods and the poor in Penjaringan.

\textsuperscript{11} Kecamatan is an administrative subdivision of a city (kota) or a district (kabupaten).
5.2 Floods and the Poor in Penjaringan

*Kecamatan* Penjaringan borders the Java Sea in the north, Pluit Lake in the west, Jakarta Bay in the east, and a highway toll road in the south (see figure 5.5). It consists of five *kelurahans*, which are Penjaringan, Pluit, Pejagalan, Kapuk Muara, and Kamal Muara. The total area is about 395.43 hectares and the population is about 306,456, which is located in 65 RWs and 800 RTs (BPS DKI Jakarta 2013). The development of

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12 *Keluurahan* is the smallest unit of the Jakarta Province Government based on the Governor Regulation of DKI Jakarta Number 147 /2009 regarding the Governmental Organization of DKI Jakarta Province. *Keluurahan*’s task is to implement the government’s duties delegated by the Governor and to coordinate government duties in the area. Its functions include the maintenance and development of public facilities and health facilities in the *kelurahan*, monitor rental housing and green open spaces, and empower RWs (association of RTs) and RTs (neighborhood association).

13 Rukun Warga (RW) is a neighborhood association that consists of several Rukun Tetangga (RT). The RT is the smallest neighborhood unit in administration settlement in Indonesia. The head of RW or the head of RTs is a documented resident who is selected by residents through an election mechanism every three years.

14 RW administratively represents an “urban locality group” (Dwianto 2003, 4). Although the kampung is not considered an official administrative unit, the identification of kampung can be approached by the presence of RWs. According to the Governor Regulation of DKI Jakarta province Number 36 / 2001, the RT/RW has rights and duties, such as promoting integration between the people and the government, accepting and implementing all of the government’s efforts and plans for the development of society, preserving and promoting the Indonesian people’s spirit of *musyawarah mufakat* (mutual consultation) and *gotong royong* (mutual assistance), collecting dues and of making full use of any means available for the improvement of the living conditions of the people, etc.
Jakarta Fishing Port, which started in the 1980s, was the tipping point in the urbanization of Kecamatan Penjaringan. Begun in the 16th century in the era of Dutch colonization, kecamatan Penjaringan has been affected continuously by new urban infrastructure. The development of water draining channels, canals, and water reservoirs crisscross the area, such as Cengkareng Drain, Pluit Reservoir, and dikes along the shoreline, has attracted housing properties, such as Pantai Mutiara resorts, Pluit residences and mall, and apartments. However, there is no low-income housing. Consequently, the urban poor build non-permanent houses next to the water facilities.

*Kelurahan Penjaringan*[^15] has the largest number of poor households (Firman et al. 2011) and is the most vulnerable to floods (Susandi, 2009). Floods have different effects on permanent houses and non-permanent houses. The permanent settlements have good drainage systems, and the elevation of their houses higher than that of the local road. In contrast, the non-permanent houses, such as in the kampong, that are predominant in the built-up area (see table 5.2) lack drainage, and their elevation tends to be lower than the road. Most of these houses are small and attached to each other (Field note, May 2012), which creates the impression of the density of these settlements. The modest and dense construction with poor sanitation and sewage has increased the risk of these buildings and their inhabitants.

**Table 5.2 Number and types of building in Penjaringan**

<table>
<thead>
<tr>
<th>No</th>
<th>Types of building</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Permanent</td>
<td>5,781 units</td>
</tr>
<tr>
<td>2</td>
<td>Semi Permanent</td>
<td>7,569 units</td>
</tr>
<tr>
<td>3</td>
<td>Slums</td>
<td>4,574 units</td>
</tr>
<tr>
<td>4</td>
<td>Squatters above the river/lake</td>
<td>3,560 units</td>
</tr>
<tr>
<td>5</td>
<td>Squatters below the toll road</td>
<td>-</td>
</tr>
<tr>
<td>6</td>
<td>Apartments</td>
<td>2 blocks</td>
</tr>
<tr>
<td>7</td>
<td>Flats</td>
<td>8 blocks</td>
</tr>
<tr>
<td>8</td>
<td>Public houses</td>
<td>2 units</td>
</tr>
<tr>
<td>9</td>
<td>Shops/Stores</td>
<td>425 blocks</td>
</tr>
<tr>
<td>10</td>
<td>Mall</td>
<td>1 unit</td>
</tr>
<tr>
<td>11</td>
<td>Warehouses</td>
<td>145 units</td>
</tr>
<tr>
<td>12</td>
<td>Industries</td>
<td>266 units</td>
</tr>
</tbody>
</table>

Source: Annual Report of Kelurahan Penjaringan, 2011

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[^15]: Kelurahan Penjaringan is located below sea level (-1 meter) and is crossed by three rivers that flow into the Java Sea: Kali Ciliwung, Kali Angke, and Kali Krukut. The area is about 395 hectares and divided into 17 RWs and 255 RTs. In 2010, the population was about 79,399 with a birth rate of 45 people per month and a migration rate of 27 people per month (BPS DKI Jakarta 2012). The coastal condition of Kelurahan Penjaringan causes some RWs, such as RW 01, 02, 03 and 17, to be inundated during rainfall and/or the high tide season (JICA 2011).
According to my field observations, most of the kampungs are clustered on riverbanks, along the shoreline, and between industrial blocks. The residents have little or no access to clean water. Because there is no space for wells, and the rivers and lakes are contaminated, water is delivered in hydrant cars. The water company covers only 80 percent of the kelurahan and mainly serves permanent houses and buildings. However, the kampung people do have access to education, health, and other social services. In addition, Kelurahan Penjaringan has two offices that coordinate disaster management and one station that monitors the floods (see Appendix 7). Hence, the government of DKI Jakarta province is prepared to manage floods at the kelurahan level.

However, according to the ACF flood risk assessment,\(^\text{16}\) which used the five variables of elevation (hazard variable), the sea wall and water pump installation (capacity), the distance from the sea or river, and the building material of the houses (susceptibility), RW 01, 03, 04 and 17 possessed high flood risk and endangered the lives of 16,488 inhabitants or 30 percent of the total population (ACF, 2008). Kampung people are vulnerable to injury, property, and income loss because they live and work in the low-lying coast and along waterways. The water scarcity caused by saline intrusion is another problem caused by floods. Furthermore, a flood simulation of North Jakarta indicated that the kelurahan penjaringan is one of the potential areas that will be inundated by 2050 (Hadi 2010). According to the World Bank (2011, 33), “the combination of these hazards and the economic and physical fragility of the poor put them at high risk for loss of property, illness, economic disenfranchisement, social disruption and displacement.” Therefore, the kampungs in Kelurahan Penjaringan are at risk.

As mentioned in the introduction, most planning practices have been conducted from the kelurahan level to the city level, and most studies of adaptation to climate change (CCA) and disaster risk reduction (DRR) have been based on climate impact modelling, social economic vulnerability, and floor risk assessment. Their findings showed that the interplay between floods and the poor occurs at the macro and mezzo levels and increases flood-related vulnerability. However, nothing is known about how kampung people perceive the interplay between floods and poor in their own kampung. It is important because the kampung and kampung people represent the localities in the urbanization of Jakarta. Combining the arguments of three scholars, I define a kampung as a “tight agglomeration of continuous and incrementally developed self-help housing” (Silas 1993, 45), “an indigenous

\(^{16}\) In 2010, the ACF conducted a study of disaster risk assessment in three kelurahans: Penjaringan, Kampung Melayu, and Cipinang Besar Utara. With regard to Penjaringan, it stated that three types of disaster risk pertained to Kelurahan Penjaringan: floods, which potentially impacted 16,488 inhabitants or about 30 per cent of 55,780 total population in 5 RWs from 17 RWs; fire, which potentially impacted 50,722 inhabitants or about 91 per cent of total population in 15 RWs; and dengue, which potentially impacted 33,508 inhabitants of about 60 per cent of total population in 10 RWs (ACF 2010).
and unplanned settlement” (Silver 2008, 130), and an informal, accretive, and un-serviced urban village that houses a majority of the urban population (Garr 1989, 79). Therefore, the interplay between floods and the poor should be examined in relation to the kampung of Jakarta.

I used five available maps to identify the kampungs that best showed the interplay between the poor and floods. The first shows the distribution of flooded areas in 2002 and 2007 on the flood map issued by the government of DKI Jakarta province. The second map showed flood threats and hazards based on historical data of BNPB. The third map showed a potential flood scenario in 2030, which was issued by the government of DKI Jakarta province. The fourth map was issued by the World Bank Indonesia and showed the recurrent intervals of flood inundation and the probability of floods in Kelurahan Penjaringan. The fifth map showed the distribution of poor households in Kelurahan Penjaringan. I used the classification system and data compiled by the government of DKI Jakarta province. These spatial data were superimposed to identify the kampungs (RW) that had been impacted by floods and that housed poor residents. The kampung that had the most intersectional value was selected. A detailed explanation of the spatial data processing and analysis is provided in Appendix 8.

Based on the results of the overlay process as described in Appendix 8, RW 17, or Kampung Muara Baru (KMB), showed the greatest amount of data that intersected floods and the poor (see figure 5.5). The other reason for choosing KMB was also its geographical location on the coastline, which best represented the phenomenon of coastal flooding. The presence of several community-based programs was also considered in selecting KMB as the location for phenomenological research.
Figure 5.5 The Result of Superimpose Analysis

Source: the author
5.3 Factors Affecting the Floods in Kampung Muara Baru

The superimposed analysis showed that floods and the poor intersect in KMB\textsuperscript{17}. The profile KMB will produce a holistic picture of the KMB people who have lived with floods. Their life situation, social dynamics, economic condition, and environmental changes over the last few decades must be understood before their lifeworld before exploring their vulnerability, adaptation planning, and adaptation practice. I analyze six factors that must be discussed to understand the KMB people: the characteristics of KMB dwellers, land and building status, basic services, community leadership, and economic condition. The discussion of these circumstances revealed the reasons that KMB is the place where flooding and the poor intersect.

Types of KMB dwellers

The documented population of KMB is about 21,865 inhabitants or 12,818 households; 65 percent of the population is adult and 54.5 percent is male (Kantor Kelurahan Penjaringan 2012). The residential density is 19,552 people per square kilometer, which are distributed among 22 formal and 28 informal RTs. KMB is the densest kampung in Kelurahan Penjaringan; the population of other RWs is just under 10,000 inhabitants. In addition, the KMB population has grown significantly from 2008 to 2013 (see figure 5.6). The 300 percent population growth in five years, as well as 602 in-migrants and only 90 out-migrants during February 2013, are evidence of the attractiveness of KMB (Kantor Kelurahan Penjaringan 2013).

![Figure 5.6 Growth of KMB Population](source: Kelurahan Penjaringan (2012))

\textsuperscript{17} KMB is administratively registered as a Rukun Warga (RW 17), which is a part of Kelurahan Penjaringan. KMB is located in the north coastal area of Jakarta and is surrounded by the Java Sea on the north side, the Kali Opak River along the Sunda Kelapa harbor on the east side, the toll road Cengkareng-Pluit and Bandengan Utara on the south side, and the Pluit Reservoir and Jembatan Street on the west side (see figure 5.6). Muara Baru means new mouth of river or new delta, which describes its geographical location as a delta region and its built-up environment as a new settlement. The total area of KMB is only about 1.12 square kilometers.
Based on the number of poor households and the amount of informal housing in 2011, the government of DKI Jakarta categorized the KMB as a high slum\textsuperscript{18} and defined it as the largest slum in Kelurahan Penjaringan (BPS Provinsi DKI Jakarta 2012). Slum households comprised about 96.7 percent of the households in KMB, or 2,979 households (Sentosa 2010). Mercy Corps Indonesia (2010) categorized RW 17 (KMB) RW 12, and RW 10 as slum areas in Kelurahan Penjaringan. The government data on the number of Raskin (\textit{bahasa} acronym for rice for the poor) also showed that there were 3,107 Raskin recipients in 2012 (Secretariat RW 17, October 2012, quoted by the author). However, the distribution of Raskin recipients (see figure 5.7) is interesting because most reside in the RTs that are located on the lakeside where many undocumented residents live.

In addition to undocumented residents, there are temporary migrants who do casual labor but are registered in the RTs and live in the modest rental housing of KMB, such as RT 7, RT 15, and RT 20. In the house of the head of RT 15, Agus and his five family members rent three very small rooms. Two people rent each room and work in the fisheries, harbor, and warehouses. Therefore, in Agus’s house, there are six documented and six undocumented people. All are poor (Field note, August 2012).

Furthermore, the ethnicities (plural community) are characteristic of KMB people. Although 97.6 percent of the population is Muslim, there are also Betawi, Tegal, Bugis, Sunda, Padang, Madura, and Chinese in the KMB area. These people are identified through their livelihoods. Betawi people usually carry fruits and vegetables, Madura people sell water or become junkmen, Tegal, Padang, and Sunda people sell food, and Bugis people work as fishermen. These segmented occupations have helped with the adaptation to floods. In responding to the emergency following the flood of January 2013, Sunda and Padang women served food in the public kitchen (Field note, January 2013). In terms of livelihood, most KMB people work in the fisheries and factories (see figure 5.8). However, this figure includes only documented residents. Most of their jobs are linked to the fishery business. Only a small number of jobs are in other occupations, which indicates that most permanent residents of KMB depend on the flood-sensitive private sector for their income.

\textsuperscript{18} The UN Habitat - United Nations Human Settlements Program defines “slum” as an area that combines inadequate access to safe water; inadequate access to sanitation and other infrastructure; poor structural quality of housing; overcrowding; and insecure residential status (UN-Habitat, 2003:12).
Figure 5.7 Distribution of poor households

Source: the author, based on the Secretariat of KMB
Figure 5.8 the Livelihoods of KMB residents

Source: Secretariat of KMB (RW 17), compiled by the author

The KMB people, whose community comprises formal and informal residents, multiple ethnic groups, and a mix of livelihoods shows us that in order to understand kampung people, we need to know the kinds of people who live there, how long they have lived there, and why they live there. Generalizing the urban poor will not help in understanding their adaptation practices. We should not measure the adaptive capacity of the urban poor by simply asking them the same questions. We need to understand their lifeworld so that we can assess their capacity.

Land and housing status

The status of land and housing status influences their adaptation options. Property owners will consider floods differently than renters will. Moreover, floods affect different buildings in different ways. The stronger a building is, the less damage a flood can cause. Therefore, it is important to understand the land and building status of KMB.

Most KMB people do not have land certificates because the land belongs to the state or to private companies. They have occupied the land en masse since it was abandoned after the 1997 economic crisis. The national emergency forced the government to let unemployed people rent the “sleeping land” and use it as cultivated land. According to Konedi, the Secretary of RW 17, the land next to the lake, which is occupied by RTs 19, 17, and 16, belongs to BP Pluit, a state-owned company in DKI Jakarta province, which was

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19 According to the regulation of Head of National Land Office Number 02 / 2003, tanah garapan or cultivated land means a piece of land that has already been or has not been attached yet by the certain right which was used or benefited by the others with or without approval by the respected ones with or without a certain length of time. It means the land is not owned, but only managed by individuals and groups through certain occupation rights. If the cultivated land belongs to the state and has been used for decades, as proven by the letter of Lurah (head of sub-districts), the land has utilization rights or even proprietary through the land registration in the city office. However, if it belongs to an individual who already has a title, it cannot be registered. Tanah garapan can be originated from the customary land that is not converted to the certain titles of land, or from the state land, including the state land that was managed by the state offices and state agencies, or from the wasteland or displaced/dormant land. Despite the land’s title, since it was not occupied or used, the local people or migrants occupied those types of land.
ordered to manage the property in the Pluit Lake area. Land next to the sea, such as RTs 21, 15, and 3, belongs to PT. Pelindo, a state-owned company that manages labor for the central government. Other lands have been given to the companies for industrial activity (Konedi, Secretary of KMB in discussion with the author, May 2012).

Thousands of households have occupied the land for decades and turned it into the dense residential area that it is now. According to Sentosa (2010), around 76 percent of the built area in KMB takes up an area less than 100 square meters, whereas 73.5 percent of the land ownership is without status and 26.5 percent are rented houses. The story of land transactions and residential developments in KMB began when the fishing port was developed in the 1980s. Before then the initial dwellers used the land only for small farming activities, especially fishponds. Most of the area is swamp, so it was used only for subsistence farming. When the fisheries industries started to operate in 1990s, the conversion from swampland began, and some dwellers became industrial workers.

As the national economy improved and the job market revived in the early 2000s, the number of workers migrating to KMB increased. They built houses in groups, sometimes telling the landowner but sometimes not. According to “Karyo,” a resident of RT 7, he built his house by secretly taking land that was far from the main street (Muara Baru Street) to avoid inspection. He built his shelter gradually with the help of three relatives from his village. A few groups were also building houses at the same time, he said. They initially built only shelters, or kotak (box), because of their simplicity and small size (about 3 x 6 meters). They used modest materials at first, including cardboard. Then they fixed and upgraded it gradually when they could afford to do so (Field note, June 2012).

The second generation of residents usually bought land or a house by using only a payment receipt. This transaction involves two parties, and it is witnessed by the head of the RT or a neighbor. In some cases, a girik20 letter is appended to the transaction, but in other cases, a letter from the head of RT/RW clarifies that the land has no dispute or other problems, and explains the history of the land. For example, Pak Irpan, a resident of RT 15, bought a 3 x 6 meter house from his neighbor to build a bedeng (a temporary house or shelter). He obtained the notice of transaction, but he did not worry about the land title because according to him, as long as the head of RT knew, it was acceptable. He first modified the house into two rooms and then built the second floor three years later. Now he has four rooms that he rents out. Rental houses common in KMB. Unlike Pak Irpan, Agus, the head of RT 15, added two rooms to rent on the second floor of his house after his father moved back to his village. He rents them out monthly. Both unfurnished rooms are 2 x 2.5

20 Girik is not evidence of land ownership, but of land controlling and tax payment on a parcel of land and building on it (if any). Girik can be registered to be land title with certain conditions. Girik can be used for land transactions as long as both parties agree on the condition.
meters. According to Agus, in his RT, 12 to 14 houses rent rooms and there are 4 to 5 rental houses (Field note, October 2012).

Berner (2000, 7) argued, “transactions in the informal land market are not controlled and registered by the local authorities.” The informal sub-market has met the high demand for housing in KMB. Therefore, although there is no land title for individuals and building permits for residential uses, the land and housing market is active through the free sub-market, which has replaced formal land regulation. However, “the KMB dwellers always pay land and building tax to the government, even though they do not have a certificate” (Interview with Gus Tara, Head of KMB, 11 October 2013).

Between 1980 and 2010, the number of neighborhood associations (RT) multiplied. In the 1980s, the KMB consisted of only 12 RTs. Ten years later, there were 15 RTs, and 14 years later, there were 22 RTs. Because the number of KMB dwellers has increased quickly, being the head of an RT is in an inconvenient position. Therefore, the RW has had a RT representative (Perwakilan RT) since 2000. Perwakilan RT is an overpopulated part of an RT (Field note, October 2012). According to Konedi, Secretary of RW 17, Perwakilan RT is needed to serve the increasing number of residents in the RTs.

Perwakilan RT has risen because of the limitation of the head of RT to serve their people. [Can you] imagine, [if no Perwakilan RT], 1 (one) head of RT serves 200-250 household? Meanwhile, a head of RT only has time after office hours; it makes them frustrated. So heads of RT proposed the establishment of a perwakilan RT in the RW. (Interview, Konedi, 20 October 2012).

The total number of RTs and Perwakilan RTs is now 48 units. Each is the same size as an RT, that is, twice as large as before. The fast-growing number of Perwakilan RTs in KMB has a strong relationship with the informal temporary migrant21 who are undocumented. According to one participant, "It is a squatter settlement that occupies the land along the lakeside” (Interview with Gus Tara, Head of KMB, 11 October 2012). Therefore, Perwakilan RT is not an administrative area that admitted by the kelurahan, but only by the kampung or RW.

The extensive increase in housing has occurred informally and tacitly because the residents of KMB cannot afford to build proper housing. They use cheap local materials such as bamboo for the house’s pillars, and plastic or inorganic garbage piles up on their reclaimed land. They do not build a disposal site, drinking pipes, or safety electrical ports. They build or extend houses haphazardly. They inform only the head of the RT, and they do not obtain government permits. Although the heads of the RTs manage social affairs in the

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21 Informal migrants are illegal residents. The difference between the legal residents of KMB and illegal residents is based on living time and house location. Residents have been in the KMB for more than ten years. The illegal residents stay more than five years and live in the Pluit lakeside (Interview with Gustara, the Head of KMB, 12 October 2013).
community, they do not have the educational or technical background to enforce zoning or building codes or to provide advice on housing permits and/or construction.

I do not have higher education background; I got elected because nobody was nominated in the election. I did not ever and do not want to know about building regulations. The important thing for me is that a new house or repaired house does not disturb neighbors’ buildings… (Interview, Gus Tara, 12 August 2012).

This situation has resulted in irregular housing and settlement development as well as questionable building safety because it is based on the owner’s knowledge. The city government’s acceptance of the expansion of KMB housing has been replaced by traditional practices in KMB. Because there are no regulations about the minimum number of tenants in a house or flat, the sanitation standards, density, and other matters concerning housing transactions are managed through oral agreements between neighbors, which are mediated by head of the RT.

Figure 5.9 shows the irregular pattern of KMB housing along the lakeside, coastal area, and roadside. Some are attached to warehouses, but they do not complement each other, and they contrast the industrial and warehouse area. However, in the neighborhood, the houses follow a ribbon pattern along the road or lake. This building pattern places the residents at risk of both flood and fire. Furthermore, the dense settlement cannot be safely evacuated in the case of an emergency.
Figure 5.9 Map of the KMB settlement

Source: the author, based on fieldwork (2012)
There are no written rules regarding the ideal population or type of housing in each RT or Perwakilan RT. However, the roles of Head RTs or Perwakilan RT are significant in the management of the population and the housing because visitors or migrants who want to stay more than one day or move to KMB must report to them. Therefore, they should be able to manage the increasing number of households. The lack of capacity of RT heads and the limited intervention from the government has plunged the residential development of KMB into chaos. Driven by the Government Regulation Number 36/1998 regarding dormant land control and utilization, people were allowed to occupy the abandoned land. This regulation has weak criteria for what qualifies as dormant land, which has created difficulties in its implementation (Parlindungan 2003; Supriyanto 2010).

Furthermore, no government agencies control housing development. According to “Anto” who is an officer in Kelurahan Penjaringan, the Kelurahan knows that most of the buildings in KMB have no formal titles or land permits but does not want to prohibit poor people from living there because it is close to where they work. He added that the kampung is supposed to have its own mechanism, which the government respects. It is a difficult for the Kelurahan office to intervene in the housing and settlement in the kampungs, including KMB.

The ignorance of the head of the RW and the heads of the RTs about the technical aspects of spatial density and housing safety should be blamed for this situation. Both the head of RW and the heads of RTs focus on the administrative requirements of the housing development proposals. Based on my observations, the absence of building permits, the unknown quota for the numbers of houses, the lack of standards for safety and healthy housing, and the ease of building a house are responsible for the severe effects of flood damage.

Basic Infrastructure

The residential density indicates limited and unstandardized basic infrastructure. Roads are only 1.2 meters wide, leaving only 15 centimeters of drainage that is 30 centimeters from the front doors of house. This crowding precludes quick evacuation, endangers children, and blurs the line between public and private (Field note, July 2012). The heads of RT 7 and RT 15 pointed out that the most serious infrastructure problems are drainage, sewage, and clean water. According to them, the open, narrow drains along the main road (Muara Baru Street) are too small, and commercial buildings have already being built on top of them. This situation inhibits the run-off of floodwater.

The drainage system is not separate from the sewer, so a bad odor is produced when the drains are full. Accumulated garbage also reduces the drainage capacity because there is limited space for disposal. For 22,000 inhabitants, there is only one disposal site at
RT 21, which is too far for most tenants to reach. Filthy, black water clogs the drains in which children play or scavenge for plastic.

The other problems are clean water and sanitation. There is limited room for wells because seawater infiltrates the ground water, so the residents have to buy clean water for cooking and drinking. According to Agus, the head of RT 15, almost 80 percent of the residents buy from the water refill depots. He estimated that it cost his family an average of IDR 23,000\(^{22}\) per week for his family of six, or around 12.5 percent of his irregular monthly income. His family usually relied on rainwater from a water tank or brackish water from his neighbor’s wells for bathing and washing. Many residents of RT 7 use a public toilet for bathing and washing, which is available in each RT in RW 17. For the residents of RT 19, 17 and 16, which are at the lakeside, there is also a public toilet, which is called a helikopter: It consists of a roofless wooden box over the river; a hole inside is used as the toilet; the water is taken from the lake. Residents use it because it is a simple and free facility.

Another problem is the lack of social facilities. There are only nine schools, nine mosques, four health clinics, and four doctors’ offices for the 22,000 inhabitants. However, based on the minimum standard of basic services in Indonesia, there should be at least 22 elementary schools, 48 mosques/praying places, and 22 community health centers. These disparities are caused not only by the limited amount of land and buildings but also by the limited financial capacity and the culture of the dwellers. When residents get sick, they buy traditional herbal products (jamu in bahasa) or go to traditional masseuse. For serious illnesses, they go to mini-shops or drugstores to buy medicine, follow the advice of family members or neighbors, or rely on what they learn from TV or radio advertisements. If there is an emergency, they will see a doctor. The village culture still influences their preferences.

The lack of open or public spaces is another problem. With more than 15,000 inhabitants per square kilometer, the availability of green spaces and public spaces is mandatory to improve the quality of living and avoid social conflict. There is only one football field in RT 1 and four vacant lands in RT 3, 11, 20, and 21, all of which belong to private companies or the government. Therefore, the settlement of KMB is vulnerable to fires and floods. The absence of open spaces not only diminishes sociological and environmental quality, but also the safety of residents.

The infrastructure of KMB exposes it residents to the hazards of floods. For instance, there is no way for floodwater to be absorbed by the land or to flow into the retention pond. In addition, the infrastructure capacity is not sufficient. Finally, there is no water infrastructure connection between KMB and Kelurahan Penjaringan except access to the social facilities.

\(^{22}\) IDR 23,000 = 1.5 euro (1 euro = IDR 15,000)
Formal and Informal Economies

The growth of the informal settlement in KMB was led by the availability of employment in the fisheries harbor (PPI Samudera Jakarta)\(^ {23}\), factories, and warehouses (see figure 5.9). The economy of KMB is affected by the presence of 31 big industries, 245 warehouses, 22 fisheries, 225 small industries, 895 stores, 27 automotive dealers, 285 offices, 12 banks, and 5 gas stations in Kelurahan Penjaringan. These formal economic activities have created a job market that attracts citizens of not only Jakarta but also other parts of Indonesia. Hence, KMB has become a residential target.

Based on a statistical report by the KMB Secretariat, adults comprise 66 percent of the total population of KMB. According to Gus Tara, the head of KMB, the livelihood of KMB is derived mainly from informal economic activities, such as traditional market and street vendors, harbor and warehouse workers, and construction workers. According to Tara, “there are few fishermen nowadays” (Interview, 20 July 2011), which indicates that the economic drivers in KMB are in the urban informal sector. Some experiences of KMB people are included in Figure 5.10.

The story of informal sectors

Amin, 27 years old, a security officer at the industry company, has lived in KMB for eight years. He confessed that he came to KMB without any preparation. He just followed an invitation from his friend, Husni in Pemalang (East Java) who had already worked and lived in KMB. Husni, told him that there was several job vacations in a wood factory, PT Interwood. Then, Amin came along with two friends with the same educational status with him, graduates of junior-high school. He applied for security at first, but was not accepted. But then he was offered to be an office boy, which he took for one and half years. He admitted that he has changed his job at least five times. He just started his work as security since two years ago. He said, “it was fortunate that I live in KMB, there were many jobs here.” He also said that there were at least dozens of people in his village who did the same thing as him, going to KMB to find jobs. (Interview, 9 May 2012)

Abdullah told another story. He is a rounded fruit seller who came from the Cirebon five years ago. He was only 19 years old, did not graduate from the senior high school, and came directly to Jakarta because a classmate in junior high told him about job vacancy in the fisheries harbor. But the job only lasted for two months because he did not have strength to do it. He looked for office jobs, but never succeeded. During that period, he worked on daily basis for several warehouses and then followed a fruit seller who coincidentally came from the same city as him. Less than one year later, he sold fruit by himself. His market area is around the KMB daily market. According to him, earning money in KMB is not difficult even though there are few jobs. (Interview, 15 May 2012)

Figure 5.10 The story of the informal sector

\(^ {23}\) It was known as Nizam Zahman Harbor, located in the north of Kampung Muara Baru. It was built in 1984 and then changed to PPS (bahasa acronym for the main fisheries harbor Jakarta). It has become one of the five main fisheries harbors in Indonesia.
The nexus of the formal economy and the informal economy constitutes the economic structure of KMB and Kelurahan Penjaringan. The formal sector includes the fisheries harbor, trading, industry, and warehouses. The informal sector includes unregulated labor-intensive activities, self-employed entrepreneurs, casual work, small businesses, unregistered activities, and illegal activities such as smuggling. Both sectors play a significant role in building the adaptation pathway. The dependencies between these two sectors also affect the sustainability of the livelihoods of KMB people.

For example, the fisheries that reclaimed the sea around RT 20 have attracted people from RT 3. According to Hidayat, a fisherman from Makassar, many tenants in RT 3 and its surroundings have moved to RT 20. His family moved to RT 20 when he was a teenager. He described helping his father put their equipment in a gerobak (a cart) and pulling it to the coast. He said that not only his own family but also several of their neighbors moved. Therefore, the nexus of the formal and informal economies is very important in the economic status of KMB.

The livelihoods of the KMB residents, which depend on the formal and informal sectors, contribute to the flood risk. If business ceases during the floods, the residents potentially will have reduced income, which is already tenuous. The informal sectors also depend on the ability of the KMB people to consume goods. Thus, it is important to understand the economic condition of KMB before exploring the lifeworld of its people.

5.4 Concluding Discussion

KMB is an informal, poor settlement that is characterized by frequent floods because it is location below sea level and is surrounded by water (the sea, a river, and a lake). The rising sea levels have been predicted to be 0.35 centimeters per year. However, the elevation of North Jakarta is about 3 meters below the level of the sea’s surface (Brinkmann 2012). Hence, the frequency flooding will increase. A big flood occurs almost every year, and the level of inundation reaches 50 to 200 cm, lasting for months in some places (Sentosa 2010). According to the Kelurahan Penjaringan office and the secretariat of RW 17, KMB is the most vulnerable to tidal floods and overflows from Pluit Lake occurs (Fitritinitia 2011). In January 2013, as many as eight pumps and twelve portable pumps could not stem the floodwater (Belarminus 2013). Consequently, floods are part of everyday life in the KMB.

Furthermore, the KMB is flooded more often than Jakarta is. KMB residents know that when Jakarta is flooded, the KMB also will flood. However, when KMB is flooded, Jakarta might or might not be (Field note, December 2012, quoted by the author). Floods often coincide with the full moon. They do not require rainfall, but are caused by rising sea tides in the spring, which are influenced by the moon and the solar gravity of the Earth. The
spring tide is called a *rob*. It has probably influenced the perceptions of KMB residents that they live in a flood-prone area.

The settlement history of KMB reveals the role of urban migrants in converting the swamp area into a settlement area, followed by harbor reclamation and industrial development. Nowadays, KMB is one of cheapest destinations for urban migrants who want to work in the capital city of Jakarta. The shifting physical landscape of the Penjaringan region from “small-quiet fishponds” to “the busiest fisheries industries” has transformed the KMB area from “nothing” to the “densest settlement.”

The recent status of KMB has increased its sensitivity to floods as well as the risk of floods. Several factors limit the adaptation of KMB residents to the floods. These include the following: the undocumented residents of KMB have never been included in estimates of flood management; the uncontrolled highly dense housing reduces the area of floodwater and thus reduces the retention capacity of this area; the garbage-clogged drains exacerbate the inundation caused by heavy rains; the water gate and water pump cannot prevent inundation or even overflows from the Ciliwung River; and the informal characteristic of their livelihood plays a daily role. These factors should be considered in understanding the KMB people.

However, the annual floods do not deter people from living in the KMB. Since the early 1990s, the number of neighborhood associations and the incidence of floods have both increased (see figure 5.11). The population of the KMB has also increased, which indicates that floods do not deter settlement.

![Image](image.png)

**Figure 5.11 The Interplay between Poor Settlements and Floods**

Source: the author
The interplay between *kampung* and floods in the KMB shows that flooding does not constrain or even reduce the spread of houses and settlements for the poor. Instead, it has changed inundations to floods. If no one lived in KMB and if dense settlement did not encroach upon the river, lake, and green open spaces, the floods would be less destructive. The growing settlement of KMB probably increased the flood risk. Therefore, the ability of the 30-year-old KMB settlement to survive and grow should be considered in defining the *lifeworld* of KMB people.

The status of KMB has demonstrated that one phenomenon must be thoroughly understood. As argued by Hornidge and Antweiler (2012), the localities that are affected by floods occur in different forms and on different scales. Floods have certainly changed the behaviour of KMB people in adapting to floods, but they have neither persuaded them to move out nor discouraged newcomers from moving into KMB. They continue to build their houses and expand the settlements. Despite these disadvantages, the KMB dwellers perceive their world as a place that still gives them an opportunity to live. Over generations, they have shaped their world with the mutual understanding of individuals and neighborhoods. They have built houses, provided infrastructure, and carried out their daily activities. Therefore, it is important to understand the construction of the world of KMB.
6 Flood Experiences: “The Vulnerable” and “the Adapter”

Limited assets, the lack of access to resources and powers, and the low economic profile make the poor vulnerable. However, many of the poor continue to live in the flood plain. Their perceptions of the stresses and shock caused by flooding could explain their adaptation. Here, I apply lifeworld analysis to investigate the construction of the Kampung Muara Baru (KMB) people’s perceptions of floods. I then use this construction to discuss the concept of flood-related vulnerability and to identify “the vulnerable” and “the adapters.”

6.1 The Lifeworld of the People of Kampung Muara Baru

The perceptions of KMB people, who live in the flood zone, are interesting because their living place is risky for residential use and economic activities. It seems irrational to live in a flood zone. The unpredictability of floods should be a deterrent to living in the KMB. However, the dense settlement by the Pluit reservoir and along coastal line is proof that KMB people are conscious of the potential risks. In other words, they are acknowledge the flood risk, but it does not bother them. Therefore, they live in a highly exposed area (flood plain) and a sensitive area (high density) because it is close to their employment. Although they have alternatives in neighboring kampungs or inexpensive rental flats provided by the government in the Penjaringan area, they prefer to live in KMB. The longstanding residents are emotionally engaged with their family history, which has accumulated over decades, and newcomers perceive KMB as a strategic place to live.

In the snowball survey that I conducted in three neighborhood units, RT 7, RT 15, and RT 20, several keywords often emerged when I asked about floods. The interviewees claimed that the flood boundaries were shaped by five spatial elements: Katulampa Bogor (Watergate), Kali Gendong (river), Waduk Pluit (reservoir), tanggul (sea wall), and laut (Jakarta gulf). Katulampa Bogor is located upstream of the Ciliwung watershed that flows into the Pluit reservoir and the Jakarta Gulf through the Ciliwung River. Kali Gendong is a branch of the Ciliwung River; the sea dyke is a barrier built along the coastal area. The interviewees partially blamed these five components for the floods and emphasized the following:

Our place is lower than the sea surfaces and it is the end of the water journey from Katulampa Bogor... If the height of the water is more than 180 meter [at Katulampa], we are prepared [for flood]. [The intensity of flood] would be worse if rain comes [whilst] kali [Kali Gedong] and waduk [Pluit reservoir] could not serve. (Konedi, interview with the author, 25 May 2012).

The links among these components are similar to their conception of the watershed; they acknowledged that the KMB is the end portion of the water flow from higher land. The water
flows through the Ciliwung River and its branches, including Kali Gendong, enters the Pluit reservoir before it reaches the sea (figure 6.1).

![Figure 6.1 Spatial boundaries of Kampung Muara Baru people](image)

Source: the author, based on interviews and group discussions in RTs 20, 15, and 7

They also linked the components in order to differentiate the types of flooding:

[There are four types of floods:] Banjir kiriman (transferred flood)... from Katulampa through Ciliwung River overloaded in [waduk] pluit; Banjir Rob (tidal flood) happens when the level of the sea tide is over the sea wall; Banjir biasa (rainy flood) caused by heavy rains; and banjir bandang (big flood) is combination of all" (Gustara, interview with the author, 11 January 2013).

He emphasized that the ineffectiveness of the Pluit Reservoir and the seawall caused the big floods in KMB. He added that the houses over the river and beside the reservoir also contributed to the floods.

In their lifeworld, the boundaries of the flood are framed by the water and the settlement location, which is on the edge of the coastal land. According to Gustara, Head of KMB, Muara Baru is a new estuary that is positioned below the sea level (Gustara, interview with the author, 18 May 2012). Consequently, the elevation of many buildings has been increased by landfill or by reclaiming land from the sea: “...We also used landfill because our land is slowly sinking without awareness... [It] has occurred for many years" (Kadir, interview, 23 June 2012). In general, "The height of the land fill is based on the level of the highest floods in the past [years] or the elevation level of the main road... but it also depends on a person’s budget" (Dulkadi, interview with the author, 4 July 2012).

Agus, the head of RT 15, emphasized the importance of house elevation. He explained that his neighborhood was safer than other neighborhoods around the Pluit
reservoir (i.e., RTs 19, 20, and 16) because it was at a higher elevation. He designated the main road as the marker between the lower and higher land because the left side of the road was around Kali Gendong, so it was originally riverside land. It was different from his side, where there are many industries. The land was reclaimed during the extensive industrial development in 1990s, so it is higher than the river (Kali Gendong). Nonetheless, his place is below sea level and is threatened by tidal floods. The construction of a seawall in 2008 significantly decreased these tidal floods. There was only a small inundation from the permeation of seawater or water overflowing from clogged drains affected by heavy rainfall.

The interviewees initially claimed that the temporal boundaries of the flood are determined by seasonal factors. They agreed that flooding has and would happen at the beginning of the rainy season in Oktober (October) and would continue until Februari (February). The suffixes "ber" and "ri" are the traditional symbols for the intensive precipitation that is strongly associated with floods. Both words have been transmitted from generation to generation. Since the Dutch colonial period, they have perceived floods as following an annual cycle and a five-year cycle in the rainy season. The interviewees also thought that the floods followed a five-year cycle based on the floods at the end of 2002, 2007, and the beginning of 2013. This reaffirmed the general assumption in Jakarta that there is a major flood every five years.

The development of flood infrastructure, from Dutch canals to the present flood infrastructure, which is discussed in chapter 4, also structures temporal arrangements for flooding. One interviewee expressed the following:

Before the sea dyke was built, every full moon, we felt unsafe with the high tide, but now we are not worried anymore...[the flood] very rarely visits us again... if it does, it's just a small and short inundation, not a flood.... (Irpan, interview with the author, 27 June 2012).

They sensed that the infrastructure had minimized the intensity and frequency of floods, but they were not certain that the reclamation program would do the same. They also took into account the activity of land subsidence in shaping the duration of the flooding. The presence of flood infrastructure, which has reduced the number of repetitions and the duration of tidal floods, has framed the temporal world of KMB people (see figure 6.2).

Based on their experiences, KMB residents could predict floods. They cited land subsidence, natural change, land reclamation, and flood infrastructure development as factors that could affect the timing of floods. They did not intend to forecast that there would be no floods because they realized that their situation depended on the floodplain and on climate change. However, the flood in January 2013 raised questions about the reliability of the infrastructure to handle future flood.
We never expected the flood on 17 [January 2013] would be huge and would last for five days. It really shocked us. The water came from the Pluit Lake, which overflowed. It slowly came at night...several groups from RT 20 came to our place and the fisheries harbor. We just stayed for three days without going out from our place... It's like a flashback from the 2007 flood. (Agus, interview with the author, 4 July 2012)

They did not know what a flood would occur despite help from the government. They compared the last three major floods:

Nowadays [flooding] is uncertain. In 2002, they came in February; in 2007, they came in November; and in 2013, they came in January. A long time ago, [we knew floods would come] every December, but now, [the time is] unclear; [it] could be after or before that... We don't have any clues at this moment; [instead] the Meteorology office (BMKG) could not predict the exact day of this year. (Khairuddin, interview with the author, 5 July 2012).
KMB people realize that the flood infrastructure cannot protect them, especially from high tides in the monsoon season. According to Konedi, Secretary of RW 17, the sea dyke that had been built in 2007 was too low and too thin. He explained that several people in RT 20 had told him that during the tidal flood, the sea surface had reached the top of the sea dyke, and he had found cracks in it (figure 6.4) (Konedi, interview with the author, 14 June 2012). In addition to the quality of the sea dyke and the extreme sea tide, the collision of the fishing boats also weakened the sea dyke, especially near RT 20. Hence, the fragility of the sea dyke has increased the KMB people’s sense of uncertainty.

Figure 6.4 Fragile sea dyke in KMB
Source: photo collection of RW 17 (2010)

The residents also know that nature is continuously changing. The content analysis of the interview data showed that they described natural change in terms of the changing time of rainfall, bigger tidal waves, and the rising sea surface: "When I was child...we saw many flying white ants dying on our floor as an indicator that the rainy season come, but now it's very rare... So, it's difficult to predict the rainy season now" (Eva, interview with the author, 7 October 2012). "Seawater is rising...it appears that our mooring pole is sinking more and more" (Ujang, interview with the author, 16 October 2012). "A long time ago, the sea level is as the same as us.... Nowadays, it seems higher...we are likely underneath [sea surface], especially when it's a full moon" (Mulyono, interview with the author, 6 November, 2012). These factors are linked to climate change, but my informants preferred to use the idea of natural change.

KMB people share their experiences and conceptions in many informal meetings, such the get-togethers of housewives (arisan), maghrib discussions among the men, and
conversations in youth groups. Housewives have a key role in generating knowledge about floods because they are “the house managers” when floods occur. They know what to do and how to ask neighbors for assistance. The *maghrib* discussion takes place each evening around 6:00 p.m. The men gather before and sometimes after the Muslim prayer time (*maghrib*). Young people gather in the street, and they usually talk while having a light snack that is sold by street vendors, such as *bakso*, *gorengan*, and *buah*. The social relationships formed by these three habits have helped shape the popular perceptions of floods.

Fadilah, who moved to KMB in 2009, is a 32-year old housewife in RT 15. She told me that she had never lived in a flood-prone area. In her hometown, Rangkas Bitung, two hours from Jakarta, her *kampung* is located inland. She explained that she has a good relationship with her neighbors and they enjoy visiting each other. She first heard about floods from her neighbor, *Bu Ijah*, who had lived there for more than 12 years. *Bu Ijah* often talked about the floods of 2007 and 2002, including their origins, effects, and the reactions of *Bu Ijah* and her neighborhood association. Fadilah also heard stories about the floods from other neighbors in *arisan* (social gathering) and *pengajian* (Muslim prayer group) programs. In January 2013 when the big floods occurred, she was frightened because they were worse than she had expected, but she remembered how she was supposed to adapt (Field note, June 2012; Fadilah, interview with the author, 20 January 2013).

The stories about floods in KMB, which Fadilah had never experienced, helped her to tolerate the impact of the flood and to accept the potential losses or damages. Since then, she has believed that the flood would never be disappeared. Fadilah’s reality has been constructed through her existence in KMB and her interactions with neighbors since she started to live there. It is a reality of everyday life in KMB, and she and other KMB residents regularly sense and experience floods. She derived the meaning of flood through her social encounter with *Bu Ijah* in her *lifeworld*. The face-to-face situations shape ideas about the floods that that new tenants, such as Fadilah, will experience in KMB. These situations encourage reification of what they have shared with each other. *Bu Ijah*’s stories about flood experiences, which were articulated by Fadilah, gave her a benchmark for the meaning of floods.

Furthermore, elderly residents, such as Konedi, Khairuddin, and Agus, who spent their childhoods in KMB, perceived the meaning of flood as handed down by their predecessors. They all mentioned the roles of their parents and *sesepuh* (*kampung* elders) in recounting the flood history before they experienced it themselves. Therefore, in addition to their own experiences, they also reified what their parents had told them, and they shared these stories with their children and others in their neighborhoods. They were sometimes surprised that children kept playing during floods. These routine interactions also influenced the
meaning that they assigned to flooding. This finding support Schütz’s argument that, in addition to social encounters, the lived experiences of predecessors and successors play significant roles in shaping the structure of the lifeworld (Schütz and Luckmann 1973; Berger and Luckmann 1967).

The lifeworld of KMB people indicates that they accept floods as part of life. They knew that the place would continue to be frequently flooded, but they stayed because they could earn a living there. Moreover, their income outweighed the risks. Therefore, they lived there and accepted the flood risk (see figure 6.5). The changing spatial and temporal boundaries of floods and the social encounters with others who have had the same experiences of flooding over time, have led them to perceive floods as a reality of their everyday lives.

Mas Anas, 23 years old, a warehouse worker, has resided in KMB for six years. In the first year, he stayed in a friend’s room. Now he rents a room alone in Agus’ house, 500 meters from his office. He has been in more than ten floods, but for him the worst one was the 2007 flood. Having survived the January flood, which forced him to stay on the roof for two days, he did not seem depressed in expressing his experiences: "Alhamdulillah, the water was finally dismissed. I thought it would be a week.... It [January flood] was beyond belief.... But, it's returning to normal now...we can work as usual" (Anas, interview with the author, 6 October 2012; 19 January 2013).

Ibu Rohima, 48 years, is a housewife with three children and has lived in KMB (RT 07) for 18 years. She moved to KMB because her husband could work in the fisheries harbor and she could run a small canteen (warung nasi), which has given them enough income. She is aware of the living conditions in KMB: "There are bad and good things about living in KMB...[bad] floods often hit in the rainy season and fire hazards in dry season....The good ones are [KMB] is close to everywhere and it is easy to get money [work].... Many people come [stay] to KMB over and over even though it's often flooded.... That's why we also do not have any interest to move..." (Rohima, interview with the author, 15 November 2012).

Figure 6.5 Intentional decisions to live in KMB

I now discuss what floods mean to the residents of KMB. Many international and government agencies know that in the coastal of North Jakarta, especially in Penjaringan where KMB located, floods are attributable to hydro-meteorological factors as well as the effects of climate change, such as heavy rains, rising sea levels, and high tides (BRKP 2009; World Bank 2011; JICA 2011; BNPB 2012). These agencies explained that floods strike the KMB because of the failure of the hydro-meteorological system in Jakarta’s watershed area. Floods are exacerbated by the uncontrolled urbanization following the intensive use of land and ground water. The different methods and scales of data have resulted in different explanations for flooding and the locations of flooded areas.

However, the interview data showed that in the KMB, floods were perceived differently (see table 6.1). Most of their terminology implied a lack of concern about the floods and the attitude that they were not out of the ordinary. The phrase sudah dari sononya (is given) implies that the flood is a natural phenomenon. In this context, the words
"gak apa-apal" (no problem) and "kita sudah biasa" (we are used to it) expressed surrender to the floods, which are out of their control. A flood is a natural phenomenon that occurs because of the Almighty God's power.

Table 6.1 Perceptions of the floods

<table>
<thead>
<tr>
<th>The kampung language</th>
<th>Translation</th>
<th>Interviewee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kita mah sudah biasa</td>
<td>We get used to…</td>
<td>Aris, 30 years old, RT 20</td>
</tr>
<tr>
<td>Biasa [s]aja sih...udah gak heran</td>
<td>It's a usual (event)… it's not surprising anymore</td>
<td>Kadir, 50 years old, RT 7</td>
</tr>
<tr>
<td>Kalau dulu iya, sekarang sudah gak [a]pa-[a]pa</td>
<td>(It was a problem in) the past, now it's all right</td>
<td>Wahyudin, 42 years old, RT 16</td>
</tr>
<tr>
<td>Kalau [banjir] datang, ya.. kita gotong lagi ke atas... tapi sekarang jarang banjir gede...</td>
<td>When (flood) comes, we bring (our things) up again… but the big flood seldom occurs recently</td>
<td>Ibu Maryam, 52 years old, RT 20</td>
</tr>
<tr>
<td>Kalau orang baru mungkin kaget ya...[tapi] kalau kita biasa [s]aja</td>
<td>If new people, yes maybe they have shock…[but] we are just fine</td>
<td>Abdullah Rustang, 40 years old, RT 18</td>
</tr>
<tr>
<td>Kejadian banjir memang sudah dari sononya</td>
<td>Flooding event is given event…</td>
<td>Ghufron, 25 years old, RT 17</td>
</tr>
<tr>
<td>Bukan muara baru, kalau gak banjir</td>
<td>(It’s) not muara baru, if it does not have flood</td>
<td>Komarudin, 55 years old, RT 15</td>
</tr>
</tbody>
</table>

Source: the author, based on fieldwork (2012)

After living through several floods, they have accepted that they transcend their operation zone. The KMB people have produced a shared meaning of the flood as a natural event. This belief is influenced by their religious and cultural values. The religious meaning of the flood, which is based on Islam, has influenced the perceptions of KMB people. Muslim residents have a strong institution at either the neighborhood level or the kampung level, which facilitates the transmission of the religious meaning of disasters to the adults in the mosque, women’s prayer groups, and children through education in formal and informal Islamic schools. In Islam, Muslims believe that the floods are caused by human disobedience to God (Makmur 2014, translated by the author) and “In the earth, the flood can be found as a sign from God for people to maintain the natural environment as stated in QS Adz-Dzariyat [51]: 20” (Zein 2013, translated by the author). Because people have mistreated themselves (e.g., by building houses in the upstream area and throwing garbage into the rivers and drainage systems), the environment cannot protect them from the floodwaters. The religious reason for the flooding event has relieved the KMB people from their sins by undergoing the floods.

Javanese culture also has shaped the meaning of the floods. Most Javanese are street vendors and fishermen. They come from provinces in East and Central Java.
According to their calendar, of the 12 months in a year, it rains for three: **kanem** (the sixth), **kapitu** (the seventh), and **kawolu** (the eighth) (see figure 6.3). The rainiest period, **kapitu**, is from 22 December to 03 February. **Kapitu** is a period of wet and cold weather with heavy rainfall, and frequent floods; even birds have trouble finding food. Even though this calendar is rarely used, the KMB people, especially the small group of fishermen in RT 20, still use their knowledge of the seasonal floods. They noted that in **kapitu**, the west wind brings the high tide that might cause the flood.

![Figure 6.6 Javanese calendar related to rain](image)

Source: Narso (2012)

Oberkicher and Hornidge (2011) argued that the *lifeworld* provides a stock of knowledge through generating and interpreting individual or collective experiences. The *lifeworld* of flood-affected people is a domain of understanding the decision to live in a vulnerable area. This situational knowledge thus becomes the reference source of KMB’s people in assessing their vulnerability to floods. This analysis of the *lifeworld* focuses on the decision of KMB people to reside in a flood zone that is not equipped to withstand floods.

**Shifting Meanings of Floods: from Opponent to “Friend”**

The knowledge of flooding is underpinned by the sciences of ecology and hydrology. Floods are caused by the overflow of water from water bodies and/or heavy rainfall (AMS
Thus, the water capacity of a region is important. Many scholars suggested that quantitative data, numerical climate modeling, and flood area mapping are needed to count the numbers of the affected people and to plot the direction of the flood flow. Therefore, the flood is categorized as a hydro-meteorological disaster that is influenced by climate change, heavy rains, rising sea levels, and high tides. Choi and Fisher (2003) argued that climate change has exacerbated the intensity of floods through increased mean annual and extreme precipitation. The World Bank (2010) reported that annual tidal flooding in the Jakarta coastal area was caused by increased sea levels and high tides, which were worsened by rapid land subsidence.

Based on this conception, flood-prone areas, including KMB, were perceived as a hazardous space to be regulated by zoning rules. The way in which the affected people interpret the meaning of floods should be considered in zoning or other flood management regulations and policies. In the KMB, floods are not merely understood as the enemy, but as "a new informal livelihood," "an ordinary thing," and "a playground."

Amir, 21 years old, is unemployed and has less than a high school education. For him, the January flood has become a source of income. He and five of his friends transport rich people from the neighboring settlement in a hand-made plastic lorry that they had found by accident. They earned IDR 950,000\textsuperscript{24} on the first day of the flood and an average of IDR 500 thousand\textsuperscript{25} per day afterwards for the duration of the flood. This amount was more than his usual daily income (Field note, January 2013, translated by the author). I heard another interesting story from "A" who was 23 years old, unemployed, and a resident of RT 19. He said that in the 2012 flood, he prevented the water gate officer from turning on the pump. He even destroyed the water pump to prolong the flood. He did that in the hope of obtaining logistical support for his neighborhood from the government and neighboring private companies (Field note, January 2013, translated by the author). In contrast, Danang, 38 years old, a toy seller who lived at RT 8, benefited from the flood by collecting plastic bottles. Redeeming the bottles replaced the income that he lost from not being able to sell toys during the flood. He used an arched-end stick, net, and rice bag to pick up the plastic. A few other people did the same (Field note, January 2013, translated by the author).

Another story interprets the flood as an ordinary random event. The women of RT 7 that I interviewed described the flood something that was both good and bad. "[Flood] is not a peculiar [thing], it is a common that annually visit [her house], but unfortunately never told when came...[laughing] (Rofadilah, October 2012). "Flood made me tired... But what should we do? For me, the importance is [we must] emotionally prepared... accept the

\textsuperscript{24} IDR 950,000 = 63.3 Euro (1 euro = IDR 15,000)
\textsuperscript{25} IDR 500,000 = 33.3 Euro
reality...[tiredness] was lost in process of time" (Soliha, October 2012). "Flood could not be
guessed, sometime we thought it’s low, in fact it was high, and vice versa...[flood] just likes
human beings" (Saparia, October 2012).

The last surprising story shows the meaning of floods for children between the ages
of 8 and 14. They enjoyed the flood because they could swim. Besides playing in the water,
they caught small fish, snails, and tadpoles. The flood is like a treasure hunt for them; they
catch rare types of fish and can share stories with each other. "[We were] happy [when flood
time], school is ordinarily off day and we can play until we are satisfied...sometimes we meet
many outside people...It was crowded, but many foods were available...” (Irfan, 10 years old,
February 2012).

These three stories demonstrate that the meaning of flood is beyond that of a natural
disaster. The KMB people viewed the flood as a multi-causal phenomenon that continuously
reached their operation zone, as something that must be accepted as a normal part of life,
and as a necessary reality that was either good or bad. Considering flood is a friend does
not mean that they were happy with the big flood, but it is a metaphor representing that the
floods sometimes contribute good and bad things at the same time, just like a friend does. It
depends on the perceptions of floods and the attitudes towards them. The long experiences
of KMB people have shifted the meaning of flood to be neutral in perceiving this flood reality.

A Different Lens in Perceiving Floods

The knowledge of floods has been obtained mostly from quantitative research that is
underpinned by ecology and hydrological engineering. Such studies focused on the
quantification of data and numerical modeling to produce flood maps and count the number
of flood victims. Vulnerability was then defined. However, a distinctive approach is needed to
understand people’s vulnerability to floods. The lifeworld analysis is conducted to
understand the perceptions that grow from the lived experiences of flood-affected people
and how their subjective experiences are shared. Our analysis revealed different
perceptions that resulted from viewing the flood area and vulnerability itself.

First, flood-affected people and the government of DKI Jakarta perceive floods
differently. The lifeworld of the KMB people is structured by being surrounded by water, the
frequency of floods, and the friendships among neighbors. They intentionally choose to live
in KMB because of their dependence on the sea harbor for their livelihood. They fully
understand and accept the risk of flooding because they have experienced either regular
tidal floods or big floods. The government, in contrast, defines KMB as flood-plain zone and
as an unsafe place to live. According to Pak Izhar, the Secretary of the Spatial Planning
Agency of Provincial Government of DKI Jakarta, the government has never issued building
permits for KMB, especially in the lakeside and coastal side area, which are flood plains.
The government has tried in vain to relocate these residents to affordable flats (Interview, 30 January 2013). Hence, the perceptions of the flood-affected people, which emerged from and are constituted by their lifeworld, are inconsistent with scientific and technical knowledge. It thus brings attention to the importance of practical knowledge that is exercised over time and of locally situated knowledge, as suggested by Antweiler (2004), to disclose perceptions of flood-related vulnerability.

Second, the analysis found that KMB residents believed that flooding is a natural phenomenon that cannot be changed or controlled. The words "sudah dari sononya" mean that it is already given, and "musibah" means disaster. Scientists insist that they can limit the amount of rainfall through weather modification technology. The head of Badan Penelitian dan Pengkajian Teknologi (BPPT) Jakarta claimed that the volume or rainfall in Jakarta area in 2013 was decreased by about 20 to 50 percent by salting rainclouds (Aziza, 2014).

Third, there are different ways of understanding the flood pattern. Based on the Hijriah Calendar, KMB people perceive that tidal floods are caused by high spring tides precisely when the full moon comes. Meanwhile, natural scientists have found that tidal floods occur in a periodic cycle 16.4 months (Hildaliyani 2011). The people of KMB perceived that the heavy rains occurred in "-ber" and "-ri" months and "kapitu" as the time of occurrence based on Javanese calendar. Scientists developed historical and projection analyses of wet spells as indicators of heavy rains. Therefore, the Badan Meteorologi dan Geofisika (BMKG) or Indonesian Meteorology Office has not confirmed the five-year flood. The head of BMKG argued that floods are caused by high precipitation, which is influenced by evaporation, the Pacific Ocean, and the Indian Ocean (Redaksi-Sains 2011). He denied that the ocean phenomenon happens every five years.

However, there is a similar perception of the causes of floods: multi-factors (non-linear) and uncertainty. The KMB people believe that the floods are not caused by the regional factors alone, such as the water flow from Puncak, Bogor through the Ciliwung River, but also by the land subsiding, poor local flood infrastructure, such as clogged drains, collapsing sea-dykes, and irregular housing patterns. Similarly, technical experts hold that a combination of global and local factors explains the Jakarta flood. Thus, it is a non-linear problem. Scientists and KMB people understand the unpredictability of floods in different ways, which is the reason that preparation for floods is not always optimal. The KMB people do not believe that the day of floods can be predicted; however, scientists explain that it can be predicted. The non-linearity and uncertainty of flooding perceived by the KMB people and the government support the view of floods as “a systemic global environmental change” (O’Brien 2013, 75).

KMB people also perceive the linkage between flood and climate change, but they equate "nature" with “climate,” which they believe is also changing. They observe that it is
warmer now than when they were children and that they can no longer tell when it is going to rain. However, numerous studies have defined floods as natural disasters and linked them to climate change, especially to heavy rains, rising sea levels, and high tides. Several scholars argued that climate change has exacerbated the intensity of floods. Climate change is shown by increasing mean annual and extreme precipitation (Choi and Fisher 2003). In coastal areas, rising sea levels and tidal floods are the indicators. The World Bank (2010) found that the annual tidal floods in Jakarta are caused by rising sea levels and high tides, both of which are worsened by land subsidence.

6.2 KMB People's Perception of Flood-related Vulnerability

The insights of flood-affected people can be used to define flood-related vulnerability. The IPCC (2012) used exposure, sensitivity, and adaptive capacity to define vulnerability. As discussed in chapter two, I use the interrelation of those factors as the framework for measuring vulnerability from the perspective of flood-affected people. I assume that the floods will probably keep changing the impressions and the perceptions of KMB people. Having discussed the structure of the lifeworld of KMB people in the previous section, in the following sections, I assess the three factors of flood-related vulnerability that were elaborated by the IPCC: exposure, sensitivity, and adaptive capacity.

Perceived Flood Exposure

Based on interviews with the heads of RTs, I identified how they perceived floods in their area. My assistant and I interviewed 22 heads of RTs and asked them to describe the biggest floods in each year from 1992 to 2012. I brought a map, conducted transect walking, and asked them to delineate the inundated area and describe their own impressions of the floods. The interviewees described the exposure in terms of frequency (occurrences of big floods in a year), magnitude (size of inundated areas), and intensity (flood level).

The leaders of the neighborhood associations claimed that floods had become less frequent since 2007 because the construction of a 1.5-meter sea wall (measured from the land surface) has prevented tidal floods. They claimed that since 2007, there have been no more than five floods a year. Previously, they had had an average of 7 to 8 floods per year. However, inundation still occurred when there were heavy rains, but they did not categorize it as a flood. "If [the rain lasted] 5-6 hours, the road was inundated because the drainage was clogged..." (Nanang, interview with the author, 7 December 2012). Similarly, another interviewee, Pak Nasirudin (RT 20) said: "here, [if] a half day is rainy, the water [is raised] ankle-deep. But it disappeared quickly." (Interview, 8 December 2012).
They based the intensity of floods on the physical dimensions of an adult: over the head, chest-high, waist-high, knee-high, and ankle-deep. They always measured the depth of the water on the road in front of their houses. The findings showed that the most intense floods were in 2002, 2007, and 2013 (January). The volume of the water was relative, but the 2013 flood took about six days to subside, which was longer than the 2007 and 2002 floods, which only took four days. When asked about flood distribution, the KMB leaders claimed that most of their area was badly inundated, except RT 2 and RT 3, which had the shallowest water. The heads of RT 16 to RT 20, which are located next to the sea and Pluit Lake, thought their areas flooded more frequently than other RTs on the right side of Muara Baru Street. The community leaders claimed that between 1992 and 2012, there were more floods, especially in RTs 14, 12, 06, and 03 (see figure 6.4).

![Flood Map](image)

Figure 6.7 Flood Map in 1992 and 2012 as perceived by the neighborhood leaders
Source: the author, based on the interviews with 24 Head of RTs and transect walks (2012)

My presence in KMB during the flood of January 2013 allowed me to conduct participant observations to confirm the perceptions of KMB people. After two days of heavy rain that began on Tuesday afternoon (15 January 2013) the KMB flooded on Thursday (17 January 2013) after the Pluit embankment was perforated and the water pump was broken.
visited the flooded location on Friday (18 January 2013) around 7:00 a.m. The floodwater was still high and no mass logistic support had arrived. People were moving from the KMB area to the Kelurahan office, the main road, and the mosque to find food, salvage their belongings, or simply rest. According to Konedi, Secretary of RW 17, there had been no warning, and no one had expected the flood to be so powerful. He predicted that the waters would be only knee-deep and then recede. However, on Wednesday night, around 9:00 p.m., he learned that Pluit Lake was flooded. The people in RTs 18, 19, and 20 had moved to the Harbor office and public apartments, which are on higher ground and have multi-level storage. By six o’clock the next morning, the level was up to the neck and covered the entire KMB. All RTs were evacuated on Thursday morning (17 January 2013) to the main road, mosque, police, and sub-district office, where the water was not as deep.

During the evacuation, I noticed that the KMB people were behaving normally. They walked in groups, carried their valuables, and chatted with their neighbors. Most of the men sat on their roofs, but the children and women evacuated. The men went to the second floor of mosques and schools and waited for assistance. There was no panic; everyone seemed to know where to go and what to do. I wrote the following in my field notes:

I just waded through the flood, I saw many people walking in the opposite direction, bringing their belongings while occasionally talking to each other and saying hello to other friends that they met in the street. [Unconsciously] I heard someone call my name, and he was Pak. A, the head of RT 1, he smiled and shook my hand and asked why I was here. There was no sadness or panic in his face. He wore a long-sleeved white shirt and rolled-up black trousers, as usual. It looked like he didn’t change his clothes last night when the flood came. We talked for about 15 minutes. He told their evacuation stories, he emphasized that he and his neighborhood had known since midnight, but they decided to evacuate because the water was getting higher, and they heard the Pluit dam had broken, so early in the morning they left when the water was at knee level. He told that it was just the same five years ago in the [2007] flood.... He also explained what he would do if flooding still inundated their place. He gave the impression that he had experienced with this condition. [Field note, 17 January 2013]

For people who had been in the KMB for more than five years, floods are not major disasters. Long-time residents know that they live below sea level and in a region that is easily flooded. Tidal floods, rainy floods, and floods transferred from Bogor are common. The tidal flood event is part of the Muslim calendar, the rainy flood event is part of the Javanese calendar, and the transferred flood is always discussed in the mass media and local conversation. These perceptions constitute the realm of KMB people. However, the perception of themselves as vulnerable and as victims was belied by their responses to and behaviors during the flood that I experienced.

In conclusion, based on their place-based memory, KMB people know that they live in a flood-prone area. They know that the place is easily inundated, becomes a disposal site, and stays wet. They admit that the danger is not the frequency of flooding, but the government’s late responses to it. The January 2013 flood confirmed that they tend to look
for logistical help rather than worry about their inundated houses. Konedy, the secretary of KMB stated, “We are mainly vulnerable to the lateness of flood aid, not the magnitude of floods” (Konedi, interview, 20 January 2013). In addition, “the severity is the worst, but people complain about the lateness of logistical support, not their severe condition caused by inundated houses or loss and damage due to floods” (Akuntono 2013).

**Perceived flood sensitivity**

This study used a people-centered approach to identify the sensitive people in the KMB. People-based sensitivity means a given condition of individuals or groups, such as age, gender, health, and origins. This condition influences them in coping to or adapting to the floods. The KMB people confirmed that the elderly and children under six years old, people who are sick and/or disabled, and new residents are sensitive to floods.

*Ibu* Rofadilah (RT 7) said that the 2007 flood killed a six-year-old in her neighborhood. The child was playing in the water in front of his house. Because the alley was too narrow and the [facade] buildings were irregular, there was no a safe hiding space when the floodwater flew fast. The water threw him against the pillars of the house, and he drowned. (Interview, 07 February 2013). A toddler died in the 2013 flood. As told by Ninu (28) in media online, the victim was one of eleven flood-affected infants who were evacuated and died of fever and diarrhea on the fifth day of the flood (Merdeka Online 2013) Both stories were shared by KMB people in the shelters and later in their neighborhood. It taught them to act preventively with their children because they understood that they were sensitive to floods that lasted for more than five days.

An elderly man with no family died because he was too weak to escape the flood. Gustara, the head of RW 17, said that two elderly people died in the 2013 flood. One was Tjasti, 74 years old, a resident of RT 08; and the other was Salim, 60 years old, a resident of RT 10. Both had been ill, but they refused to be evacuated. However, there were not enough food and medicine in their home because they had probably not expected the flood to last five or six days. Gustara said, "Elderly people are sensitive to floods because they are dependent people [who] should be accompanied by their family members or neighbors" (Interview with the author, 23 February 2013).

KMB people understand that the sick are sensitive to floods. They are easily infected by the unsanitary conditions caused by the floods. In addition to the five or six days of flooding, the garbage and pollution from other parts of Jakarta contribute to the danger. The water is black during a flood. Long floods are followed by blackouts, so the nights are cold and mosquitoes are everywhere. Agus said, “If [the flood lasts] 2-3 days, [we are] still fine, can survive, no bath, no changing clothes, limited food and water, but if it’s more than that,
just like last January before, the healthy person can be sick, moreover the sick people” (Agus, interview, 24 February 2013).

People with disabilities are also sensitive to the floods because their mobility is limited. Asep, the blind masseur in RT 16, depends on his phone to call his friend who lives in RT 20 if a flood comes. He needs to be guided in packing his important belongings, dry food, water bottle (aqua), clothes, radio, and his stock of massage potions. During a small flood, he navigates by hitting his stick against the pillars of houses and listening to the voices of bajaj or truck sounds to find the main road (Muara Baru street). (Interview, 7 February 2013).

The final group of sensitive people mentioned in the interviews and the two group discussions held in RT 15 and RT 20 are new residents, house owners, and land-based people. The new residents are individuals who have been in the KMB for less than a year and who have never experienced a big flood. These people are very sensitive because they tend to panic. They usually have limited social relationships with neighborhood leaders, who often have better access to and information about logistical support. Newcomers are likely to become confused when a flood strikes. As a result, they usually lose their belongings on the way to the shelters because they are too heavy and already wet. The house owners spend money to clean and improve their property, but tenants or renters leave their dwellings. Therefore, the losses incurred and damage suffered by new residents and house owners are usually greater than those incurred by the renters. People who work on the water, such as fishermen or boatmen (manusia perahu), are not as bothered by floods. In contrast, the land-based people, mostly the second-generation KMB people who work downtown, are clumsy and heavy-handed in responding to the tidal floods.

Thus, the sensitive people know that their settlement is irregular, which causes problems in getting logistical assistance from the outside into the neighborhood. They also know that the elevation of the houses, which is under the level of the main road, means that their area is easily inundated. However, they still perceive that the sensitive condition of their living place is not their greatest worry. It is more important for sensitive people to know the neighborhood environment and have the ability to contact friends, not panic, and seek assistance.

**Flood-Related Adaptive Capacity**

Adaptive capacity can reduce both exposure and sensitivity. However, the human capacity to adapt flood situations is a key element in building a resilient community and adapting housing and settlement to flood situations. Therefore, the KMB people must define their own adaptive capacity.
In the in-depth interviews with several people who have lived there for more than 10 years and group discussions held in RT 7 and RT 15, the word “experience” was often expressed. Experience is the best teacher. Residents use not only their own experiences in adapting to a flood but also those of others. These experiences include the daily activities during floods (responses), post-flood (recovery), and the next flood (anticipatory). The responses that they have during floods are eating and drinking (cooking or eating), getting their children to school, earning a livelihood and sleeping. To do these daily routine activities, individuals or groups need practice. A past action is used to create a better future action. Both the holistic understanding of the KMB neighborhood and the strong relationships with neighbors help the residents to adapt. Therefore, the longer they live in the KMB, the more familiar they become with the safest places, the shelters, the fastest evacuation route, and the best survival strategies.

Experiences in relation to recovery activities pertain to cleaning, repairing, and replacing lost or missing belongings. Less experienced people spend too much on repairs and do not know how to find inexpensive replacements. Fendi (RT 16) stated, “Generally people clean their houses after the water gone, which left a lot of dirt, but it is wrong because it must be not enough water [to clean]... the good [time to clean] is when the water was still... at least reach ankle high” (Interview, 28 January 2013). Ridwan (RT 20) said that he always puts off repairing damaged parts of his house because construction materials are part of the assistance that he receives. When I first met him, he thought that I was a donor or a donor’s representative because I asked him what had been broken. He said that aid was available, but people have to know how to get it. New residents do not always know this. According to Fendi (RT 16), Ghufron (RT 17), Sahrul (RT 21), and Endang (RT 20), at the end of January 2013, many pieces of furniture and materials were floating around the neighborhood. Teenagers could earn money by collecting plastic bottles and glasses, making carts and renting them to deliver people or motorcycles, or even selling the materials in the flea market during flood sessions. Therefore, experience is essential for adaptation.

Furthermore, the ability to anticipate floods is related to keeping houses as clean as possible, creating a storage place, preparing food, obtaining logistical support, and improving neighborhood facilities. The experienced people compare the height of the water to their height of the floor. Some people can afford to raise their houses. Those who cannot raise the floor build a dyke in front of their door or install the temporary storage on the walls. They also stockpile gallons of water gallon and indomie (instant noodles) in anticipation of the next floods. Dorkas and his wife Santi (RT 15) learned from the five-day flood in 2007 that they could both survive on one gallon of water and half a carton of instant noodles (not boiled). Moreover, Konedy, the Secretary of KMB, always evaluated the latest flood with the heads of the RTs, seeing which facilities had and had not been used, which facilities were
the most in demand but not available, the performance of shelters, and the logistic mechanism. They did not hold a public forum, but met in small groups in the Secretariat. They never discussed building facilities against the floods or trying to reduce their magnitude, intensity, or frequency because they knew that they did not have the capabilities and competencies. The community leaders were more concerned about surviving the floods and minimizing their losses.

For poor residents or renters, activist or solitaire, workers or the unemployed, the experience can reduce vulnerability and increase adaptation. The extent to which this is possible depends on how the boundaries of experiences are constituted in their life. Some people limit their zone of operation to their family and house, but others extend their zones to the neighborhood. The story of Agus, head of RT 15 (see figure 6.8), shows that people can transcend their lifeworld boundary when it is necessary to work for the neighborhood.

Adaptive capacity of Agus, the head of RT 15

| Agus, 28 years old, born in KMB, living with his five family members in 21-square meter wooden-house, attached to the sea-dykes. He does not have a job, but he rents three rooms on the second floor. He has experienced floods both in his childhood and on the present. He senses flood just like ordinary events, not a big deal for him. He remembered when he was a child; he always played in the floodwater in the rainy day with his friend. It was a happy day, he said. He sees from time to time, the flood is just the same, but it takes a little bit longer to be dry. Now, he has responsibility to keep his family safe since his father went back to their village. When January flood came, he told his struggling in finding the food because his stock was diminishing. With his two male friends, he created floating cart from plastic fiber, which found in the neighborhood and went to main road to find the logistic truck. He found army-truck was stopped, but not distributed the food. He afraid to ask, but because of hunger, he just forced the army to give them more foods. He just jumped in the truck and threw the noodle packs to his colleagues. He succeeded to bring the instant noodle, aqua, bread, etc. to his house where his family and several neighbors stay on the roof. |

Figure 6.8 Adaptive capacity of Agus, the head of RT 15

Although the houses and livelihood of the poor are fragile, the intensive lived experience is their main asset. The experience of living through a flood gives them a place-based identity and established social relationships, which improves their survival capacity during a flood and their adaptability in the KMB area. Some residents of KMB stay in place and adapt to the conditions. They are constantly adapting, such as by raising their homes or changing their habits in response to the stress and shock caused by the flood. However, other people, especially tenants or renters, move temporarily; some leave KMB and find another livelihood.
The highly lived experiences of KMB people can be gained only if they are socially active in their neighborhood. KMB has an informal union for women (arisan), Muslim solidarity (pengajian/majelis taklim), and neighborhood talks that allow for sharing among the members and neighborhood improvements, such as clearing small drains before and after floods. The sharing is based on the Indonesian spirit of gotong royong. The entire community contributes resources and participates in a project or activity that benefits the community or specific members. It supports Jelinek’s argument that the kampung has the cultural value of gotong royong, which distinguishes it from urban settlement.

Gotong royong is a traditional spirit rooted in Indonesia’s cultural values. It is “a mutual social action institutionalized in a community, rather than one born from the full voluntary will of villagers for mutual support” (Kobayashi 2007, 9). Kobayashi argued that gotong royong is a constructed tradition that depends on the community. As a community of multi-ethnic migrants, KMB people maintain the spirit of gotong royong while building their adaptive capacity. They institutionalize gotong royong though kerja bakti in each RT. Kerja bakti can take the form of cleaning or repairing drains and other neighborhood facilities. KMB people sometimes conduct kerja bakti for public projects, such as mosque construction, or communal events, such as marriages and deaths. Therefore, KMB people use kerja bakti to update information, informally discuss issues, and maintain their solidarity to increase their adaptive capacity.

6.3 Concluding Discussion: “the Vulnerable” and “the Adapters”

In chapter 2, I mentioned three concepts derived from the vulnerability framework: exposed people, sensitive people, and adaptive people. I placed these concepts along a continuum of vulnerability and adaptation. Adapters have the greatest adaptive capacity because they use all resources at their disposal and can transform their vulnerability into adaptability.

Exposed people are similar to flood victims. The level of flood exposure is derived from the comparison between past and present floods, personal involvement, and the amount of loss and damage. The number of floods experienced is thus very important to understand a person’s degree of exposure. Based on the flood experiences of KMB, I proposed a self-comparison method to define flood-related vulnerability. To conduct the self-comparison, I needed to know the spatial, temporal, and social arrangements of individuals in KMB. The place-based memory of the situation of floods was an essential source of their historical and comparative flood exposure. This memory revealed their perceptions of flood exposure. The depth of the perception depends on how long they had stayed in KMB and the closeness of their relationships with old residents. The people who had lived there for
decades had the strongest sense of being surrounded by water. They understood that their world is bounded by water and temporarily structured by a series of inundations. In contrast, people with limited experience had a weaker sense of exposure and less access to information about floods.

Sensitive people experience more losses and damage than the adapters experience. In the medical world, people who are allergic to some medicines can be weaker than others are. The assessment of sensitivity is based on their circumstances. The KMB people have similar ideas about sensitivity. People who depend on others are the most sensitive. Their zone of operation is predictable and often is inadequate to cross the flood boundary. The source of the actions is the world of their predecessors. KMB people have identified the sea-based culture and livelihood, land entitlement, age, and health and disabilities as the main factors that can influence sensitivity. KMB people also demonstrated that these factors change if people share their experiences and teach others to compensate for the limitation of their zone of operation in a flood.

The poor need to increase their income, but they do not necessarily depend on their economic capacity to adapt to the flood. They can count on experience. The KMB people use the flood to adapt, as did Agus and Amir. Their escape routes, find shelters, build preventive facilities, and neighborhood cooperation are examples of the creativities of their adaptive capacity. Because of these practices, floods are not considered extraordinary. Therefore, adaptive people know how to live through floods. As previously discussed, local innovation comes from their limited capacity through trial and error to protect their houses and neighborhoods from the inundation. These experiences make them self-reliant in adapting as individuals or as group. The lifeworld is the domain of increasing adaptive capacity (see figure 6.9).

![Figure 6.9 Vulnerability assessment using lifeworld analysis](image)

Therefore, flood-related vulnerability changes periodically. It could be reduced if based on experience, the creativity and innovation are able to adapt to the exposure and
sensitivity. However, vulnerability also can be higher if the poor have little or no experience in coping with the floods. Adaptive capacity decreases vulnerability. It relies on how the inter-subjectively shared world of experienced people is constituted by the poor. Through *kerja bakti*, KMB people can increase their adaptive capacity because it is conducive to sharing. It creates a stock of knowledge that can be applied and re-applied by KMB people to increase their adaptive capacity. Therefore, I argue the poor are not vulnerable if they can use their stock of knowledge to improve their own and their community’s adaptive capacity. In fact, they can be adapters if the enhancement of the adaptive capacity is able to surpass the degree of exposure to flood and the value of their sensitivity. They can be more vulnerable if they fail to capitalize on the knowledge sourced from their social world to manage their exposure and sensitivity.

Based on the in-depth investigation on the *lifeworld* of flood-affected people and the analysis of the *lifeworld* perspectives, I found that not all the poor were vulnerable and that living in a vulnerable area did not make a person vulnerable. There were different degrees of vulnerability among residents of the same building. In addition, based on self-reflection, lived experience was the central factor that influenced all KMB people, tenants and owners, males and females, young and old, socially connected and isolated. Life experience distinguished the adapters by their preparedness, knowledge of safe places, ability to survive on a roof and clean up afterwards, and capacity to mobile. KMB people defined vulnerable people as those who could not do these things. Moreover, the *lifeworld* of KMB people had constructed a meaning of flooding that is completely different from that of the natural scientists. KMB people see floods as common and frequent events. They have no idea when they will strike or how bad they will be. In contrast, natural scientists describe floods as periodic hydro-meteorological disasters. There is a five-year cycle of big floods and a 16.4-month cycle of tidal floods. The causal factors are heavy rainfall and high spring tides that the ground cannot absorb, which are exacerbated by the improper land use, land subsidence, and poor drainage. The different perceptions influenced both the identification of vulnerable people and defined both their vulnerability and the adaptation pathway that needs to be followed.

As stated in chapter 2, a people-centered approach can be used to assess vulnerability, in addition to the previous eco-place and socio-spatial approaches. In this study, I argue that *lifeworld* analysis can offer an alternative way to identify vulnerable people and places. It has the advantage of providing individuals’ perceptions of not only the state of vulnerability but also the role of adaptive capacity. This analysis does not use the usual parameters of social vulnerability (e.g., health, education, economic condition) as in the quantitative approach, but it reveals the factors that have meaning for the flood-affected people. Table 6.2 shows that the adaptive capacity of vulnerable people could be optimized by the number of flood experiences and the amount of reciprocity achieved through their
own mechanisms of social relations. It transforms them gradually from the state of being vulnerable to being adapters.

Table 6.2 Flood-related vulnerability

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<th>Vulnerable</th>
<th>Early Adapter</th>
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<tr>
<td>Exposed people</td>
<td>Being threatened (pre-flood), Gets panicked when evacuated (during flood),</td>
<td>Being casual, Reacts normally, Willing to move to another affordable place</td>
<td>Being casual, Still does his/her habits, Remains and does not want to move out</td>
</tr>
<tr>
<td></td>
<td>Decides to move to other places (post-flood)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensitive people</td>
<td>Dependent on the others</td>
<td>Independent to some extent, can take care of his/her personal matters</td>
<td>Independent and can assist the others</td>
</tr>
<tr>
<td>Adaptive capacity</td>
<td>Inexperience, No idea about the detail situation of his/her surrounding,</td>
<td>Few experiences, Survival responses during the flood, Following the others who has creativity</td>
<td>Experiences not only flood, but also knows the way out, Recovers quickly, Generates income during flood in a creative and innovative way</td>
</tr>
<tr>
<td>of people</td>
<td>No creativity and innovation</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: the author

The vulnerability assessment is a central component of an adaptation. It is important in gathering information on “what to adapt to and how to adapt” (Füssel and Klein 2006). The lifeworld analysis contributes to elaborating the state of individuals in adapting to the changing phenomena that they have experienced. This internal assessment emphasizes the meaning that people assign to their experiences. Because those meanings are shared, the vulnerable state of the community is the aggregate of individual vulnerability.

The global awareness of the utility of employing local knowledge in the vulnerability assessment emerged through the SREX report of IPCC in 2012 and the Global Platform Consultations report on Post-2015 Framework for Disaster Risk Reduction (HFA2) in 2013. UNISDR recommended that the development agenda for building community resilience should focus on reducing vulnerability and strengthening capacity. The recent discourse relies on socio-spatial and eco-place approaches. Therefore, research is needed to assess the vulnerability and the adaptive capacity from a people-centered perspective. This study offers a lifeworld analysis that assesses vulnerability. This case study of the urban poor who live in a flood-prone area found that the human dimension is essential in measuring a community’s vulnerability. Further studies that examine different communities and other effects of climate change effects and types of disaster are needed to obtain a holistic understanding of vulnerability assessment.
7 Living with Floods: Locally Embedded Adaptation Planning

In order to know whether the practices of KMB people involve a planning process or not, I discuss my research findings by combining Schütz lifeworld theory and Schön’s reflective practices. As described in the conception framework, the lifeworld is a domain of the reflective practices at work in the community. Departing from Schön’s argument that planning process needs to “shift from rationality to reflective-in-action” (Schön 1983, 21), increase the capacity of planners through enhance the ability to reflect in action (Fischler 2012), and educate the planners by a method of “learning through personal experience” (Dewey 1998, 9), I show how the KMB people apply these concepts in relation to adaptation planning.

Schön’s idea of reflective practice is rooted in examining the relation between the thought and action of anyone who plans something for anything. It is the kind of thinking that shapes our actions before, during, and after the action. The quality of an action then depends on the thinking that we can do before and in the process of the action. Therefore, in this research, the main discussion of reflective practice concerns the ability of KMB people to use their own and others’ knowledge to improve their adaptation actions in real time. Furthermore, I discuss the production of knowledge of KMB people based on the “triple-loop learning process” inspired by Aagry and Schön in 1978 (see figure 7.1).

As argued by Pahl-Wostl (2009), triple-loop learning is an exploratory process at different levels of intensity and scope. She described three levels of learning that take place in analyzing adaptive capacity:

Figure 7.1 Model of triple-loop learning
Source: thorsten.org
Single-loop learning refers to an incremental improvement of action strategies without questioning the underlying assumptions. Double-loop learning refers to a revisiting of assumptions (e.g. about cause-effect relationships) within a value-normative framework. In triple-loop learning, one starts to reconsider underlying values and beliefs, worldviews, if assumptions within a worldview do not hold anymore. (Pahl-Wostl 2009, 359)

People learn from floods. In the first phase, learning creates new knowledge that is likely to confirm the practices of others. It shifts the meaning of what the previous practices have achieved and transforms the paradigm of the adaptation. Therefore, there are two main parts to the following discussion: how reflective practices reflect the process of KMB people in adaptation planning and the type and source of knowledge that drive them to plan and its relation to their lifeworld.

7.1 Reflective Practice and Adaptation Planning

The shifted meaning in the realm of the KMB people who adapt to floods plays a significant role in shaping their adaptation pathway. The shifting meaning of floods has transformed their response to floods. They repeatedly adapt. As a result, the flood is no longer perceived as something that needs to be blocked or stopped but should be survived with as little damage and inconvenience as possible. KMB people produce a simple plan based on the reflection on their last experiences and their present and/or future adaptation. It is a plan that provides lessons learned from the series of adaptation actions that are accumulated, articulated, and preserved in memory. The lessons learned strengthen their intuition. This intuitive knowing is the main modality used to increase the adaptive capacity of KMB people. Here, I discuss the planning knowledge used by KMB people in building their adaptation pathways through three planning practices: scenario planning for evacuation and shelters, spatial planning for living space arrangements, and infrastructure planning for neighborhood support.

Scenario Planning for Evacuation

Scenario planning is “a creative and shared process” that allows people to reflect on “what seems to be happening (analysis), what’s really happening (interpretation), and what might happen (prospection)” (Conway 2003, 20–31). Unlike prediction, scenario planning uses a foresight method that tells about what might happen. According to Conway (2007, 7–8), “Everyone has an innate foresight capacity to think about the future.” In organization learning, foresight used “to assess the implication of present actions, to detect and avoid problems before they occur, considers the present implication of possible future event, and to envisage aspects of desired futures” (Conway 2003, 16).

In planning evacuation routes, KMB people have engaged in scenario planning because they used foresight method to sense the uncertainty of future floods. Based on their
flood experiences, they discuss the consequences of the previous evacuation process and the obstacles to staying on rooftops, and they envisage the next steps for the future. As explained in chapter 5, negative experiences have taught them to be more careful in the evacuation. Therefore, they prefer to take shelters on roofs. If the flood reaches the roof, they will evacuate. Reflecting on what they had done before, they keep anything (e.g., floating plastic carts) that was available to use in the next flood. They have no resources to escape, but when the worst case occurred, logistical support, such as lifeboats and life jackets, were available (Field note, January 2013).

In arranging the evacuation plan, KMB people develop a scenario that reflects their past experiences with floods. In my group discussion with RTs 7, 15, and 20, the consensus emerged that if adults could not keep their heads above water, they would leave their houses. Otherwise, they would go to a nearby two-floor house (see table 7.1) Agus, the head of RT 15, said that if the inundation lasted only two or three hours and the water was not above the knees, the flood would recede within a half day. This happened with tidal floods or during rainfall in the wet season. However, these floods are becoming rare because of the sea wall built in 2007. The floods coincide with the full moon (tidal flood) and wet season (rainy flood).

Table 7.1 Scenario planning for flood evacuation

<table>
<thead>
<tr>
<th>Flood scenario</th>
<th>Plan</th>
<th>Logistics need</th>
<th>Evacuation tools</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knee-size inundation (less than 50 cm)</td>
<td>Stay at home; manage house by own</td>
<td>Modest food for family</td>
<td>N.A.</td>
<td>Focus on protect their electric equipment at house</td>
</tr>
<tr>
<td>Chest-size (1 meter)</td>
<td>Transfer to the 2-storage house of neighbour</td>
<td>Modest food, water, and cooking equipment</td>
<td>Wood stairs and flashlight</td>
<td>If the logistics run out, borrow from neighbour (warung)</td>
</tr>
<tr>
<td>Adult-body size (1.5 meter)</td>
<td>Gather in the roof of two-story house</td>
<td>Modest food, water, and cooking equipment</td>
<td>Life jacket and life boat (if any); plastic or PVC cart; drums</td>
<td>If the logistics run out, send young man to get the food outside; The tools are available in the secretariat of RW</td>
</tr>
<tr>
<td>Over the adult-body size (the same as the roof level)</td>
<td>Left out the house by emergency boat from the government/donor</td>
<td>None, probably hand phone if still alive</td>
<td>Life jacket and life boat (if any)</td>
<td>Waiting the instruction from the head of RT; Evacuating the women, children, and elderly at the first time</td>
</tr>
</tbody>
</table>

Source: the author based on the focus group discussions of RTs 7, 15, and 20

Agus recognized that it was tiring to carry his television to and from the second floor. He realized that it was useless because the flood only reached the table leg and receded.
quickly. He indicated that his electronic equipment would be safe as long as the waters remained below the knee. He also told me that as the head of RT 15, he has shared his experiential knowledge with his neighbors and at several neighborhood events. The knowledge about protecting equipment was confirmed by the FGD participants in RT 15. I saw heads nod in agreement when I asked what they would do during a flood. Khairuddin, one of Agus’ neighbors, added that he used his leg to gauge a flood’s intensity. He asserted that water that did not reach the knee was not worrying.

Another example was raised in the discussion with RT 20 about evacuation. Irpan, the head of RT 20, described a neighbor’s scenario plan that was similar to Agus’ plan. However, because their area is surrounded by the sea wall, the first scenario of floods seldom occurs in their area. He knew the flood behavior in his area. Pak Irpan's only concern was that the land was sinking, which was raising the water to the top of the sea wall. He wanted the sea wall elevated because it was only 20 centimeters higher than the water. He warned that if the sea wall were not elevated, the flood damage would be similar to that in worst flood of 2002.

A: How do you assess the flood in your area?
I: First, I always figure out when flood comes in and out as well. The flooding (period) usually takes a long time for the sea emptying (means receding). Second, we know we have a sea-dike, but if it is broken or overflowed, then we wait until the water recedes, but no need until the water run out because the water recedes slowly.

(Irpan, interview, 27 October 2012)

He added that the 2002 flood receded in a month because the Pluit Reservoir and the generator for the water pump were not working. The flood was caused by the combination of the high tide, the flood transferred from Bogor, and the extreme rainfall, did not stop for 24 hours. The water from Bogor could not flow to the sea because the sea surface was at the same level as the inundation height. He pointed out that using the water pump was useless.

A: So you mean that the sea wall was never elevated?
I: It has been done already, but broken in 2007. The height of water was about 1.5 meters come from this way (he pointed to the front of his house that faced the sea). I hope that I won’t experience it again. But now, it's getting harder. Our position now is two meters below the sea level; therefore, I have warned my people where
next to the sea-dyke, if it starts to be cracked, I ask them to report me. [He is silent for a moment.]

By the way, are there any benefits for the residents here that taken from this research? Or is it just a manuscript? I need your help to inform the government because sometimes university students have interviewed use. If high tide come, the difference between sea surface and dyke's height is only 20 centimeters. When I started to live here [1990], the elevation was about 0.25 meters under the sea surface; now [2012] it has already reached two meters.

(Irpan, interview, 27 June 2012)

Ibu Maskuni, who has lived in RT 7 since 1983, noted some differences from before the 1990s, when KMB was still empty and the houses were made only of plywood, and the present condition, in which factories, warehouses, and houses thrive and the area is dense. She explained that she has two flood houses made of concrete, but she worries because the floods last longer and evacuation is harder. According to her observation, the buildings blocked water flows and the narrow alley and the housing density increased the difficulties for rescue boats and finding the fastest evacuation route.

However, she described her evacuation plan to me on 4 July 2012:
A: Have you experienced floods entering your house?
M: Yes, in 2010, when the dyke was still made by sandbags, it reached chest-level [she demonstrated by putting her hand on her chest] and even a rubber boat entered the neighborhood.
A: What? How could that happenned?
M: It was possible, because not the big one.
A: Were you shocked at that time?
M: Not shocked, but I hesitated whether the water would keep rising or not.
A: Do you remember when?
M: If I am not wrong, on Isra Miraj day [the Moslem day]
A: In 2010?
M: Yes, in July or August
A: Daylight or night?
M: Day and night. It lasted 10 days.
A: Did you evacuate?

M: (No), just waited on the top of the roof. I was afraid my belongings would be stolen or swept by flood. So, we just lifted them up.

A: Children too?

M: Yes, of course.

A: Did you take a bath?

M: Sometimes (laughing), to take a bath, we just plunged [into the water]

A: For drinking?

M: We bought Aqua [Aqua is a brand of drinking water that quite famous in Indonesia. It usually used as a generic term].

A: Where and how did you buy it?

M: We bought it by ourselves, in the main road [Muara Baru main street], because only this area was flooded.

A: I mean how do you reach the place? The water was on your chest, right [I pointed to my chest]

M: Yes, we just walked slowly to find food and drinks for our children especially.

A: How do you find the route?

M: We got used to taking detours because it safer from our experiences.

A: So you got wet?

M: Yes, of course we got wet [laughing]. Our clothes, underwear… everything got wet.

A: But you still did it?

M: Yes, it's fine. We admittedly were sick, but we must did it and it's not so difficult. We already knew our way out.

... In this neighborhood, Pak Kadir, the head of RT 7, described the same evacuation plan. He added that even though one of his neighbors had learned to walk to a safer place, his people had their own evacuation route, which he described in an interview on 23 June 2012.

... A: As the head of the RT, do you have a rescue or early warning system?

K: No, we don't have it at all. If the flood comes, usually the rubber boat comes.
A: From RW?
K: I don’t think that our secretariat has it.
A: So, from where?
K: I usually contact the head of RW, but if it does not work, I send our young men here to go to the main streets to find the army or government people.
A: So, is there any training for emergency responses?
K: Yes, there was, but I did not attend, the representatives of our people that came to the training. It was in Puncak [Bogor] and organized by Indonesian Red Cross [PMI]
A: In here? In your neighborhood?
K: Yes, once I think. It was under PMI as well. But I forgot the names.
A: Did women here follow the training?
K: Yes, most of us followed the training. We followed the tsunami simulation. How to evacuate, find kentongan [the traditional tool made by wood that used for indicating the clock. It is originally used to monitor the neighborhood security at night], etc.
A: But does it work? People still recognize the sound? Why don’t you use a hand phone, maybe?
K: Yes, indeed [laughing]. Everybody uses a hand phone, but it also sometime does not work because when flood comes, there is no electricity. We don’t have kentongan as well, but I think people have already known by themselves because the flood is rising slowly. So, we still have time.
A: Did you get another lesson?
K: Yes, we were taught to run to the safety place [laughing]. It was fun, but we never did that.
A: Do you use life jackets? Any rescue equipment stock?
K: No, don’t say stock, we seldom see and never use life jackets.
A: So, what do you wear to evacuate?
K: No, we just go up to the upper level, see the water and wait. We have rice, oil, and noodles stock.
These examples show that they understood their situation very well. They assessed the condition and knew their options. Their evacuation plans were based on their actions in earlier floods. They agreed that the best evacuation place was the roof of their two-floor house. They brought food that was easy to eat, such as instant noodles and bottled water. The women seemed to have a better command of food details than men did, but the men knew more about the supply of cigarettes. If the flood had not reached the roof, but lasted more than two or three days, then the head of the RT would ask young men to look for logistic support using the plastic cart or a big plastic bag.

However, this scenario plan is not the same as the evacuation plan that was promoted by local and non-government agencies (see figure 7.2). The Standard Operating Procedure (SOP) in a flood emergency response requires them to evacuate immediately to the government shelters. However, this procedure applies only if the government has decided that the flood is disaster. It is thus problematic because for the KMB residents, a flood is a commonplace event. The big floods happen throughout the Jakarta area every five years. The annual tidal floods bring chest-deep water. Therefore, because the SOP only applies in major floods, it is not surprising that the shelters are located in the safest place in the KMB area.

![Figure 7.2 Shelter and evacuation maps](image)

**Figure 7.2 Shelter and evacuation maps**

Source: the author based on FGD RTs 7 and 15
Only the KMB people in RTs 7 and 15 used the government’s shelter. On the north side of KMB, the shelters are four-floor flats and the fisheries harbor building. In most cases, people just climb onto the roof of their two- or three-floor house. Most residents of RT 7 and RT 15 have two- or three-story houses (see figure 7.3). Therefore, their evacuation plan was based on self-reflective practices and on self-organized and communal management, whereas the government’s plan concentrated on certain buildings and was managed by the organizational structure.

Figure 7.3 Distribution of a two-floor House
Source: the author based on FGD RT 7 and RT 15

Spatial Planning for Living Arrangements

A living space arrangement is a type of adaptation planning that belongs to individuals or households, but the planning of a house arrangement is constructed according to their shared understanding of houses that have been flooded. Many interviewees are women who stay at home. As in other kampungs in Indonesia, women are expected to take care of the home, but some of them also work informally for extra money, such as in open warung (small booth), doing washing, and as part-time servants. The housewives know what will happen to their homes if they are not well prepared. The embeddedness of their planning knowledge is generated and consciously shared among them in casual meetings at
warung, pengajian in houses or mosque, or arisan (regular social gathering) and at neighborhood (RT) meetings.

Based on the interviews and group discussions in RT 7, RT 15, and RT 20, KMB people managed the room function by following what the neighbors have done before. They planned the houserom management by reflecting on previous experiences of flooding and then learning from each other. One-floor houses had no upper floor or balcony. The owners did not have any plans to change the layout, but they installed a storage facility and raised the teras (the front floor) and floor to minimize the amount of floodwater that got inside. They used wooden scraps to install the storage, and they used cement and tiles to raise the teras (figure 7.4).

![Figure 7.4 Adapted one-floor houses](image)

The storage facility was created on a hanging floor, which was nailed to the wall and used to store electrical and cooking equipment. The storage place was generally high on the wall. The teras was made of concrete, and it was at knee-height. The floor was gradually raised above the level of the previous inundation. However, they could not raise the ceiling or roof. The houses are therefore becoming smaller instead of larger (see figure 7.5).
This knowledge of spatial arrangement was generated in the informal conversations among women. They had the same interest in managing their households. Although they seldom talked about how they managed their houses, they discussed the impact of the flood on their houses. They grumbled about the mud on their furniture, pots and pans, and appliances. Afterward, they paid more attention to the stories of their friends’ who had solved these problems. Finally, they shared some ideas about storage.

Figure 7.5 Adaptation plan for one-floor house
Source: the author based on FGD RTs 7, 15, 20

In the group discussion in RT 7, Ibu Asih claimed that some of her neighbors had emulated her hanging cabinet. She said that her husband built a hanging cabinet in their living room to store their papers, flatiron, rice cookers, and flatware. Some of her neighbors asked them about the hanging cabinet when a pengajian event held in her house. Her friends asked how it had been made and why the height of the cabinet was only at the neck of an adult. She explained that it was because in her experience, the height of flood would never reach that position except the big ones when it would be easier to move her belongings on to and from the cabinet and move back and forth within her narrow place. She decided with her husband—learning from annual tidal floods—that they needed a hanging cabinet to prevent the hard work of cleaning their belongings after the flood had subsided. When I asked several women how often they emulated their neighbors, they replied that it
was the easiest way to solve the same problem. The fragment of my interview to Ibu Asih on June 25, 2012 is a supporting argument:

(I interviewed her after the group discussion)

I: ... Do you feel safe with the floor raised?

A: Not really because the height of the teras floor kept the water back for just a short time. The water still entered my house. Our equipment got wet and was ruined. Therefore, we need the hanging storage place [she pointed to the wooden box hanging on the wall], at least until the water dried up.

I: I see... but how did you get the idea?

A: Ah... [She smiled] ibu-ibu [women] here already knew it. We often talk with each other [she used the bahasa term “curhat,” which means a private talk]

I: So, [do] you mean that you got the idea from your neighbors?

A: Here, we are like a family. So we always share if we hear or have something new or even bad stories.

The women of KMB are very close. The term curhat (tell the story deeply) is used between trusted friends. Ibu Asih considers her neighbors “family.” Her response also confirmed my observations in group discussions held in RTs 7 and 20. I could see from the clothes that that the women wore and from their conversation that they shared their solutions.

Two-floor houses are often used as temporary shelters for neighboring families. Most of the residents of both RTs built modest two-floor houses, each of which was about 18 square meters. The women said the ground floor was the main floor and the upper floor consisted of children’s rooms and rooms for rent. During a flood, they would empty the first floor and move everything upstairs. They used the second floor for storage, sleeping, and neighbors that were guests. They just unfolded plastic carpets to gather their belongings. This functionality also applied to three-floor houses. A wood ladder gave access to the second floor. Some of them put the ladder along the outside wall if there was not enough space inside (see figure 7.5). Some people put the ladder inside the house, attached it to the wall, and cut a hole in the ceiling to access the second floor (see figure 7.6).

The options for adding a ladder and using second floor as a multi-functional room were reflected in the experiences of what neighbors had done. In the interview with Ibu Maskur (RT 7), she said that her husband built the second floor as a bedroom for their four children. Before two of her children moved out, they started using their children’s room as a storage area (Interview with the author, 18 June 2012). Pak Parlan (RT 15) said that he added a second floor so that he could rent it, but since the renters always went back to their
home village, he used the second floor to store his belongings (Interview with the author, 31 January 2013). Even though second and third floors were added for reasons that have nothing to do with floods, they could be used for storage during a flood. For them, raising the floor is a way to accommodate a growing family and to generate rental income. The flood does not force them to change their house. They use the extra floor to store equipment, install a ladder, and put a padlock on the door. Therefore, I deduced that they planned the functionality of the rooms in their houses to adapt to the floods.

Figure 7.6 Adapted two-floor houses; photo taken by the author
Figure 7.7 Adaptation plan for a two-floor house

Source: the author, based on FGD of RT 7, RT 15, and RT 20

The interviewees commented that this living space management resulted from informal conversation, and it was not intentional. The men discussed it casually, especially at *maghrib* e. On this occasion, they talked about other neighborhood issues. Entong (RT 7) said that he often got useful information when they gathered in the mosque before their *sholat maghrib* (*maghrib* praying), which included the measures his neighbors took during the floods (Interview, 23 June 2012). This small forum is an effective way to socialize and learn about what others are doing. This sharing process is analyzed in the next chapter. However, it can be deduced from the house management plan that it is based on common concerns about minimizing losses and damage caused by the floods.

With regard to house management, KMB people do what planning professionals do. The purpose of layout planning is “to determine the best physical arrangement of resources within a facility” (Reid 2010, 3). KMB people planned to add storage that could be used in a flood. Therefore, the arrangement focused on increasing the functionality of their houses. KMB people followed the six steps of layout planning: 1) defining the objectives; 2) identifying main and supporting activities; 3) determining access, arrangement and flow; 4)
determining space requirements; 5) designing an alternate layout; and 6) evaluating and choosing a layout.

The objective was to protect valuable equipment. By identifying the main and supporting activities, KMB people decided that the primary function of the second floor would be economic and the secondary function would be storage (safety). In determining access, arrangement, and flow among household activities, KMB residents added a ladder and installed the storage that was accessible. In determining the space requirement, they also designated the room for specific uses. In designing alternative layouts, they used several imaginary sketches that were orally described. Finally, in evaluating and choosing a layout, they reflected on their knowledge and their neighbors’ actions. Therefore, compared to the zoning regulation and building codes of Jakarta, their plans did not meet the standard.

**Neighborhood Infrastructure**

The third case concerns the supporting facilities used to adapt to the floods in their neighborhood. KMB people adapted the house’s surroundings in order to diminish the flood’s impact on their belongings. They did not pay much attention to the house itself. Therefore, they created an adaptation plan that kept as much mud and garbage as possible out of the house.

They focused on improving the drainage and footpaths. They repurposed the drains not only to improve the flow of water, but also to filter garbage. They attached a fisherman’s nylon net and placed iron pins taken from construction equipment at the lower and upper drainage ends that crossed their neighbors. They used beach sand to build a footpath to and from their neighborhood. They use used wood and bamboo construction along the pathway to ensure that the sand sacks strong were enough to walk on (see figure 7.8).

Before the sea dyke was built in 2007, KMB residents sandbagged the shoreline. Afterward, they build a barricade of sandbags to keep garbage from floating into their houses. Based on their experiences, men took the sand from the beach and women poured it into the rice bags, which were supplied by the KMB secretariat. The height of the stacked sandbags was determined by discussions held by the heads of RTs with the neighborhood. The men, most of whom were construction workers, did the building.

The adaptation of the infrastructure reflected the emergent need to support their ingress to and egress from the neighborhood. They improved it from time to time based on the lessons learned from the previous flood. They counted on the availability of local resources. There was no fixed decision-maker; they made the easiest and least expensive decision.
On 24 June 2012, I talked to Ibu Entong in RT 7 about the decision to make the road.

A: But, how does the road in front of your house? Do you help raise the road?
E: It comes from our own sources, swadaya (a self-help mechanism).
A: How many times have you raised it?
E: Wah… many times… countless.
A: How high do you think?
B: Since I was here (1985)… [She thought for a moment]… I think more than one meter… because my house floor is still under the road level. While I have raised it about 70 centimeters.

I also raised this topic with Pak Kadir, the head of RT 7 on 7 July 7 2012:
A: Was the flood level reach this level? [We stood on the alley road of this neighborhood, in front of his house]
K: No, it has risen a lot… I think about two meter. Before, there was a fence that the height is two meter, now the fence already covered by the road. [He means the height of the road and fence is equal].
A: Where do you get the funding? From kelurahan [government]?
K: Hmm… just once. Mostly come from our people.
A: How do you raise it up? What kind of materials did you use?

K: Generally, I invited two or three people here and discussed about the damage of our road. We also evaluated the last flood event, especially the height of the flood. Then we tried to calculate roughly how high we should raise up. Normally, we often raise 30-50 centimeters only, because we also count on how much debris from former buildings we can store.

A: Did you buy it?

K: Yes, but sometimes from the building demolition around here. We borrow a pickup if the location is far or a wagon if the location is nearby.

A: The manpower?

K: We did it ourselves. Each household raises the road in front of its own house.

A: Are people willing to do so?

K: Yes, they do. They use this road every day, don’t they? So, they certainly will work in raising the road.

The adaptation planning agenda is derived from the head of the RT and anyone else who takes initiative. If someone needs something done, he proposes it to the head of the RT or tells friends and neighbors. For example, when they do kerja bakti (working together to clean up the neighborhood), they sometimes discuss it first. Because they attend kerja bakti every Sunday at the beginning of month, the issues have always been updated. Kerja bakti is a ritual for planning adaptation to flood. It is not only a duty as argued by Perkasa and Hendytio (2003). The memory of drains clogged with garbage and the large number of mosquito larvae are the most general drivers of KMB people to conduct kerja bakti.

The neighborhood infrastructure planning also preceded through the reflective practices of KMB people. Kadir, the head of RT 7, wanted the road surface in his neighborhood to be raised so that it would be easier to use. Based on his knowledge, he assessed the possible height of future floods. He also searched for information and calculated the cost of the repair. He gathered the men in this neighborhood association to work together. KMB people did the same thing when they installed nets as disposal filters for the drains near their front doors. They remembered the stinking garbage left after an earlier flood. These planned adaptations resulted from their acquired foresight, which was developed through reflection and practice.

Therefore, the adaptation planning by KMB people is based on their memories of and information about the worst floods. They borrow tools and exchange information about modifying their houses. They generously share information about the solutions that they
have found but sometimes they seem to brag. Furthermore, although there are residents of different ethnicities in each neighborhood, they are all urban migrants. They see their neighbors as family, which makes it easier to share information about how to protect their houses from floods. The modality of lived experiences is a key factor in locally embedded adaptation planning.

As these three cases showed, the application of reflective practices in adaptation planning responds to several issues pertaining to the adaptation. First, the adaptation of the poor is not only spontaneous but also planned. The KMB case study showed that the two are linked by reflective practices. Adaptation action, which is perceived as spontaneous, is modified to reflect previous adaptation. The reflection depends on the structure of lifeworld of the residents. Therefore, the planned adaptation of the kampung people who directly experienced floods differed from the responses of the government. The NGOs simply analyzed the flood.

In contrast to the typology of adaptation developed by Smit et al. (2000) and Smit and Pilifosofa (2007), which identified the different forms and types of adaptation based on the goals and the period of adaptation, I argue that the typology of adaptation is also differentiated by the lifeworld of the adapters. Someone who has lived through the flood makes a significant contribution to defining the form of adaptation. Different people adapt to a phenomenon in different ways. Thus the lifeworld of the person determines the form of adaptation. The distinction between planned and spontaneous or passive and anticipatory adaptation has no relevance in terms of the self-reflective practices used in the planning process. The spontaneous action provides knowledge about the weaknesses and strengths of past and present adaptations. Therefore, they reflected on them to in planning adaptation. The form of autonomous adaptation is used as a baseline against which the need for planned adaptation is evaluated. Therefore, spontaneous and planned adaptation are linked through reflective practices.

7.2 Locally Embedded Knowledge as a source of Reflective Practices

Adaptation occurs in different “systems,” “units of analysis,” or “exposure units” (Carter 1996; UNEP 1998). According to Garzon et al. (2012), adaptation planning at the community level is still in the initial phase. However, numerous books and manuals have encouraged community adaptation planning (CAP). Most of this literature concentrates on participatory and procedural mechanisms (CARE 2010; USAID 2009). Previous studies have not considered the lived experiences of flood-affected people and their accumulated knowledge resources for adaptation planning. This practical knowledge could be a useful source for the CAP.
Some scholars have suggested that local knowledge should be integrated into adaptation planning (Adger et al. 2009; Turner and Clifton 2009). Sagala and Damayanti (2010) recommended that the incorporation of individual actions should be done through a community planning approach. In the transmission of adaptation planning, knowledge could change local behavior (Carmin 2009). External factors, such as professional networks and associations, NGOs, and consultants, often transmit ideas and knowledge to the local community. However, knowledge is not easily transferred to the individuals because the content of technocratic language has not been translated into their daily language and has not been communicated in their social world. Therefore, the locally embedded knowledge should be included in translation and communication.

The kampung people, like KMB people who are still rooted in rural culture have communal values. The Round Table Forum of the Pacific Rim Council on Urban Development (PRCUD) Urban Planning and Climate Change in Indonesia, which was held in Palembang, South Sumatera in 2011, recommended that “Indonesia need to harness its long tradition of community participation and self-help to come up with innovative local solutions to integrate poverty reduction with climate change actions” (Rabe 2011, 37). The forum also recommended early engagement, the provision of relevant information and knowledge, and capacity building of vulnerable groups as the keys to the adaptation to climate change. Therefore, locally embedded knowledge is needed at the community level.

Locally embedded knowledge is different from the knowledge used to explain the production of local knowledge. Local knowledge is produced within a specific environment. It was derived from Lindblom’s conception. It is relevant to particular experiences and is used to assert that the experts did not produce knowledge exclusively. Therefore, locally embedded knowledge is a form of knowledge that is “embedded in local history, local memory, and local network” (Gaillard 2011, cited in Piccollela 2013). In other words, locally embedded knowledge is experiential knowledge that is repeatedly deposited in the realm of individuals in a particular spatial, temporal, and social situation.

KMB people used locally embedded knowledge in three types of planning. In the context of planning, they did not engage in the kind of data collection and data analysis that professional planners conduct. They mapped the flooded area through a self-sensing process based on historical inundation events that had occurred in their lifeworld (see section 6.1), instead of applying remote sensing or other geo-reference tools. They then analyzed the adaptation options through inter-shared meaning production that was generated from a series of experiences (see section 6.2) instead of expert knowledge. Finally, they conducted planning through a series of self-organizing events (see section 7.1) instead of depending on statutory city planning.
The locally embedded knowledge of KMB people is similar to metís. This practical and experiential knowledge was conceptualized by James Scott (1998) in his book, *Seeing like a State*, to counter the dominance of scientific knowledge in improving human development. A locally situated environment that is a domain of human practices and experiences can form a *metis*. It resembles a language that is easily learned by rote. The dominance of the scientific community in producing planning knowledge is especially evident in adaptation planning, which is a relatively new field of planning practitioners. The locally embedded knowledge must not only provide new insights at the micro level but also be used to derive a planning principle that is too general to be implemented at the micro level. The *lifeworld* thus defines the kind of planning process that KMB people can imagine and practice.

The embeddedness of knowledge depends on the structure of the *lifeworld* and the knowledgeability of individuals. Knowledgeability is “an ability to know something about certain themes, [and] is different for the different members of a culture, and changes, as it is itself a social product” (Antweiler and Mersmann 1996:13). KMB people showed that their *lifeworld* had defined their ability to plan for evacuation, house management, and infrastructure provision. Their perception that a flood is not an enemy and their ability to adapt to and even benefit from flooding shaped their adaptation planning.

Their experiences produced the knowledge that the residents are surrounded by water and that there have always been floods. Instead of trying to prevent the floods, they preferred to live with them. This change in knowledge was used in adaptation planning. The structure of the *lifeworld* delineated their planning zone and narrowed the horizon of future conditions that they needed to achieve. This *lifeworld* also functioned as a reflected media that modified the present adaptation and allowed them to invent future adaptive actions. Therefore, the structure of the *lifeworld* determined the level of knowledgeability.

The changed meaning of floods framed the adaptation pathway of KMB people, who have adapted repeatedly to floods. These practitioners use the shifts in meaning to plan their evacuation, living space management, and nearby support facilities. Living with floods is their locally embedded adaptation planning. It is a simple plan that comes from the reflection on their flood experiences and their present and/or future adaptation. The lessons learned from the series of adaptation actions have been accumulated, articulated, and preserved in their memory. They are then consciously used to decide the kinds of present and future adaptations to floods. The KMB residents also borrow from others and expand their knowledge, which strengthens their adaptation planning. This intuitive knowing is the main modality of increasing adaptive capacity.

The locally embedded adaptation planning process elucidates the relationship between adaptive and coping capacity, which have been discussed in terms of disaster risk
reduction and climate change adaptation. From the perspective of people-centered development, this relationship should be strengthened to increase the human capacity in responding to immediate shocks and potential stresses. The IPCC (2012) emphasized the distinction between coping and adaptive capacity:

Overall, coping focuses on the moment, constraint, and survival; adapting (in terms of human responses) focuses on the future, where learning and reinvention are key features and short-term survival is less in question (although it remains inclusive of changes inspired by already-modified environmental conditions). (IPCC 2012, 51)

The dimension of time and the type of responses are differentiating factors. In terms of planning, the two concepts should not be separated because the planning process departs from the present condition, reflects past experiences, and addresses future opportunities and challenges. Borrowing the learning loop framework of Argyris and Schön (1978), which is shown in figure 7.9, the Locally Embedded Adaptation Planning (LEAP) of the KMB people is a continuous learning process that can be divided into three loops: the immediate response of KMB people to their first flood; the reframing process of a lesson learned from past experiences; and continuous transformations in individuals, collectives, and socially reflective practices.

![Figure 7.9 Learning loop of KMB people](image)

Source: the author based on IPCC (2012), Pahl-Wost (2009), Stermann et al. (2006), Hargrove (2002), and Agrys and Schön (1978)

In the single-loop learning phase, adaptation is focused on ascertaining whether the reactions are adequate and effective to reduce the loss and damage caused by floods. Single-loop learning focuses on preliminary actions that are based on present knowledge. It is similar to experiential learning in the transformation process of social-ecological resilience (Folke et al. 2009). In double-loop learning, the evaluation is extended to assess whether actors are “doing the right things” (Flood and Romm, 1996), that is, whether the evacuation and house management have solved the real problem. Corrective actions are taken after the problem is reframed and different planning goals are identified (Pelling et al. 2008). In triple-
loop learning, the actors question how the *kampung* and external institutions, such as the government, support their adaptation planning. It provides a domain and framework in which locally embedded adaptation planning operate. Providing a planning framework for integrating double- and triple-loop learning, particularly by flood-affected KMB people, is more effective than narrower planned approaches, which depend on specific future climate information (McGray et al. 2007; Pettengell 2010).

Locally embedded adaptation planning is needed because the response to floods is perceived not only as a static reaction to a hydro-meteorological catastrophe or a natural disaster but also as socially constructed by the affected community. Therefore, the *lifeworld* of the affected people should be discovered before linking the different actors in adaptation planning. Limited interaction results planning divergence. It cannot consolidate all resources to adapt to the disaster events or climate change impacts. The KMB people used reflective practices to conduct their own planning process through informal forums instead of through formal institutions that were facilitated by the government.

### 7.3 Concluding Discussion: Locally Embedded Adaptation Planning

At the community level, adaptation planning does not depend on the technical experts mentioned in the previous chapter and follow the emergent shift in the planning paradigm from participatory to people-centered. The LEAP is one example of people having their own plan to adapt to their changing environment. Therefore, the process of adaptation planning at the community level should reflect the lived experiences of the affected people.

The case of KMB demonstrates that planning practices were generated by their habitualized actions in adapting to regular floods. It supports Schön’s (1987) assertion that “the experiences (theory-in-use) that were embedded in the logic of the action” could be used in creating solution (cited in McDowell et al. 2007). Although the domain of their thoughts and actions were not sufficient to deal with floods, they constructed their adaptation planning even though the planning outputs were not available for long-term actions and strategic visions. Their *lifeworld*, which confines their framing in space and in time, explicated their capacity to develop adaptation pathway. This world must be recognized, before it can be connected to the larger world of the city.

The importance of the personal scale in the planning process has also been discussed in the recent discourse of planning practices (section 2.2). Gehl’s (2011) human-scale perspective and Friedmann’s (1987) conception of territorial units of individuals have caused the urban planning discipline to examine the micro-scale and the subjective human experiences (Wagner, 1970). Therefore, with the proposition that planning is a universal
human activity, I argue that if the personal scale is taken into account, the urban poor, as represented by the *kampung* people, also conduct adaptation planning.

KMB people share their knowledge of adaptation planning by refusing to cast the flood as an enemy. They modify their houses and surroundings to reduce the consequences of flooding. They plan to live with the floods despite the inconvenience. The reflection on those experiences later shapes their zone of operation in adaptation planning. In addition, the lack of resources and/or isolation from formal institutions has driven them to concentrate on their immediate surroundings. Therefore, they engage in a “locally situated form of knowledge” (Antweiler 2004) that is similar to the *metîs* (Scott 1998).

The planning approach used by KMB people is based on their reflections on their previous experiences and understanding of the history of floods in their area. They do not use that knowledge to formulate a long-term solution. The locally embedded adaptation planning of KMB is not preceded by a participatory process but is conducted by the construction of inter-subjective meaning (Schütz 1967), which is intentionally shared in habitual actions (Berger and Luckmann 1967). The locally embedded adaptation planning in KMB also showed that the adoption of Schütz’s *lifeworld*, which elucidates the institutionalization of planning for a personal good, begins with the inner experiences of the people involved in the planning process. The *lifeworld* analysis revealed the institutionalization of adaptation planning in social construction because the *lifeworld* provides the context for and the domain of adaptation planning.

The KMB people used informal community events, such as *maghrib* talk, *kerja bakti* and *arisan* to transmit planning ideas or implementations. In the process of locally embedded adaptation planning, they used trial-and-error methods to actualize their locally situated knowledge. The lessons learned from previous floods were an important source. They did not realize that they had conducted a planning process, but they understood the steps used to design their evacuation plan, their house arrangements, and neighborhood infrastructure.

Living with floods required locally embedded adaptation planning that should be understood as the real world of KMB people. They used locally situated knowledge (Antweiler 2004) that was formed through the exchange of habitualized adaptation practices to mitigate the effects of flooding, and modify their houses and neighborhood infrastructure. The institutionalization of locally embedded adaptation planning of KMB will be discussed in the following chapter.
8 Institutionalization and Reification of Locally Embedded Adaptation Planning

‘Our people seldom read...and write even less’ (Konedi, Secretary of KMB)

In their locally embedded adaptation planning (LEAP), the KMB people have institutionalized the plan of living with the floods that occur in their neighborhood. This chapter discusses how they share these plans; establish “a rule of the game” in adapting to the flood; define their roles; develop control mechanisms; and reify the meaning as part of an institutional order. The social world is the arena where the function, practices, and repetition of the planning are decided. It is important to understand the KMB people as a typical of the kampung people in Jakarta. They are urban migrants who work in informal sectors and live in informal settlements, but they still practice their village traditions. Even though kampung have a symbiotic mutualism with the city, kampung people are different from urban people. The kampung people tend to think and act more covertly than other urban dwellers do. This informality also applies to KMB people in their everyday lives and in adapting to floods. Therefore, the reification of LEAP cannot be separated from the kampung as a community organization that is socially constructed by its residents.

8.1 Institutionalizing Locally Embedded Adaptation Planning in KMB

By using the chronological stepwise approach of institutionalization processes, which Peter Berger and Thomas Luckmann assessed in The Social Construction of Reality: A Treatise in The Sociology of Knowledge (1967), I describe the objective meaning of living with floods as the locally embedded adaptation planning. This objectivation occurs because reality is an inter-subjective interpretation:

Everyday life presents itself as a reality interpreted by men and subjectively meaningful to them as a coherent world... [It] is a world that originates in their thoughts and actions, and is maintained as real by these. Before turning to our main task, we must, therefore, attempt to clarify the foundation of knowledge in everyday life, to wit, the objectivation of subjective processes (and meanings) by which the intersubjective common sense world is constructed. (Berger and Luckmann 1967, 19–20).

The previous chapter showed that reflective practice based on lived experiences shifted the focus of adaptation planning from evacuating to staying on the roof, from protecting the house to converting the space during floods, and from blocking the drains to filtering the garbage. Such changes resulted from inter-subjectively shared reflective practices. These changes were developed in the course of informal social gatherings. These
events were the main forums for the reciprocal typification of LEAP by KMB people. In the following section, I explain the construction of three cases of LEAP: typification, institutionalization, legitimation, and reification.

**House Management Plan**

Outside the flood season, house management plans are shared among the women in each neighborhood association in KMB. They usually talk about their furniture or the condition of their rooms. During floods, they usually talk about how messy their houses are and what they did. The houses in the mouth of the alley tend to stay flooded longer than houses in the middle or at the end. After the flood, they talk mainly about how they repaired the damage and what should they modify their preparations for the next flood. Based on a FGD in RT 7, I observed that they discussed what Ibu Ipeh, one of the participants, did to store her kitchen equipment.

The KMB people, especially the women, used LEAP as the “company of their operating procedures” in adapting to floods. The women carried out a house management plan. It was practiced repeatedly, and it reflected how they and their tenants adapted to the KMB environment by modifying their rooms:

Living permanently in KMB is not cheap because we have to build at least a two-floor house like most residents here. Emptying a ground floor for floodwater is a model of all KMB house... [In the future], if I have enough money, I will build my house like that. (Nasir, interview with the Author, RT 20, 12 October 2012).

The habitualization of this house management plan compelled the KMB people to be innovative and critical. For instance, they added a ladder to reach the second floor (see section 7.1) They discussed whether to use iron or wood, whether the position of the ladder should be inside or outside the house, the number of stairs to install, and whether they should use odd or even numbers. The plan could be modified because the residents came from different cultures and understood floods differently. By having access to many examples in the KMB’s houses, the KMB people optimized the functionality of their rooms. Hence, institutionalization had already occurred. Berger and Luckman asserted, “institutionalization occurs whenever there is a reciprocal typification of habitualized actions by types of actors” (Berger and Luckmann 1967, 54).

Having storage facilities on the upper floor or hanging on the wall of the ground floor allowed them to feel safer and worry less about regular floods. Because they benefited from this plan, it is not surprising that they adopted it and recommended it to their friends. I observed these plans being discussed in arisan, warung talks, or in sidewalk chats (see section 3.2). Even though the topic was not always about this plan, many participants raised this issue, especially when they saw it on television during the rainy season.
I observed that, although the arisan was often combined with pengajian (Al-quran reading), the housewives discussed their everyday lives before and after pengajian. They also talked with each other after returning from the market in the morning or in the afternoon after bathing time. I often observed them talking about the inundation and the acceptance of logistical support. I also often observed groups of men talking in warung and on the sidewalks in the morning before they went to work and at night after dinner. They talked about the news and about problems in the neighborhood. There were several conversations about the flood, such as the inundated road in front of the fishery port, the condition of their houses and the mosque, and evacuation roads.

Because KMB people have informal social events, the information pipeline is informal. The secretariat of the KMB had administrative functions and facilitated social relations among heads of RTs, religious figures, and CSO leaders. They often used the secretariat to discuss strategic issues. This circumstance allowed the continuous transmission of knowledge. KMB people used both forums to socialize and internalize problems and solutions. Using part of the house for storage had become a rule of thumb for KMB people. However, there was no penalty for not doing so. They knew that the people were responsible for their own decisions:

For your own good, I think [we] must have upper floor for keeping our equipment out of flood. Here, building two-floor [house] seems like a must. Many of us did just like that. If not, your furniture equipment would be easier to be broken. (Cicih, interview with the author, RT 15, 18 October 2012)

Therefore, everyone who built a house in KMB must have a storage room. The reification of this plan occurred through intensive social association. Whenever a house was built, either the head of the RT or the closest neighbors recommended safe storage facilities in case of flooding. For Agus, the head of RT 15 and the son of the former head of RT 15, this precaution was embedded in his knowledge and that of his neighbors. As a second generation of residents in the KMB area, he reified the house management because he had already experienced the advantage of having storage facilities:

For new people, if they want to build a house, they must think about using their second floor during a flood ... So, they would not be rushed when time comes... For people who live here, they knew already...it’s automatic...it is inside their head [smiling and pointing to his head]... therefore, new people should ask the old residents here. (Agus’s statement in the FGD in RT 15)

**Evacuation Plan**

In flood evacuation, KMB people used the planned (table 7.1) scenario of facing a flood situation. The heads of the RTs institutionalized the scenario during floods because they taught their neighbors what to do. KMB people were more inclined to listen to the RT than to the rescue team or another organization. Staying on the roof is the best option based
on their experience. The success stories about people who stayed on the roof have influenced the formulation of the scenario plan. Consequently, they considered it guidance in taking an action during flooding time. They did it automatically. The heads of RTs have no difficulties convincing people to follow the scenario because the plan has been internalized.

The advice to stay on the roof was not only widely transmitted within the neighborhood association but throughout the kampong. According to Konedy, “This is [refer to staying in the roof] how we adapt to the flood situations” (Konedy, interview with the author, 12 December 2012). He emphasized that KMB people preferred to stay until the flood reached their second floor. The enactment of this knowledge was confirmed by Andre and his friends, who are volunteers with the Palang Merah Indonesia (Indonesian Red Cross). I interviewed them on 18 January 18 2013 (the second day of the January flood). He asserted that the behavior of KMB people in staying on the roof was well known by most donor agencies.

We already know their choices... but we keep persuading them to evacuate in order to avoid the other potential severity. We always do our best, but they insist on staying... We just run the emergency response procedure for their own good. (Interview with the author, January 18, 2013)

The media reported that people were staying on their roofs during the January 2013 flood. At that time, online media reported that even though some KMB people chose to evacuate, many remained in the settlement. For example (see figure 8.1), on January 2013, Media Indonesia reported that “thousands of people of Waduk Pluit26 refused to be evacuated.” Pos Kota, the local newspaper, also reported that government staff and army had always persuaded local people to evacuate (Ilham 2013). Therefore, staying on the roof has been reified and by the KMB people.

When I was there on the second day, some neighborhoods on the north side, such as RTs 15, 20, 21, 7, and 13 were flooded by water that was more than 1.5 meters deep. Therefore, the residents took shelter in bus stations, police stations, the main mosque, and an elementary school. According to the data gathered in my interviews, men brought their wives and children to the shelters, which were less flooded than their homes. The men told me that they went back to sit on their dry roofs until the waters receded.

26 Waduk Pluit is a big reservoir in the west KMB. The word sometimes is used to describe the surrounding community, including KMB people who live in RT 19, 12, and 21.
However, some groups too took the bus out of KMB; the bus was parked in the main toll road, just 500 meters from the mouth of KMB road. The private buses were lined up while their drivers shouted for passengers, most of whom were renters in KMB. When I asked several of them where they were going, they said that they were headed back to their hometowns, such as in Banten area (two hours away), central Java (four hours away), or west Java (two hours away). They were leaving because they had no valuable possessions, and they were seasonal migrants in Jakarta.

Therefore, based on my observations and interviews during the five-day flood, the permanent residents of the KMB were more compliant with the plan than the renters were. There were no sanctions for those who did not follow the plan, but they did not receive assistance when it arrived.

If you live here, it’s better to do whatever the heads of the RTs and your neighbors who have been here the longest. They know this area well...they know how the things are run.... If head of RT does not know you, we are not responsible if anything bad happens. (Interview with the author, Gustara, 21 June 2012)

Another plan

Another example is the 2007 flood when KMB people built the sea dyke. Sandbags have been used to build a sea dyke since the flood in the early 2000s. Damin, a resident of...
RT 15, said that he used sandbags to protect the front of his house. He said that in every flood, his neighbors pile sandbags, and that his uncle had asked him to buy rice sacks in the morning market. Therefore, during the 2007 flood, he remembered to use them. At that time, because of the scale of the flood, most KMB people helped build the sand dykes. Hence, the use of sandbags was familiar. Even the provision of rice sacks was coordinated by the Head of the RW, and they were distributed by the heads of the RTs. According to him, this is common in the rainy season; many sacks are available in the market, and street vendors sell them (Field note, June 2012).

These planning initiatives also show that the KMB dwellers had informally and spontaneously organized the planning process (see table 8.1). At the individual level, the adapters used informal sources, such as learning from colleagues, in their individual planning. At the family and household level, the housewife had several optional sources of knowledge, which included family or conversations with her neighbors. At the neighborhood level, the heads of the RTs usually initiated the planning process but informally though warung chitchat, pengajian in houses, arisan, or RT meetings. At the kampung level, the secretary of the KMB discussed the solutions that involved the neighboring RTs through an informal kampung meeting.

Table 8.1 The multi-level institutionalization process

<table>
<thead>
<tr>
<th>Factors/ Level</th>
<th>Individual</th>
<th>Family</th>
<th>Neighbourhood</th>
<th>Kampung</th>
</tr>
</thead>
<tbody>
<tr>
<td>Method(s)</td>
<td>Self-reflective practice</td>
<td>Sharing time</td>
<td>Inter-shared meaning</td>
<td>Informally organized meeting</td>
</tr>
<tr>
<td>Substance(s)</td>
<td>Alternative livelihood</td>
<td>Houseroom management</td>
<td>Evacuation and shelters</td>
<td>Flood emergence response</td>
</tr>
<tr>
<td>Local actor(s)</td>
<td>Adapted people</td>
<td>Adaptive housewife</td>
<td>Head of RT</td>
<td>Secretary of KMB</td>
</tr>
<tr>
<td>Main role</td>
<td>Planning maker</td>
<td>Planning maker</td>
<td>Advisor and social mobilizer</td>
<td>Facilitator to the Kelurahan office</td>
</tr>
<tr>
<td>Planning media</td>
<td>Private event</td>
<td>Daily interaction</td>
<td>Warung chitchat, alley talk, etc.</td>
<td>Pengajian, RW meeting, etc.</td>
</tr>
</tbody>
</table>

Source: the author

There were no specific meeting agenda, no written invitation, no precise time to open or close the meeting, and no minutes of the meeting. When I asked why they did not formalize the meeting, they smiled, and one participant simply said: “We like this way....” The secretary of KMB claimed that KMB people are accustomed to listen and talk, not read and write. I observed the same behavior in group discussions held in RT 7 and RT 15. The KMB dwellers have established an informal way of operating the planning process. Therefore, the informal spaces of planning are constituted by the lifeworld of the KMB dwellers. Ananya Roy stated, “engagement with informality is in many ways quite difficult for planners” (Roy 2005).
8.2 The role of Adapters as Informal Planners

The informal planners in KMB are adapters who reflect on their experiences and those of their predecessors to make and enact plans before, during, and/or after flood events at different levels of the operational zone. At the community level, the heads of the neighborhood associations are informal planners, which is significant because they offer advice to families on adaptation planning. The KMB case study also showed that they preferred to use the existing forum to present or exchange planning ideas instead of holding special events.

The role of informal planners depended on where they operated, but it was limited by time and space. From the individual zone to the family zone, they tended to be resources for family or colleagues in providing the best practices for adapting houses and livelihoods. The informal planners liaised with other KMB stakeholders, such as company owners, harbor administrators, and the city government. They promoted planning idea at the kampung level. Therefore, I will now discuss the roles of informal planners for individuals, households, neighborhoods, and the kampung.

As stated in chapter 6, adapters used self-reflective practices in making an adaptation plan to improve their livelihood during a five-day flood. Even more at individual level, Fendi, who grew up in RT 16, earned money during the floods. He said that furniture and plastic materials floated around the neighborhood. In the first flood, he collected two rice sacks of plastic bottles. In the next flood, he persuaded his two friends to build a cart from debris. In addition to collecting plastic bottles, they used it to transport people (figure 8.2). Fendi’s experiences showed that he could learn from experience and generate income without having formal knowledge. He framed the flood not as a problem, but as a potential source of income. He honed his ideas to create income from the flood, improve the performance of his carts, and enact the same procedure with his friends. By using their practical knowledge, he and his friends profited from the floods. What Fendi and the others did is actually a planning process using knowing-in-action. Schön (1982) stated that the theory-in-use is embedded in the logic of actions. James Scott also refers to this unwritten planning knowledge as metis in his book, Seeing Like a State.
At the household level, during a flood, family members often discussed the self-reflective adaptation practices that they or their neighbors have already applied. It was common knowledge that the worst flood is the benchmark for house management. The women were the resource people since they had the greatest number of stories. The meaning shared among the family members was used as a reference for the next flood. As in other kampungs in Indonesia, women took care of the household equipment. Since they adapted when flood comes, they knew better how to manage their houses. They learned to do better from their previous experiences, thus following the triple-loop learning process. Therefore, they showed intuitive planning that allowed them to adapt easily to the floods.

An example at the neighborhood level shows the evacuation planning process. For instance, in RT 7, there is a common understanding that when the water reaches chest height, the people of RT 7 will move into a two-story house. This is not the plan suggested by the local government and NGOs. People were required and trained to run to the shelters that had been decided as the logistic center, but most of them never did. Their evacuation plan reflected lessons learned from earlier floods. Unfortunately, they never mapped or
wrote down the plan. They preferred to talk it over because they thought that reading and writing were not the habitual actions of KMB people.

At the kampung level, they built a footpath on the permanently inundated road on Perindustrian Street. This path enabled KMB people to enter and leave their neighborhood, especially from RT 15 to RT 20. However, because the government and industrial companies had never helped them to build the road, the residents did it themselves. They started to discuss it with Agus, the head of RT 15 in a maghrib. He insisted that they raise the inundated road to facilitate the movement of the residents. After two or three talks, they asked the head of KMB to solve this problem. The head of KMB tried to discuss it with the companies and industries on the harbor, but failed. Then they decided to use beach sand and a sand fortress to make a footpath, and they asked the residents to help with the construction. As mentioned in the previous section, they organized themselves to implement this small road development through the spirit of gotong royong.

Therefore, the role of the adapters as informal planners is very important in the transmission of knowledge. KMB people looked to the head of RTs as the informal planners because that person usually had more information and experiences related to the floods. I observed that most interviewees mentioned the head of the RT when I asked who their resource person was during a flood. The heads of RTs also facilitate communication between households and the kampung secretariat. However, other resource people included Konedi at the kampung level, Bu Maskuni at the household level, and Fendi at the individual level. They preferred to share their knowledge personally with neighbors and friends. When the plan was workable and useful, the others applied it to their own houses.

In contrast to formal planners who make a sophisticated plan in order to convince the community, informal planners develop such plans in their everyday lives. This is an embedded process instead of a project-based activity. The informal planners use social events to share their plans and with their followers. Since it is a reciprocal process, the planning knowledge that comes from the informal planners is not exclusively separated with their followers” realm. It is a locally situated form and forming process. Therefore, the control resides in the community, whose members have the same rights to evaluate or modify the plan. The control mechanism is embodied in their informal social events, and it depends on the initiatives taken by the people.

8.3 Institutionalizing Locally Embedded Adaptation Planning on the City Level

Although many cities have developed a flood infrastructure (e.g. sea dyke, canals, and water gate and a flood warning system) to protect the living place, numerous scholars emphasize the importance of the human dimension in urban resilience, particularly on the
poor. Participatory planning is clearly perceived as a tool capable of recognizing the presence of and absorbing the input from the community. Less clear is the role of the urban poor in using their own resources to make their settlement resilient. It is often unobserved since their planning knowledge is tacit and they are unfamiliar with the formal planning process. Therefore, the ownership of the planning process needs to be addressed (AKP 2013).

Ownership has a significant role in institutionalizing the plan. In the urban context, the literature shows that participatory planning is imperative in building systemic resilience to climate change (UNFCCC, 2009) because it will make sure the local aspiration considered and meet the requirements of vulnerable groups (UNU-EHS, 2011). It is driven by community with respond to location-specific needs (UNDP, 2010) and use the shared learning dialogue (Tyler et al., 2010). The literature implies that the participatory planning model is a suitable framework for the incorporation of local knowledge.

Some international organizations have developed a community toolkit to facilitate the adaptation planning process, such as a CBA (community-based adaptation) toolkit (CARE, 2010), a CRisTAL (community-based risk screening for adaptation and livelihood) user manual (IUCN et al. 2012), CoBRA (community-based resilience assessment) guideline (UNDP 2013), a guidebook of adaptation to the coastal climate change for development planners (USAID 2009), and an Adaptation Planning Handbook by Canadian Institute of Planners (CIP 2011). Planning knowledge is still driven by technically procedural planning, is oriented to the degree of vulnerability of the place, and depends on the competence of professional planners.

Planning debates adopting a people- or place-based approach are widespread. In adaptation to climate-related disaster, most studies have taken a place-based approach, derived from the notion of vulnerable place. The discourse on people-based approach still lacks empirical evidence; "the planning is a self-conscious universal human activity that involves the consideration of outcomes before choosing amongst alternatives" (AICP, 2013). The poor are the most vulnerable to disaster comes since they are located in the least safe areas and lack resources (Satterthwaite, 2007). Community-based planning should have a role in development (Stiftel, 2000). Jan Gehl (2011) addressed the importance of shifting the planning paradigm to the personal scale. He suggested that transportation planners should look at the problem of the citizens’ need not the cars.

Therefore, the integration of the human dimension into the building of resilience requires a different perspective on planning. The resilience planning that is driven by local people needs to be examined. The Commission on Climate Change and Development (CCCD) recommends encouraging local adaptation strategies, such as the point of departure for engagement; learning from past experiences; the development of adaptive
capacity by the people; the promotion of locally owned capacity; the prescription on diverse solution; the promotion of ecosystem services; and the provision of public funding support for the poorest (Christoplos et al., 2009).

However, the planners” perception on the role of urban poor is that are only gatekeepers, participants, or contributors. They are seldom regarded as having their own planning knowledge. This research discovered that the KMB possesses knowledge of locally embedded planning. Extensive flood experiences provide a lesson learnt through self-reflective practices. The triple-loop learning cycle facilitates the transformation of KMB people from know nothing to plan something, such as experienced by Fendi, Agus, or Konedi (see figure 8.3). They could take a role as a planner when the situation needs them to do so. Identifying the type of people who has typical knowledge is very important in institutionalizing the adaptation plan. Because, in fact, they have already initiated the planning process and adapt to the environmental changes, particularly in debating and selecting the best way to adapt their settlement to the flood.

![Figure 8.3 Transformation process from vulnerable to adaptation planners](image)

**Figure 8.3 Transformation process from vulnerable to adaptation planners**

In the context of building resilience, some economists believe that urban poor are vulnerable. However, not all vulnerable are poor in terms of social capital. Moser argued that “individuals in poor communities often have a great deal of social capital: informal reciprocal relationships between individuals and families...such as community organizations” (Moser, 1998). Martin-Breen and Anderies (2011) added that:

The poor are not helpless; that is, they already organize to build resilience. Provision of only direct solutions to poverty—building new housing, providing employment, health care services—may indeed reduce adversity, and even move someone out of poverty, but they do not necessarily build resilience; it may even erode the existing resources that contribute to it... (Martin-Breen and Anderies, 2011:28)
“The capabilities of the poor population to use their resources to reduce their vulnerability” (Moser, 1998:14) needs to be addressed by urban institutions. However, only few cities have a policy framework that enables endogenous knowledge of resilience, such as owned by urban poor, to grow. Since these settlements are located in a flood-prone area, consist of temporary buildings in an irregular pattern, and lack a basic infrastructure, the municipality cannot always support the poor communities in adapting to the flood. Therefore, building urban resilience needs to consider the existing or endogenous sources of resilience.

The levels of planning discussed in the previous section show that the lifeworld of flood-affected people has shaped their planning way. Alfred Schütz states that the individual’s lifeworld depends on and is determined by his or her position in time and space (Schütz, 1967). From the individual to the kampung level, no provision in those planning processes is provided to move them from the flood-prone area or relocate them to safer places. When I apply the lifeworld analysis, I see that living with floods is an aggregate of what KMB people know about flood. It is not a reactive emotion of KMB people, but a reciprocal meaning that constitutes after the long reflection on the adaptation options that they have taken.

The lifeworld analysis also helps identify the reciprocity of women and men in the social events of KMB. The social world of KMB people is the domain for planning. The presence of adapters, who can survive and even benefit from the floods, is central in the production of planning knowledge on adapting to floods. For example, staying on the roof is knowledge that resulted from the shared meaning of reflected experiences. According to Agus, the head of RT 15, this knowledge is perceived differently depending in a person’s familiarity with it. He knows what he does with staying on the roof because he has a scenario to survive and escape if the flood reaches the ceiling. He argues that the lifeboat and any logistics will be easier to reach from a roof. It is a designated plan. He realizes that this knowledge has been socially distributed, but still depends on the people themselves. Some people may know, but if they see it was not relevant to them, they do not stay. The others probably do not know at all because they do not care (Field note, January 2013).

The other example is the knowledge of adding a ladder to two-floor houses. Kadir, the Head of RT 7, reminds people who add a second floor to put the ladder in front of the house where it is easier to reach, not inside. Several accidents occurred because of the small size of the house. It thus becomes more dangerous for people to bring their belongings back and forth during flood time. However, he also told me that not everyone follow his advice because they think it is not relevant for their cases, but most of their neighbors have applied this knowledge (Interview with the author, 22 June 2012).

The knowledge of plastic bottle collection during floods is another example of people emulating each other. As told by Fendi, the idea of collecting plastic bottles came from the
collection of someone when flood in 2007. He saw a 1 x 2 meters net that installed in front of Gang 1 (alley) to catch the garbage that brought by flood. He just memorized the feature of the net without asking the installer how to make it. He thus followed and developed further the net by making a capturing net in a 30 centimeters diameter hole. He made a used-wood grip to hold the net, like a tennis racket. He sat on a dry place in front of the mosque, but sometimes waded into the water to catch plastic bottles. Two of his friends copied him; they earned money from the severe flood (Interview with author, 28 January 2013).

Those cases support Berger and Luckman’s claim that knowledge in everyday life is socially distributed, possessed in different ways by different individuals and by different types of people. It depends on the sum of the individual lifeworlds (Oberkircher and Hornidge, 2011). Therefore, the institutionalization of the locally embedded adaptation planning is more effective because the plan uses the language that originates in and has primary references to everyday life in the KMB.

The effectiveness of the LEAP’s institutionalization can be also proven by considering the ignorance of KMB people regarding the formal plans and policies made by government and NGOs. Clearly, these planning processes and outputs are not congruent with the realm of kampung dwellers. For example, the relocation planning of 7,000 households in the Pluit lakeside, including KMB dwellers, to new flats that would be built on 8.3 hectares in the KMB did not suit the preferences of the KMB people. The KMB dwellers’ preferences were different from the government’s plans (Jordan 2013). The other examples are the differing responses to the floods. As explained in chapter 7, the KMB dwellers preferred to wait out the flood on their roofs and not go to government shelters. They also used their own modest means to evacuate when necessary. Both responses showed that the domain of government planning did not recognize the adaptation pathway that had already been planned by KMB dwellers and was constituted in their community.

The government of DKI Jakarta province has attempted to integrate kampung into the city development as follows: 1) administering kampung as a part of community services unit; 2) establishing rembuk RW27 or kampung meetings as the first tier of the development planning process; and 3) providing financial assistance for the heads of RWs and RTs in order to strengthen government services. Through the annual rembuk RW (see figure 8.4), the government applies a bottom-up form of development.

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27 According to Bappeda DKI Jakarta (2013), Rembuk RW is the community consultation meeting at the RW level held to identify problems, needs, and the activities in order to solve problems based on priorities that should be formulated together. Previously, the head of the RW was a kelurahan representative at community consultation meetings. Since 2013, the consultation meeting has been conducted at the RW level.
**Figure 8.4 The position of Rembuk RW in the planning system of Jakarta**

Source: Bappeda DKI Jakarta (2013), translated by the author

*Rembuk RW* is a forum for *kampung* people to inquire about facilities, infrastructure, or any other support that they need from the government. The list of inquiries is submitted and discussed at *kelurahan* and *kecamatan* based on the scale of the program and the technical department based on the type of program. These offices select the program and propose it to the musyawarah perencanaan pembangunan (*musrenbang*) (development planning forum) at the provincial level. The selected program is implemented in the next fiscal year.

I observed the *Rembuk RW* 17 on 11 January 2013. I found that the consultation meeting resembled a one-sided conversation. The facilitators from Kelurahan dominated the meeting by introducing a new glossary and practical information about *Rembuk RW*. The program ran from about 7:00 p.m. until 8:30 p.m. It was attended by 20 heads of RTs and three employees of the KMB secretariat. The head of KMB opened the meeting, followed by instructions from the *kelurahan*'s staff. Afterward, the meeting participants asked questions, and the meeting closed. However, at the beginning, the situation was formal, but after the opening speech, the meeting became more casual and the attendees stopped paying attention (see figure 8.5). Only three questions were asked, and these did not seem relevant to the meeting. The people at the meeting did not seem to take the *Rembuk RW* seriously.
There are many hurdles to bridging these two worlds. One is that there was no meeting agenda. Two days before the meeting, in my conversation with Konedi, the secretary of KMB, I suggested that he propose the flood preparation to be on agenda of Rembuk RW, considering that it was January. He agreed and then proposed the flood issue to the floor. However, the kelurahan’s staff, who was the facilitator, did not agree to focus on the flood preparation. He insisted on showing how to fill out the form of Rembuk RW as shown in figure 8.2.

### Problem Identification at RT level

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Stated at Jakarta, …………….2014
Head of RT

(…………………….)

### Figure 8.5 Rembuk RW 17 on 11 January 2013, photo taken by the Author

### Figure 8.6 Form of Rembuk RW

Source: Bappeda, 2013, translated by the author
There was also a technical problem. As shown in figure 8.6, the *kampung* people were asked to provide the volume (column 6) of and the unit cost (column 7) of their proposed solutions. This format seemed to make it easier for the government to compile all programs from the neighborhood at the provincial level, but it would also limit the options to physical solutions. As a result, the KMB people complained that they did not know how to measure and calculate the volume or standardize the unit cost of their solution. They also struggled to understand the terminology used and to follow the framed format to input their aspirations. They did not understand the formal discussion of Rembuk RW.

However, they still filled the form of Rembuk RW, except the columns of volume and standards. When I asked Konedi, who collected the lists from the heads of RTs, he admitted that he also could not fill both columns because he also did not know how to calculate the volume or the unit costs of the solution. Consequently, he did not compile the forms of RTs into a single recapitulation form. He just gathered the papers into one envelope and submitted them to the Kelurahan office.

According to Konedy, the secretary of KMB, Rembuk RW is a formality, not a solution. The questions he asked had not been considered in the replies from the kelurahan office. For example, he requested a garbage wagon. He has already mentioned that he needed a smaller wagon because of the narrow alleys in the settlement, but they sent big wagons. Therefore, the garbage wagons were left at the mouths of the alleys, which created the new problem that the garbage collectors were late. Another example is the request for tools to handle flood emergencies. He had made several requests for equipment such as lifeboats, big rope, lifejackets, and power supplies (genset). However, he has never received what he believes that KMB needs to prepare for the floods (Interview with the author, 24 January 2013)

The head of KMB and most of the heads of RTs did not trust the Rembuk RW to meet their needs. The programs that they suggested in one year were not implemented in the next year. There were always changes or delays. There is no common planning language between KMB and the government. However, if a big flood occurs, the secretariat of KMB always coordinates with the kelurahan office, Badan Penanggulangan Bencana Daerah (BPBD) (disaster management agency of Jakarta), the police office, and the Indonesian Red Cross. Many companies, NGOs, and other agencies offer support, but on an ad hoc basis.

The other difficulty in institutionalizing the government’s plan is the relocation program. The relocation plan does not consider the realm of KMB people. In one case, it was even at odds with the KMB people’s plan. For example, in 2007, because of the harbor expansion, PT Pelindo, the state-owned harbor company, moved some residents of RT 15 through a compensation scheme. Only some houses were relocated, and the rest, 50
houses or 120 households, refused to move because they had evidence of their land status. The relocation of those who had the land status is still pending. In 2010, PT. Pelindo built the barricade of rock gate as a sea dyke to protect the land from tidal floods and to separate PT. Pelindo’s land from the 50 houses of RT 15.

However, the people of RT 15 covertly made a body-size hole at the rock gate in case they had to escape from a fire or other disaster (see figure 8.4). According to Komaruddin, one of the elders in RT 15, claimed that PT. Pelindo tolerated it for humanitarian reasons. Because there had been no further construction, they tacitly used the hole as a back door. Some residents used the space for water storage, raising chickens or livestock, and visiting neighbors.

Extending the back yard is a social problem. When I joined a group discussion, I saw many signs of PT. Pelindo’s land across the backyard. According to Agus, Head of RT 15, those were outsiders who had started to build a temporary shelter and then built a house. Most of the people plan to live there. Therefore, KMB people always reject relocation plans even though some programs that were executed by the government. They do not understand the world that the government plans to build.

![Figure 8.3 The “back door” of the rock gate](image)

Source: the author (2012)

This unconnected world thus exacerbates the differences in planning between the government and KMB. Interaction between government and KMB has not occurred since the beginning of the planning process. KMB people believed that they could live with the shocks and stresses associated with floods. They insisted they could adapt. However, the government wants to relocate them. The result is a counterproductive plan.
The findings of the case study indicate that in order to institutionalize a planning product, the planners must understand the individuals’ *lifeworld* from the beginning of the project. This first step is imperative in understanding the inter-subjectively shared meaning in their social world. This meaning was already constituted, and they perceived it as reality. Planners then could develop a planning process that considered the language, interests, and relevance of the *kampung* people. This approach would address the problem of connecting planning to the reality of lived experience (Baum 1980).

### 8.4 Concluding Discussion: Unconnected Institutionalization Processes

In many cities in developing countries, including Jakarta, informality is embedded in urbanization. The notion of informality emerged in the 1970s. Many economists discussed the perspective of the informal sector in urban migration and employment. Nezar AlSayyad, professor of urban planning at the University of California-Berkeley, located the origin of urban informality in the literature of the 1970s in several studies, such as “State vs. Trade-service Sector”, “Wage-based vs. Traditional/underemployed Services”, and “Protected vs. Unprotected Labor Market” (Alsayyad 2004, 10). He argued that although urban informality does not simply relate to poverty or marginality, the informal sector, informal jobs, informal settlements, and informal markets are historically associated with poor communities. According to him, the linkage between informality and the poor was initially examined in relation to slums or squatter settlements, the shifting location of new informal settlements, and the gradual encroachment of public spaces. Thus, the role of informality may evolve depending on how it was constructed.

Informality has also been examined from the sociological perspective of institutions, such as North’s (1990) distinction between “formal rules” and “informal constraints” (cited in Hornidge 2011). Many scholars have used this distinction to distinguish formal from informal institutions. Formal institutions are characterized by legal regulations, designed products, explicit rules, and law-court enforcement, whereas informal institutions are non-legal or illegal, spontaneous, tacit, and peer sanctioned. However, according to Hodgson (2006), North’s distinction failed to explain the difference. Moreover, the distinction between formal and informal institutions does not merit examination because there are still linkages or dependencies between them. Therefore, it is more worthwhile to understand how institutions are formed and sustained than to compare them.

As a social construct, institutionalization takes place through "a reciprocal typification of habitualized actions" (Berger and Luckmann 1967, 54). Locally embedded adaptation planning is a socially constructed product that has been performed by KMB people for more than a decade. The adapters of KMB showed that they could produce adaptation planning
even without a formal knowledge of planning. They used the reflective practices based on their *lifeworld* as a flood-affected people who were also poor. Furthermore, they institutionalized locally embedded adaptation planning into everyday life and proved they could live with floods.

In contrast, informal institutions are embedded in the culture of a community. As discussed in chapter 2, the *kampung* can be interpreted as an example of the informality in Indonesian urban development because "urban informality cannot be separated... [f]rom certain area-studies discourse" (Roy 2005, 155). The role of the *kampung* people should be central in disaster risk management because they are the first to be affected. They know better than anyone does about the local potential and limitations in reducing their flood-related vulnerability.

As discussed in chapter 4, Jakarta’s response to frequent flooding is aligned with the evolving institutions of flood management. The changes in institutions are evident in the flood infrastructure planning process, which has evolved from a structured plan to a management plan, from local to global cooperation, and from controlling to utilizing floods for development. However, Jakarta still prioritizes flood mitigation through the development of infrastructure instead of community empowerment. In contrast, United Nation Department of Economic and Social Affair (UN DESA) (2003) has recognized the value of community-based forecasting systems in reducing loss of life and property. They also suggested using local empirical knowledge and increasing local capacities to reduce communal vulnerability to floods.

As explained in the previous chapter, the KMB people based their adaptation plans on their locally embedded knowledge, such as the road and sand fortress that used the modest materials that KMB people could access, the simple house management of raising the floor and installing hanging storage, and the shelter options in the evacuation plan. Therefore, I argue that the embeddedness of this planning knowledge is generated and consciously shared through spontaneous and informal events, such as incidental meetings, *warung* talk, *arisan*, sidewalk conversation, and *kerja bakti*. These events allow the residents of KMB to perform reciprocal typification of what they have performed in past floods. The events are learning centers that allow them to share adaptive practices. They attend the events as routine activities without having to know the outcome in advance. The social events are the means by which they live in KMB, including attaining the knowledge of adaptation planning.

The structure of the *lifeworld* is a domain that increases the adaptive capacity of KMB people (Ehlert 2012; Hornidge and Schotes 2011; Oberkicher and Hornidge 2011). The poor do not and cannot depend on economic power as a means of adapting to floods. They rely on their own experiences. The KMB people have shown that they can use the flood to
survive and even to earn an income. The repeated practices of how they choose escape routes, find shelters, build preventive facilities, and/organize neighborhood cooperation are ways of increasing their adaptive capacity. These repeated practices have transformed the people of KMB mentally and physically to accept floods as ordinary. The poor are not vulnerable if they can apply the stock of knowledge in their community to use in creating local innovation.

However, the institutionalization of locally embedded adaptation planning can not be extended to the city level. KMB has specific traditions that are situated and embedded in the *lifeworld* of its people (Huxley 2000). A different *lifeworld* caused the disconnection between the *kampung* plan and *kota* (city) plan. As argued by Habermas (1987), mutual understanding can be achieved only if the representatives are ready to withdraw from power and start a rational argument. The disconnectedness indicates that locally embedded adaptation planning can be similarly associated with covert planning (Beard 2002). However, in this case, instead of being driven by social justice, it is caused by different realms and the actors’ disconnected world. Moreover, KMB people still consider the government as part of their world and as potentially useful in providing facilities for adaptation. In other words, in contrast to Briassoulis’s claim that informal planning is not necessarily institutionalized, I contend that locally embedded adaptation planning can be combined with and institutionalized in the planning system but it needs a converter that can translate the different emerging languages into a common language that all sides can understand.
9 Vulnerability, Adaptation, and Planning: A Kampung Trilogy

Floods, which have struck coastal cities for decades in Southeast Asia force urban dwellers to adapt to the accompanying stresses and shocks. The historical relationship between the urban poor and floods has led to local knowledge of adaptation planning. In the debate regarding climate change adaptation or disaster risk reduction, scholars have recognized that knowledge of urban poor is the key factor in building the adaptive capacity of the city. Therefore, the practical knowledge of the urban poor in managing flood risk has to be included in the debate on adaptation planning. Based on the evidence and discussions in previous chapters, this chapter provides a synthesis of the institutionalization of locally embedded adaptation planning by the kampung people within the kampung of Jakarta.

My core argument is that the lifeworld of kampung people delineates their operational zone of planning and then produces a stock of knowledge for developing and managing their adaptation pathways. The interconnected meanings of vulnerability, adaptation, and planning constitute a trilogy of knowledge, which is generated from the lived experiences of kampung people when they reflect on their adaptation practices. Therefore, this thesis contributes to the ongoing debate on adaptation and managing flood risk on three levels. First, this research provides empirical evidence of the locally embedded adaptation planning practiced by the residents of Kampung Muara Baru (KMB). Second, it contributes to the discussion on adaptation planning and effective response strategies. Third, based on the findings of this research, it makes practical recommendations for including human elements to current planning policies and practices.

9.1 The Social World as a Domain of Locally Embedded Adaptation Planning

This thesis sheds light on the use of lifeworld theory in conducting adaptation planning. Thus, using a people-centered perspective, it clarifies the relationships among vulnerability, adaptation, and planning. As described in chapter 2, however, it is not clear how this approach could be applied to the adaptation planning process. In the discussion of climate change adaptation, the literature reflects the relational framework between adaptation and vulnerability. I have argued that the people-centered approach can differentiate the vulnerable from the adapters in locations that are vulnerable, whereas the other approach tends to categorize all residents in such locations as being vulnerable. Therefore, I focus on examining the adaptive capacities of people who have lived in
vulnerable circumstances for a long time in order to understand the “real” state of vulnerability and the differences between the vulnerable and the adapters.

I was attracted to investigate the lifeworld of flood-affected people in KMB by the interesting phenomenon that floods are not a deterrent to migration into the KMB area. Through this investigation, I first found that not all of the poor who live in this flood risk area are vulnerable and that not all of those who are vulnerable are helpless to the extent that residents living in the same building have different degrees of vulnerability. Second, the lived experience is a key factor in increasing the adaptive capacity of KMB people whether they are tenants or owners, males or females, octogenarians or schoolchildren, socially connected or isolated. It is based on the self-reflective practices of KMB people during the series of floods. These lived experiences have resulted in significant differences between people who are vulnerable and those who adapt. Third, the lifeworld of KMB people has constructed a perception of flooding that differs from that of natural science. From the scientific perspective, the flood is a hydro-meteorological disaster; big floods follow a five-year cycle and tidal floods have a 16.4-month cycle. Floods are caused by large amounts of rainfall and high spring tides, which the land cannot absorb. These conditions are exacerbated by improper land use, land subsidence, and poor drainage. In contrast, the people of KMB perceive floods as common and frequent events that inundate their homes and possessions. They have no idea of when a flood will occur or how bad it will be. They perceive floods as unpredictable. The lifeworld of KMB residents, who have lived with regular floods for years and who interact with other flood survivors, has changed the meaning of floods. It not only has influenced their definition of who is and who is not vulnerable but also has defined the state of vulnerability and the kind of adaptation pathway to be taken.

Based on the empirical findings of this research, the lifeworld analysis contributed to understanding the differences in identifying vulnerable people and defining an area at risk of flooding. As described in chapter 6, the flood experience is the main factor that distinguishes the vulnerable and the adapters. In a similar vein, Bengtsson et al. (2007) and Kuruppu and Liverman (2011) argued that vulnerability depends on the personal lives and daily interactions of social groups, individuals, and their “properties or stressors” (Cutter 1996, cited in Fekete 2010). Furthermore, the lifeworld analysis defined the spectrum from vulnerable to adapter, helping to identify the position of individuals in space and time (table 6.2). The lifeworld analysis revealed the realm of KMB people in perceiving floods and knowing flood-related vulnerability, which confirmed that the human dimension is an essential factor in measuring the vulnerability of a community.

Because vulnerability assessment is a part of adaptation planning, lifeworld analysis should be applied to the planning process. Based on three case studies of adaptation
planning in KMB, that is, scenario planning for evacuation, spatial planning for house management, and infrastructure planning for neighborhood facilities, the findings showed that the adaptation planning at the community level was reflected in the lived experiences of the affected people. The case of KMB demonstrated the use of the lifeworld in explaining the reasons for planning based on reflective practices. The lifeworld of these flood-affected people structured the zone of operation of their adaptation. Even though the operating zone of planning was characterized by short-term perspectives, a neighborhood scale, and a problem-solving orientation rather than long-term views, a city-scale, and a visionary-orientation, the KMB people have constructed their adaptation planning. Schön argued that planning could count on “the experiences (theory-in-use) that were embedded in the logic of the action” (cited in McDowell et al. 2007, 10).

Furthermore, the structure of the lifeworld of the KMB revealed that it continues to be a useful source in producing planning knowledge. As described in chapter 7, neighbors and predecessors must be reflected in defining subsequent or future adaptation practices. The planning approach of the KMB residents is based on their reflections on what they have done and how they have understood the historicity of floods in their area. Locally embedded adaptation planning in KMB does not use a participatory method but is a construction of “inter-subjective meaning” (Schütz 1967; Schütz and Luckmann 1973), which is intentionally shared by and among KMB people through their “habitualized actions” (Berger and Luckmann 1967), such as arisan, pengajian, and kerja bakti. This approach showed that in this research, the adoption of Schütz’s lifeworld elucidated the planning process on a personal level, which began with exploring the inner experiences of the planning process. Lifeworld analysis is a means of examining the institutionalization of adaptation planning in a social world because the lifeworld can provide the context and the domain of adaptation planning processes.

KMB residents shared their knowledge of adaptation planning by forming “a locally situated form of knowledge” (Antweiler 2004) and by not depicting the flood as the enemy. They made plans not to prevent or to cope with floods but instead to modify their houses and surroundings in order to mitigate their consequences. They realized that frequent floods and serial major floods have forced to shape their zones of operation in adaptation planning. Through the shared learning framed by the triple-loop learning cycle discussed in chapter 7 (figure 7.5), KMB residents transformed routine coping practices into an increased adaptive capacity. From reacting in the first loop, to corrected reframing actions in the second loop, and modifying adaptation plans in the third loop, the residents of KMB learned to live with floods, which constituted their locally embedded adaptation plan.

Individual reflections on their past adaptation practices produced the meaning of the collectively shared adaptation plan. This process took place informally in casual
conversations and get-togethers in KMB. Such events expedited the embeddedness of this knowledge in the realm of the KMB residents. Locally embedded adaptation planning is an authentic method for people who have no formal training in planning. Their self-taught planning knowledge reflects their practices.

Because they produced the knowledge themselves, it is more easily transmitted throughout the kampong. They acknowledged the plan by interpreting it based on reflections on their own experiences or those of others. They discussed the substance of the plan in order to arrive at a decision that affected all residents. Then they distributed assignments based on the recognition of the capacity and willingness of each resident. The verbal agreements to act on the plan were not written down because the parties preferred hearing to reading information. The plan was amorphous, flexible, and did not include sanctions. People who did not follow the agreement were ridiculed and treated with scorn and contempt. Therefore, the social world of KMB is a domain of the locally embedded adaptation planning.

9.2 Locally Embedded Adaptation Planning: A New Insight for Planning Debate

Based on the exploration and investigation of the practices of KMB residents, the institutionalization of locally embedded adaptation planning can be divided into six steps (see figure 9.1). This model connects the lifeworld, reflective practices, and institutionalization in an integrated planning cycle. This planning model not only addresses the problems that have been defined by the local people but also increases their ownership of the planning product. This model also enriches the incorporation of the lifeworld and reflective practices into their planning practices.

The first step is to identify the adapter as an informal planner who can facilitate the planning process. The process should be based on the locally habitualized actions of the community in practicing social activities. The adapter should be an individual who has extensive experience with floods. A recommended method of identifying the adapters is the lifeworld analysis. In adaptation planning for floods, the adapter is someone who has adapted to floods. As discussed in chapter 6, Schütz’s lifeworld is suitable because it reveals the structure of the lifeworld of flood-affected people in a way that is more personal than Habermas's lifeworld, which emphasizes communication.
The second step is to compile the precedents of any actions that have been practiced by the local people. Whether the action has succeeded or failed is irrelevant. This collection is important in determining the kind of framing that was produced in performing that action. Framing is important for determining the kind of solutions that are presented as options. As described in chapter seven, I recommend Schöns reflective-practices because they investigate the relation of theory-in-use and espoused theory in planning. In locally embedded adaptation planning, because the actors have no special training in planning, their practical knowledge is revealed.

The third step is to reveal and assess practical knowledge in the context of the sociology of knowledge. The conceptions of practical knowledge (e.g., experiential knowledge and locally situated knowledge) defined by Antweiler are useful in defining and categorizing the type of knowledge that is embedded in the realm of local people. In this research, the way in which KMB residents reflected on their adaptive practices and transmitted this knowledge to their neighbors and predecessors is a form of planning knowledge. The extent to which the projection resulted from the reflective practices depended on the structure of their lifeworld.

The fourth step is to facilitate a deliberative forum for discussing a social phenomenon in the community based on the traditions and habitualized actions of the local people. In this research, because the kampung is an informal settlement and the people have informal livelihoods, social events tend to be organized in a casual if not covert manner.
Planning is imposed on those social activities without a clear framework or schedule. It is highly recommended to avoid any program that moves the participants from their own habitualized actions, such as the community aspiration meetings organized in the participatory planning approach. As discussed in chapter 8, the advantage of using existing social events is that the participants can use their own language and communicate freely with each other.

The fifth step is to build a consensus based on the habitualized activities of the participants. In many informal settlements, such as kampung, the residents are not accustomed to reading documents or maps because they usually do not have the capacity to read them, and they already know their environment. Improving their technical capacity would take time, and it might never be applied or institutionalized because both media—texts and maps—do not represent who they are or what they know. In the KMB context, oral consensus is an effective means of mainstreaming and institutionalizing the locally embedded knowledge for the KMB residents. By using the heads of Rukun Tetangga (RTs), the research focuses the consensus-building process on a single point of reference.

The last step is to divide the assignment among the community members and set up a control system that ensures that the plan will be implemented. In line with this process, the objectives of the plan would be met because the people understand floods and know how to live with them. The members would rehearse the plan in advance in order to make it as relevant as possible to their own interests. The oral form of the plan thus would be embedded in the community members’ minds and then be applied in their adaptation planning.

The adaptation planning cycle that was generated by the practices of the KMB residents showed that their world is distant from the world of planners. The lack of resources and disconnection from formal institutions compelled them to concentrate on the world that is within their reach, which is the kampung. However, they still recognized that the governmental institutions in their world could help them to improve their adaptation infrastructure. The absence of the government or other formal institutions indicated that the locally embedded adaptation planning could be associated with covert planning (Beard 2002). However, in this case, I argue that instead of being driven by the need for social justice, locally embedded adaptation planning occurs because problems are perceived differently.

According to Gehl (2011), locally embedded adaptation planning uses an individual scale to examine problems. However, in planning, the practical knowledge of local people should be considered. In contrast to Gehl (2011), who suggested that planners and architects use the cognitive process in defining problems on a personal scale, this model uses lifeworld analysis to discover the lens used by common people who have experienced
the problems. Therefore, based on the findings of this research, I call for a better humanistic planning model in answer to Friedmann’s (2008) argument that planning needs to consider humanist philosophy. Planners should apply the LEAP model at the beginning of the planning project and subsequently strengthen the humanistic value in urban planning practices by using Gehl’s personal scale.

9.3 Contribution to Climate Change Adaptation

By developing this model of locally embedded adaptation planning, this research contributes to the discourse of adaptation planning, which far has been dominated by the climate-proofing and community-based approaches. These approaches have been predominant in both research and in practice, as discussed in chapter 4. The model of locally embedded adaptation planning provides an alternative to the predominant approaches to adaptation planning. It is worthwhile to discover the adaptation pathways of local people, especially those who have experienced a flood phenomenon.

This model also enriches the incorporation of the lifeworld and reflective practices into the ongoing debates of adaptation planning. As shown in table 9.1, this model is more suitable than the other two models of adaptation planning for use at the community level. By depending on the lived experiences of local people and their reflective practices, this model encourages local people to take the initiative in making their community self-reliant. Therefore, I suggest that urban adaptation planning should be an accumulative process of the locally embedded adaptation planning of urban communities.

Table 9.1 Typology of adaptation planning

<table>
<thead>
<tr>
<th>Elements of planning</th>
<th>Type 1 People-centered</th>
<th>Type 2 Community-based</th>
<th>Type 3 Climate-proofing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drivers/Actors</td>
<td>Predecessors and people who experienced the climate-related disaster</td>
<td>Facilitators of CSO/NGO in CCA, DRR, and/or sustainable development</td>
<td>City planners or professionals who have a competence on CCA and/or DRR</td>
</tr>
<tr>
<td>Goals</td>
<td>Adapting to the changing situation</td>
<td>Increasing adaptive capacity</td>
<td>Reducing the level of vulnerability</td>
</tr>
<tr>
<td>Data</td>
<td>Practical situated knowledge</td>
<td>Climatic and non-climatic data/information</td>
<td>Climatic and non-climatic data/information, and experts’ justification</td>
</tr>
<tr>
<td>Methods/Approaches</td>
<td>Inter-subjectively reflective practices planning</td>
<td>Participatory planning</td>
<td>Rational comprehensive planning</td>
</tr>
<tr>
<td>Types</td>
<td>Problem-solving</td>
<td>Prioritized actions</td>
<td>Systematic response</td>
</tr>
<tr>
<td>Level</td>
<td>Individual to community level</td>
<td>Community to sub-district level</td>
<td>District/city to national level</td>
</tr>
<tr>
<td>Source of knowledge</td>
<td>Lived experiences</td>
<td>Modules/guidance</td>
<td>Theories/practices</td>
</tr>
</tbody>
</table>

Source: the author
This model should be linked to the city level because successful adaptation requires cooperation among urban stakeholders. Coordinated management that involves diverse stakeholder groups (Sperling and Szekely 2005) could assist in preventing maladaptation across sectors or on different scales as well as in creating solutions that could benefit urban stakeholders. The presence of locally embedded adaptation planning as a product of vulnerable groups could contribute to effective adaptation planning at the city level. The model of locally embedded adaptation planning could provide suitable adaptation measures that serve the most vulnerable groups, meet their most urgent needs, and increase their resilience.

IPCC (2012) stated that the knowledge of adaptation planning is still evolving and no single approach should be recommended. The key principle is that adaptation planning offers development benefits in the short term and reduces vulnerabilities in the long term. Instead of examining the role of donors and NGOs in urban adaptation planning as described by Carmin et al. (2012), I recommend that we should look at the planning practices in the community. Urban adaptation planning is more than the integration of technical and local knowledge, in which the latter merely supplements the former. It should also be used to disseminate the planning knowledge that has existed in many communities. Based on the adaptation planning in KMB, the urban adaptation planning process would probably shift the general planning procedure from a single process to one that integrates the locally embedded adaptation planning.

According to AKP (2013), several key issues of adaptation planning need to be addressed: (i) multiple layers of stakeholders; (ii) ownership of the planning process; (iii) money matters; (iv) shifting time horizons. As discussed in chapter 4, NGOs that conduct community-planning projects in Jakarta, such as MCI, ACF, IAP, also face issues regarding the ownership of the planning process. The model of locally embedded adaptation planning could address the ownership question because the plan is based on the lifeworld of the flood-affected people and has been institutionalized through informal events that are suited to and reified in their way of life. If the government connected this model to urban adaptation planning, the sense of ownership would be stronger than a program that had been created only by planning experts.

The adapters take the role of planners because they have already done some planning, such as assessing the flood situation, providing adaptation options, and organizing cooperation in the neighborhood. In addition to involving or even directing the planning process, the adapters also act as transmitters in order to institutionalize the planning products. Since they are a part of the community, it would not be difficult to use the local language as the main communication tool. Therefore, adaptation planning not only depends
on the type of actor (Füssel 2007) but also on the lifeworld of the actor who is shaped by the intensity of lived experiences.

The triple-loop learning process demonstrated by the KMB residents also contributes to the discourse of integrating climate change adaptation into disaster risk management. In response to a specific disaster, the repeated coping strategy could be a source of adaptive capacity through the reflection process. It would shift the adaptation options of KMB residents in responding to the changing environment from reactive to anticipatory adaptation.

9.4 Contribution to Flood Management

As discussed in chapter 4, the findings of this research showed that the divergent worlds of adaptation planning prevent institutions from delivering solutions to flood management. The different realms of planning result in inefficient and ineffective adaptations and might even create additional problems. Climate proofing cannot solve the problems at the community level, and locally embedded planning is not conducted at the city level. NGO involvement through participatory planning also has failed to bring the different realms of experts and vulnerable groups to a common understanding. The realms continue to exist on different levels instead of being structurally connected within a single, integrated frame.

Community-based disaster management is the most effective response strategy in flood management. It is the missing link between the disaster response that is actually needed and the response that is provided. Community involvement in planning and implementing the adaptation would lead to sustainable solutions. Therefore, in order to prepare a community for disasters, the role of the community in the planning process needs to be formulated.

Planning for flood management that does take into account the local shifting meanings of flood risk has precipitated the reliance on informal planning approaches by the poor in the kampung community. KMB residents well understand that their living space is an informal and flood-prone area. This knowledge encourages them to take a self-reflective approach to assessing their flood-related vulnerability. They voluntarily share the assignments for managing the flood plain area without formal regulation or guidance. They informally share their ideas on house protection. Finally, they do not depend on the kampung leader to organize flood management, but they keep him informed about the measures that they take. The people of KMB produce and reproduce these structures of flood risk management by using casual manner as their way of life.

The way in which the people of KMB live with the flood is incompatible with the government’s flood management plan. The government has built the flood infrastructure to control the floods and reduce the flood risk. The zone of operation of KMB’s residents is not wide enough to encompass the government’s idea of flood control. They learn to live with
the floods by gradually refining previous plans. The informality of flood management in KMB is acceptable because it is derived from the lived experiences of the residents. In contrast to the formalization strategy, I suggest that these informal institutions be fully recognized by being placed on par with and linked seamlessly to formal planning institutions.

Building resilience can also incorporate locally embedded planning at the community level where the process of planning is derived from the lived experiences of local people. Although the urban poor are always cast as victims of environmental changes (e.g., floods), they still have an intangible asset that allows the adaptation pathways that they have already planned to flourish. The KMB case study demonstrated that the residents developed their plans for the short term, and they formulate goals that are more practical than the goal of procedural planning. This process occurs because their thinking and actions are spatially structured by the kampung area, socially constructed by the informal system, and temporally limited by their predecessors’ experiences. This *lifeworld* explicates their reachable world, which needs to be recognized before it can be connected to the bigger, different world of the city.

The institutionalization of locally embedded adaptation planning would be useful in disaster risk management at the community level. This research showed that KMB residents have engaged in flood risk management by using their local knowledge. According to UN DESA (2003), flood risk management consists of risk assessments, including potential flood hazards and vulnerability, in addition to flood plain management, which is assessed by structural and non-structural measurements. Similar to UN DESA (2003), based on reflective practices, KMB residents have practiced (i) understanding flood hazards based on the past experiences, (ii) assessing flood-related vulnerability based on inter-subjectively shared meaning, (iii) planning house management and neighborhood infrastructures, and (iv) managing evacuation from flooded areas.

Therefore, I conclude that flood management will remain ineffective if the planning knowledge of flood-affected people is not revealed and consolidated into official flood management practices. Flood management planning must take advantage of the practical knowledge of adaptation planning that is embedded in each community. The shifting focus in the adaptation planning process, from the merely climate-proofing approach to the locally embedded knowledge of vulnerable people, will connect the macro and micro perspectives of flood management. I argue that effective adaptation to floods cannot be institutionalized if there is only a single process of adaptation planning and if only experts are involved without considering the views of the real experts, that is, the *kampung* residents.
9.5 Implications for Planning Policies and Practices

Many KMB residents have succeeded in becoming adapters who have no interest in moving; some have even managed to benefit financially from the floods. They perceive the floods not as crises but as normal occurrences. When a flood occurs, they modify their houses and surroundings. They use trial and error to actualize their knowledge and use reflected practice in planning adaptation. The lessons learned from previous floods assist them in preparing for the next one through the refinement of their plans. They have demonstrated that they have planning knowledge in their own language; thus, they customize traditional social events, including *kerja bakti*, in order to transmit planning ideas to other community members. Therefore, the planning practices in KMB are informally organized, and they produce several informal planners based on their zones of operation. These informal planners play a significant role in building community resilience, especially by sharing lessons learned with colleagues and family members, by advocating evacuation and shelter plans in the neighborhood scale, and by managing the flood protection facilities at the kampung level. Therefore, they should be included in urban resilience planning.

In KMB, *kerja bakti* extends beyond inter-group cooperation among residents used to maintain social cohesion (Huber et al. 2004), “traditional institutions” (Wilhelm 2011), “collective activities” (Lont 2005, 42), or “duty work” (Perkasa and Hendytio 2003, 130). It is also a medium for the exchange of knowledge. The regularity of *kerja bakti* ensures the reciprocal knowledge sharing and thus structures the *lifeworld* of the individuals and institutions within the *kampung*. Therefore, the city government should understand and consider this phenomenon planning urban development.

According to Joko Widodo, a former governor of DKI Jakarta province and president of the Republic of Indonesia, Jakarta’s development should focus on improving the *kampung*. The first step is to understand the *lifeworld* of the *kampung* people. The next steps are to discover the locally embedded planning that has been institutionalized in the *kampung* and then to connect it to the city’s planning institutions. This research has shown that KMB residents have used reflective practices to plan their adaptation pathways according to their lived experiences the knowledge shared by their predecessors and neighbors. Even though this research is limited to the single case of the KMB, it could be used as a stepping-stone to further research on the applicability of this model of locally embedded adaptation planning to other *kampung* and/or gated communities in the cities and the rural communities of Indonesia.

The findings of the research suggest that the urban development planning system in Indonesia should provide an enabling environment for this type of planning. Locally embedded adaptation planning could be integrated with city planning through following several recommendations. First, the city government needs to evaluate the procedure of the
annual musrenbang (planning forum), which is held at various levels from the kampung to the city level. At the kampung level, the government should provide more time and open the floor to informal planners to disclose their locally embedded planning. Second, the cities need to discover a “plugged in” application that would compile the locally embedded planning of communities. This “plugged in software” would also enable the cities to extend the application of planning, to facilitate the addition new features in the planning process, and to reduce the uniform codification of planning. Third, the central government should review the planning regulations\(^\text{28}\) to support this plugged-in software in order to enable its use by different cities. This customization is imperative if the localities are to be included in the development of the cities. An interface model that suits the purpose or tastes of different urban communities would facilitate this collaboration.

With regard to planning practitioners, the findings of this research suggest that the community of planners needs to learn about the model of locally embedded adaptation planning because it can help them to address Baum’s (1980) critiques, in which he argued that planning practices are not always connected to the real world. Furthermore, adaptation involves human-environment interaction that should be examined as a social phenomenon. This phenomenon includes vulnerable people who experience floods and want to become adapters by learning from their experiences, their predecessors, and their surroundings. Triple-loop learning has transformed their adaptation pathways from being reactive to becoming anticipatory through reflective practices. Therefore, planners need to understand the lifeworld of the people with whom they interact through the model of locally embedded adaptation planning.

This research focuses only on the phenomenon of the informal settlement, which is likely irrelevant in formal urban settlements, such as gated communities and apartment complexes. Moreover, it does not reflect the characteristics of rural communities. The KMB is a plural community at an economic level that is similar to a rural community. However, the model of locally embedded adaptation planning has not yet been tested in mixed economic communities. Therefore, I recommend testing the model of locally embedded adaptation planning in different types of communities. Subsequently, it would be necessary to conduct additional research to develop a converter tool for implementing locally embedded adaptation planning in the planning cycle at the city level.

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\(^{28}\) Planning regulations in Indonesia are distributed among several ministries. In this case, at least four regulations are needed to create this plugged-in system: (i) Surat Edaran Bersama Menteri Negara Perencanaan Pembangunan Nasional/Kepala Bappenas dan Menteri Dalam Negeri Number 0008/M.PPN/01/2007 and 050/264A/SJ, 2007 regarding technical guidance of Musrenbang; (ii) Peraturan Kepala Badan Nasional Penanggulangan Bencana (Perka BNPB) Number 4, 2008 regarding technical guidance of disaster management planning; (iii) Peraturan Menteri Pekerjaan Umum Number 20, 2011 regarding the guidance of detailed spatial planning; and (iv) Peraturan Menteri Dalam Negeri (Permendagri) Number 66, 2007 regarding rural development.
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### APPENDIX 1 – Fieldwork Schedule in Jakarta

<table>
<thead>
<tr>
<th>No</th>
<th>Periods</th>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>01.04.2012-30.04.2012</td>
<td>Preparation: going to Jakarta, setting up host in Urban Studies Postgraduate Program UI, recruiting assistants, gaining research permission from DKI Jakarta Province; providing and testing list of questions in Indonesian terms</td>
</tr>
<tr>
<td>2</td>
<td>01.05.2012-22.06.2012</td>
<td>Secondary data gathering, preparing maps; interviewing Head of RW and planners; Conducting mental mapping activities and participant observation for 1nd and 2nd research question</td>
</tr>
<tr>
<td>3</td>
<td>22.06.2012-16.07.2012</td>
<td>Field observation; mental maps cross-checking; informal interview; key informant discussion; and group interviews for 2nd research questions</td>
</tr>
<tr>
<td>4</td>
<td>16.07.2012-16.08.2012</td>
<td>Participant observation excluding the political campaign, preparation, and election days (5-7 July)</td>
</tr>
<tr>
<td>5</td>
<td>16.08.2012-30.09.2012</td>
<td>Making data transcription; translating into English</td>
</tr>
<tr>
<td>6</td>
<td>01.10.2012-10.12.2012</td>
<td>Focus Group Discussions in 3 different RWs; story-telling and case study; in-depth interview for 3rd questions</td>
</tr>
<tr>
<td>7</td>
<td>12.12.2012-12.03.2013</td>
<td>Making data transcription and translating into English and conducting participant observation, if flood occurred, for cross-checking FGDs’ result</td>
</tr>
</tbody>
</table>
APPENDIX 2 - List of Secondary Data

1. Spatial Data

<table>
<thead>
<tr>
<th>No</th>
<th>Items</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Basic Map of North Jakarta</td>
<td>Bappeda DKI Jakarta</td>
</tr>
<tr>
<td>2</td>
<td>Land Use Map 1:5000</td>
<td>Dinas Tata Ruang DKI Jakarta</td>
</tr>
<tr>
<td>3</td>
<td>Spatial Plan of Jakarta (RTRW)</td>
<td>Bappeda DKI Jakarta</td>
</tr>
<tr>
<td>4</td>
<td>Detailed Spatial Plan of Sub-district of Penjaringan</td>
<td>Dinas Tata Ruang DKI Jakarta</td>
</tr>
<tr>
<td>5</td>
<td>Vulnerability Map of Jakarta due to sea level rise</td>
<td>BRKP</td>
</tr>
<tr>
<td></td>
<td>(based on USGS methods)</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Socio-economic Map of Jakarta</td>
<td>University of Indonesia</td>
</tr>
<tr>
<td>7</td>
<td>Flood Simulation Map</td>
<td>Institute Technology Bandung; World Bank Jakarta; University of Indonesia</td>
</tr>
<tr>
<td>8</td>
<td>Land Subsidence Map</td>
<td>Institute Technology Bandung</td>
</tr>
<tr>
<td>9</td>
<td>Risk Map of Jakarta</td>
<td>BNPB</td>
</tr>
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</table>

2. Statistical Data

<table>
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<tr>
<th>No</th>
<th>Items</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Penjaringan Sub-district in Numbers 2011</td>
<td>BPS DKI Jakarta</td>
</tr>
<tr>
<td>2</td>
<td>Number of Slums and Squatter area in Penjaringan sub-</td>
<td>Dinas Perumahan Jakarta</td>
</tr>
<tr>
<td></td>
<td>districts</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Number of Poor Household in Penjaringan sub-districts</td>
<td>Dinas Sosial DKI Jakarta</td>
</tr>
</tbody>
</table>

3. Reports

<table>
<thead>
<tr>
<th>No</th>
<th>Items</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Final Report, Spatial Planning RTRW 2011-2030</td>
<td>Bappeda DKI Jakarta</td>
</tr>
<tr>
<td>2</td>
<td>Final Report, Detailed Spatial Planning of Penjaringan</td>
<td>Dinas Perumahan Jakarta</td>
</tr>
<tr>
<td></td>
<td>Sub-district 2012-2032</td>
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</tr>
<tr>
<td>3</td>
<td>Final Report, Risk Map and Disaster Management Plan 2011</td>
<td>BNPB</td>
</tr>
<tr>
<td>4</td>
<td>Final Report Policy Dialogue of North Jakarta case</td>
<td>IAP</td>
</tr>
<tr>
<td></td>
<td>study 2011</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Final Report, Urban Poverty and Climate Change in</td>
<td>World Bank</td>
</tr>
<tr>
<td></td>
<td>Jakarta 2010</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Final Report, Jakarta Coastal Development Strategy</td>
<td>Bappenas</td>
</tr>
<tr>
<td></td>
<td>2010-2011</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Final Report, Strategic Environmental Assessment of</td>
<td>Bappeda DKI Jakarta</td>
</tr>
<tr>
<td></td>
<td>North Jakarta 2010</td>
<td></td>
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</tbody>
</table>
APPENDIX 3 - Participant Information

Research Title:
Climate-Adaptation Planning: The perception, meaning, and institutionalization of locally embedded adaptation planning along the example of Kampung Penjaringan, Jakarta Indonesia

Contact:
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simarmata.andy@yahoo.com

Introduction
This research is a PhD Research-based in the ZEF-Center for Development Research, University of Bonn to be carried out in DKI Jakarta, Indonesia. The research will be carried out from 28 March 2012 until 28 of March 2013. I hereby request your assistance as respondent in this research because your knowledge and experiences are useful for constructing the conception of institutionalization processes of locally embedded adaptation planning. The purpose of this research is to understand the institutionalization of climate-adaptation planning from individual lifeworld's perspectives in the local community through identifying the vulnerable people who has practices of planned adaptation, unfolding the meaning of adaptation planning based on their perception, and understanding the way of planning process in the community.

Participation
Your participation in this project is voluntary yet very much appreciated. If you do agree to participate, you can withdraw from participation at any time without comment or penalty.
You can participate in this research by:
1) Participating in interview discussing your perception on vulnerability, adaptation, planning, and institutionalization process, which understood and practiced by yourself.
2) Following in a group discussion to exploring the ide of vulnerable people, meaning of adaptation planning, and what kinds of rules, actors, and resources that you think that you and your community had.
3) Involving in social mapping to defining the history of vulnerable places, adaptation measure taken, and the symbols that used by your community

Expected Benefits
It is expected that research will benefit the policy-makers in Jakarta and other cities in Indonesia in the field of urban planning and climate change adaptation, the actors, including communities, government of DKI Jakarta, and professional association, as it will produce an explanation of institutionalization process of adaptation planning, which may you and your community had been done. At the end, this research may result in responsive knowledge sharing/exchange of climate-adaptation planning, especially from developing countries.

Confidentiality
The names of individual persons will not be used and the names of Institutions will be used only with consent. I will use the information for my academic written only and if I propose to use any quotes recorded during an interview or workshop we will verify with the respondent and/or participant that the quote is truthful before its inclusion.
I intend to make audio-recordings of interviews and transfer it into a transcript for the analysis works in the research. You may refuse to be recorded and still participate in this research. If you refuse to be audio-recorded I will take notes to record the interview. Audiotapes will be destroyed five years after the research has been completed. The records will be kept privately and transcripts will be stored in password-protected files. Audio recordings will not be used for any other purpose. Access to audio recordings will be restricted to the assistant researcher, researcher and supervisors of this research.

Consent to Participation
I would like to ask you and/or your institution to confirm verbally your agreement to participate.

Questions
Please contact me in the above email address if you have any questions answered or if you require further information about the research.

Thank you
APPENDIX 4 - Semi-Structured Interview Guidelines

Planners
This guideline will provide semi-structured questions for an interview for planners. This research will investigate mainly the process of adaptation planning, the roles of planners, peoples' participation, and the institutions. The questions in here however will be aimed at asking the planners' perception on role of people when conducting the planning process.

Adaptation Planning Process
1. What is adaptation planning in your perception?
2. In which level(s) do you think it should be conducted? please, explain.
3. What kinds of approach that you preferable choose to conduct?
4. How many times do you conduct the planning process, which related to climate change/disaster?
5. What do you think about the validity of data and climate model?
6. Did you feel satisfy with the process? Why?

Role of Planners
1. Where do you learn about adaptation planning? How do you perceive it?
2. What are your tasks during the process?
3. Can you explain about your function in the process?
4. In which term, do you think you need to increase you knowledge or skills?

People's Participation
1. How do you explain to people about adaptation planning?
2. According to you, did they understand well?
3. What do you think about level participation of people in your case?
4. What are the useful things that you can get from the people? Knowledge? Experiences?
5. According to you, is it a must that you should consider people's knowledge? People's experiences? Would you mind to elaborate it more?

Institutions
1. In which rules/regulations that become your references in conducting adaptation planning? Was it work?
2. Do you think we need a new regulation to conduct adaptation planning?
3. In the community level, do you think is it necessary to build an organization to plan and implement the adaptation plan?
4. Do you think, who are the most important actors in adaptation planning?
5. What kind of resources that can be used at the community level?
6. How do you see the relation between community and government in synchronizing the adaptation plan?

Thank you
NGOs

This guideline will provide semi-structured questions for a leader of NGOs. This research will investigate mainly the process of adaptation planning, the roles of NGOs, peoples’ participation, and the institutions. The questions in here however will be aimed at asking the NGOs’ perception on role of people when conducting the planning process.

Adaptation Planning Process:

1. What is adaptation planning in your perception?
2. In which level(s) do you think it should be conducted? Please, explain.
3. What kinds of methods that you preferable choose to conduct?
4. How many times do you conduct the planning process, which related to climate change/disaster?
5. What do you think about the validity of data and climate model?
6. Did you feel satisfy with the process? Why?

Role of NGOs

1. Where is adaptation planning projects come? Have you learnt it before?
2. Do you have referenced organization? Would you mind to tell story about it?
3. Can you explain about your (institutional) function in the process?
4. In which term, do you think you need to increase you knowledge or skills?

People’s Participation

1. How do you explain to people about adaptation planning?
2. According to you, did they understand well?
3. What do you think about level participation of people in your case?
4. What are the useful things that you can get from the people? Knowledge? Experiences?
5. According to you, is it a must that you should consider people’s knowledge? People’s experiences? Would you mind to elaborate it more?

Institutions

1. Do you refer to rules/regulations or international best practices when conducted adaptation planning? Was it work?
2. Do you think we need a new rules or regulation to conduct adaptation planning?
3. In the community level, do you think is it necessary to build an organization to plan and implement the adaptation plan?
4. Do you think, who are the most important actors in adaptation planning?
5. What kind of resources that can be used at the community level?
6. How do you see the relation between community and government in synchronizing the adaptation plan?

Thank you
Government Officers

This guideline will provide semi-structured questions for government officers who have authority related to adaptation planning. This research will investigate mainly the process of adaptation planning, peoples' participation, and the institutions. The questions in here however will be aimed at asking the NGOs' perception on role of people when conducting the planning process.

Adaptation Planning Process:

1. What is adaptation planning in your perception?
2. Where do you learn it? Do you referenced organization or best practices?
3. In which level(s) do you think it should be conducted? Please, explain.
4. What kinds of methods that you preferable choose to conduct?
5. How many times do you conduct the planning process, which related to climate change/disaster?
6. What do you think about the validity of data and climate model?
7. Did you feel satisfy with the process? Why?

People's Participation

1. Do you think people need to participate? In what level? Please explain.
2. What do you think about level participation of people in Jakarta? Penjaringan?
3. What are the useful things that you can get from the people? Knowledge? Experiences?
4. According to you, is it a must that planning should consider people's knowledge? People's experiences? Can you explain it?

Institutions

1. Does Jakarta have regulation or international best practices to be reference? Was it work?
2. Do you think we need a new rule or regulation to conduct adaptation planning?
3. In the community level, do you think is it necessary to build an organization to plan and implement the adaptation plan?
4. How do you see the community plan to the government's planning, programming, and budgeting?
5. Do you think, who are the most important actors in adaptation planning?
6. What kind of resources that can be used at the community level?

Thank you
Head of RTs/RWs

This guideline will provide semi-structured questions for the selected head of RTs/RWs. This research will investigate mainly the process of adaptation planning, peoples' participation, and the institutions. The questions in here however will be aimed at asking the Head RTs/RWs' perception on vulnerability in their community.

Exposure:
1. Could you mention what are the disasters which ever affected to your community?
2. Do you think your place is exposed to impact of climate change? Or other hazards?
3. How bad is the impact? Please, explain.
4. Do you know, which one of your community whom hit most?
5. What have been done to reduce the exposure? Do you see any difference before and after the development?

Sensitivity:
1. Do you agree with some opinions that say your area is poor?
2. Why do you think they are poor?
3. In which area, is the poorest household?
4. Do you think, is there any factors that make your community sensitive to hazards?

Adaptive Capacity:
1. Who are the most suff ered persons in your community?
2. Why do you think they suffered?
3. Can you explain who are the persons that can be counted on to respond the disaster, based on previous experiences?
4. What did they do?
5. Do you have any adaptation measures that have been built by your (community) own?

Thank you
# APPENDIX 5 - Transcript Form

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<thead>
<tr>
<th>Interviewer:</th>
<th>Date and Location of Interview:</th>
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</thead>
<tbody>
<tr>
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<table>
<thead>
<tr>
<th>Information of Respondent:</th>
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<td>Name:</td>
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<td>Organization:</td>
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<tr>
<td>Yes</td>
<td>Verbally</td>
</tr>
<tr>
<td>No</td>
<td>Written</td>
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### APPENDIX 6. The occurrence of tidal floods (Banjir Rob) from 2007-2014

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<td>2009</td>
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Source: Author, based on Hiladaliyani (2011).
APPENDIX 7 Social and public facilities in Kelurahan Penjaringan

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<td>75</td>
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<tr>
<td>2</td>
<td>Church</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Buddhist praying place</td>
<td>4</td>
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<tr>
<td>5</td>
<td>Health Clinique</td>
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<tr>
<td>6</td>
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<tr>
<td>7</td>
<td>Junior high school</td>
<td>8</td>
<td>Including religious school</td>
</tr>
<tr>
<td>8</td>
<td>Senior high school</td>
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<tr>
<td>9</td>
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<td>Art and Culture place</td>
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<tr>
<td>12</td>
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<td>13</td>
<td>Sport arena</td>
<td>6</td>
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<tr>
<td>14</td>
<td>Market/shops</td>
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<td>17</td>
<td>Fire station</td>
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<td>Chinese Cemetery</td>
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<td></td>
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<tr>
<td>23</td>
<td>Neighborhood security post</td>
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</table>
APPENDIX 8 Superimpose Analysis with ArcGIS 9.0

Spatial analysis is a combining process of several information based on various layer of data by using certain spatial operation. It is a process that answers the question related to the spatial information. We can use vector, satellite imagery, and tabular data. There are at least five steps to do the spatial analysis: defining key questions, collecting and preparing data, choosing the method or analytical tools, analytical process, and checking and editing the results.

Analytical tools using ArcGIS
ArcGIS has several techniques in the arc toolbox (see picture 1) to analyse spatial data, which consists of:

- **Extraction**, which consists of clip, select, split, and table select.
- **Overlay**, which consists of erase, identity, intersection, symmetrical difference, union, and update.
- **Proximity**, which consists of buffer, multiple ring buffers, near and point distance.
- **Statistic**, consists of frequency and summary statistic

In this research, I use the intersect tool because this method superimposes of the vector data of the identity feature to the input area and allows the integration of tabular data in the input features.

Data processing
Before I preceded the overlay process, I had collected various maps that can represent the flood and poor in Kelurahan Penjaringan. Based on my secondary data collection, I have listed three kinds of flood map that represent flood as following:

1. The distribution of flooded area based on the big flood occurrences in year 2002 and 2007, which was released by the Government DKI Jakarta province. It would show the facts on which area of Penjaringan that has been inundated during the 2002 and 2007 floods (see picture 4)
2. The map of flood scenario by 2030 that was predicted by the government of DKI Jakarta province. It would represent the future prediction of floods (see picture 5). The scenario was built based on the 2007 flood and was divided into four classes: 0-10 cm, 10–30 cm, 30-100 cm, and 1 – 5 meter (see picture 6)

3. The flood-hazard map based on the historical data of flood events during the last 20 years, which was recorded by BNPB. It would represent the potential risks of flood that classified into two classes: high and very high (see picture 7) since all Kelurahan Penjaringan has been categorized as the most risk area.

4. The map of recurrence interval of flood inundation that represents the probability of floods in Kelurahan Penjaringan. The map was adopted from the World Bank Indonesia that categorized the interval into three level, first is 1-2 years, second is 5-10 years, and 50-100 years interval (see picture 8) and one map, the slum distribution that represents the distribution of poor households in Kelurahan Penjaringan. The tabular data was divided into four levels: heavy, medium, slightly, and not slum, using the slum categorization of Government of DKI Jakarta province (see figure 7).

In order to operate this tool, firstly, I selected the identity options in the arc toolbox of the ArcGIS 9.1 software. I inputted the five maps above as the features that need to be overlaid. I only selected the polygon area as joined attributes (see picture 3) and used the RW boundary as the unit analysis. This overlay process could show which RW has the most superimposed data. The result identified one of the RWs that can represent the area where interplay between floods and the poor occurred.

![Overlay process](image)
Picture 5 Flood Scenario by 2030 (Government of DKI Jakarta, 2009)
Picture 6 Flood Hazard (Source: BNPB, 2009)
Picture 7 The Recurrence interval of flood inundation (Source: World Bank Indonesia, 2007)
Picture 8 Distribution of poor in Penjaringan