Changing Cultural Landscapes around the Jostedalsglacier (West Norway), from Cultural Landscape Management to Cultural Landscape Governance - a Future Path?

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Einleitung

Seit Jahrtausenden werden die Sommerweiden *(Setras)* und Hänge des größten europäischen Inlandgletschers, dem *Jostedalsbreen*, im inneren Teil des Nordfjords in traditioneller Almwirtschaft nutzbar gemacht. Es etablierte sich eine dem Höhenprofil vertikal ausgerichtete, funktional verflochtene und durch menschliche Wirtschaftsweisen geschaffene Kulturlandschaft *(Fjordscape[1])* zwischen den Höfen auf den Talsohlen und den gemeinschaftlich genutzten Sommerweiden auf den höher gelegenen gletschergeprägten Alluvialböden. Über Generationen hinweg entfalteten die Bewohner dabei eine kognitive Verbindung zu dieser Kulturlandschaft, welche neben der Ressourcenbereitstellung (z.B. Rohstoffentnahme, Weidefläche und Energiegewinnung) bis heute auch als Medium für regionale Traditionen, Sitten, Gebräuche und Identität verstanden wird. Daneben spielt die Inwertsetzung dieser Kulturlandschaft durch den Tourismus eine immer gewichtigere Rolle in den ländlichen Regionen Westnorwegens. Sichtbar wird dies durch die so genannten grünen Tunnel, so bezeichnen die zuständigen Raumplanungsakteure die sukzessive Verbuschung *(gjengroing[2])* ehemals halb-offener Täler und Talhänge, ausgelöst durch die Aufgabe der traditionellen Nutzungsformen oder die Überformung durch moderne Nutzungsarten.

Zentrale Forschungsfrage

Es geht in der gegenwärtigen Untersuchung um den aktuellen Umgang mit Kulturlandschaften am Beispiel der drei Untersuchungstäler Briksdalen, Bødalen und Erdalen in der Gemeinde Stryn in Westnorwegen, am westlichen Fuße des Gletschers. Dabei wird erforscht, ob die zentral und top-down gesteuerten Maßnahmen zur Gestaltung und Pflege *(Management)* der Kulturlandschaft den Herausforderungen des Kulturlandschaftswandels entsprechen und dabei einer zukünftigen Ausgestaltung des regionalwirtschaftlichen Potenzials ländlicher Räume, für z.B. den Tourismus in Norwegen, gerecht werden oder ob diese spezifischen *Fjordscapes* nicht besser als Aktions-, Kommunikations- oder Identitätsräume konstituiert und durch integriertes gesellschaftlich gesteuertes Handeln *(Governance)* gehandhabt und einer intendierten Entwicklung zugeführt werden. Die zentrale Fragestellung lautet also: Kann die Einführung einer Kulturlandschaftsgovernance einen alternativen Pfad zur Bewältigung der Dynamik des Kulturlandschaftswandels und der intendierten zukünftigen Kulturlandschaftsgestaltung

1 *Fjordscape* ist ein Neologismus bestehend aus den Begriffen *Fjord* and *Landscape* und wurde durch AUSTAD and HAUGE (2008) geprägt.

2 *Gjengroing* ist der norwegische Begriff, der die zunehmende Übergrünung ehemals offener Landschaftsteile beschreibt.

auf der Ebene der drei Fallstudientäler darstellen? Die Notwendigkeit einer Anpassung konstruiert sich aus der:

- Sektoral-politischen, zentralen top-down Steuerung (Landwirtschaftspolitik, Naturschutz, Denkmalpflege, integrierte ländliche Entwicklung, Tourismus) von Kulturlandschaften.
- Beschreibung und Bewertung der Dynamiken des Kulturlandschaftswandels und der treibenden Faktoren *(Drivers)* im Untersuchungsraum.
- Analyse formeller Institutionen (Gesetze, Verwaltungsvorschriften und finanzielle Beihilfen) und informeller Institutionen (Toponyme, Werte, Ontologisierungen), die das Kulturlandschaftsmanagement vor Ort regeln und gestalten.
- Identifikation und Interaktion der beteiligten Kulturlandschaftsakteure *(Stakeholder)*.
- Erfassung von Diskursen und Konflikten im Umgang mit den Kulturlandschaften.
- Analyse möglicher Governanceformen.

Hierbei werden institutionen-, güter- und steuerungstheoretische Zugänge in Verbindung mit einem reflexiv-konstruktivistischen Verständnis von Kulturlandschaft am Beispiel einiger Governanceformen empirisch analysiert.

Methodik

Die Arbeit variiert den methodischen Ansatz von GAILING und RÖHRING (2008) und kombiniert eine Institutionenanalyse, eine qualitative Inhaltsanalyse mit diskurstheoretischer Adaptierung und die kritische Auseinandersetzung mit möglichen kulturlandschaftlichen Governanceformen. Analysegegenstand sind Produkte sozialer Kommunikation (Inhalte aus Dokumenten und leitfadengestützten Experteninterviews) über Kulturlandschaftsmanagement in den Fallstudientälern. Die erste Untersuchungsebene umfasst die Analyse ausgewählter formeller Institutionensysteme (Gesetze, Vorschriften, finanzielle Anreizsysteme), die Kulturlandschaftsmanagement in den Bereichen Landwirtschaft, Naturschutz, Denkmalschutz, Raumplanung, ländliche Entwicklung und Tourismus betreffen. Weit über 100 Primärquellen (Gesetze, Verwaltungsvorschriften, Regelungen, Berichte, Weißbücher und Pläne) sowie umfangreiche Sekundärliteratur (Fachliteratur, Zeitschriftenartikel, Konferenzbeiträge etc.) wurden analysiert. Statistiken sind speziell in der Betrachtung des Kulturlandschaftswandels und der daran beteiligten Faktoren (*Driving factors*) zum Einsatz gekommen. Die zweite Ebene der

Evaluation befasst sich mit den Fallstudientälern. Mithilfe der Ergebnisse aus der primären Empirieebene und anhand leitfadengestützter Experteninterviews sowie mehrfacher Begehungen der Fallstudientäler werden auf der zweiten Untersuchungsebene vertiefte Kenntnisse über den Aktions-, Kommunikations- und Identitätsraum Kulturlandschaft im Hinblick auf die Charakteristik formeller und informeller Institutionen (Toponyme, Werte und Ontologisierungen) sowie sich ergebende Diskurse um Kulturlandschaftsmanagement und zukünftige Entwicklungsstrategien gewonnen. Ein Kategoriensystem, das einen Bezug zu den theoretischen Ansätzen der Güter-, Institutionen- und Governancetheorien herstellt, wurde für die gesamte Analyse als Untersuchungsprinzip verwendet (GAILING und RÖHRING 2008: 106).

Ergebnisse

In den drei Untersuchungstälern sind graduelle und strukturelle Unterschiede bezüglich der Kulturlandschaftsgeschichte, des Zustandes der Kulturlandschaften, des Managements und der Dynamiken dokumentiert.

Formelle Institutionen (Managementregeln der Kulturlandschaft)

Drei Verständnisebenen, welche das Kulturlandschaftsmanagement in Norwegen regeln, werden identifiziert. Diese werden vor allem durch sektorale Politikfelder (Landwirtschaft, Denkmalpflege, Natur- und Umweltschutz, Raumplanung, Tourismus):

- als landwirtschaftliche Nutzfläche (triviale Kulturlandschaften),
- als ein Prädikat für die Erhaltung natürlicher und historisch gewachsener kultureller Werte (geschützte Kulturumwelt),
- als touristisches Potenzial (ästhetisierte Kulturlandschaft als Image) verstanden.

Eine zentral gesteuerte Agrarpolitik beherrscht durch ihr formelles Institutionensystem sämtliche kulturlandschaftlichen Maßnahmen. Flankiert werden diese durch die Raumplanung, den Natur- und Umweltschutz und die Denkmalpflege. Entsprechend der Verständnisebenen des Kulturlandschaftsbegriffs in der norwegischen Politik und Planungspraxis stehen dabei die trivialen Kulturlandschaften im Vordergrund und werden durch gesetzliche Vorgaben als landwirtschaftliche Nutzfläche bewahrt und subventioniert. Ziel ist der Erhalt und Ausbau der Leistungsfähigkeit des primären Sektors. Dieser findet teilweise auf Kosten der prädikativen Kulturlandschaft (geschützte Kulturumwelten) mit speziellen natürlichen und kulturellen Werten statt. Dabei werden, häufig durch finanzielle Anreizsysteme, besondere geschützte und für den Erhalt natürlicher

Werte in Gletschergebieten notwendige Kulturumwelten, z.B. im angrenzenden Jostedalsbreen Nationalparks, durch die gegenwärtigen Marktanforderungen und Zeitersparnisse in der Landwirtschaft modifiziert. Der Kulturlandschaftswandel wird verstärkt.

Erkenntnisaustausch durch Diskurs

Die untersuchten formellen Institutionen, weisen auf folgende Diskurse um Maßnahmen des Kulturlandschaftsmanagement hin:

- Kulturlandschaft wird zur Konfliktzone von Produktion (privates Gut) und Konsum (Gemeinschaftsgut).
- Kulturlandschaft wird als externer Effekt (traditionell) genutzter landwirtschaftlicher Fläche verstanden.
- Kulturlandschaftsmanagement ist formell geregelt und finanziell gefördert. Die aktive Umsetzung von Kulturlandschaftsmanagement findet aber aufgrund von wirtschaftlichen und zeitlichen Erfordernissen statt, weniger durch Zielvorgaben der sektoralen Politiken.

Die Tourismusindustrie wird als Trittbrettfahrer wahrgenommen. Diese bemächtigen sich des Images der Kulturlandschaft, beteiligen sich aber nicht direkt an den Managementmaßnahmen und nur indirekt an deren Kosten. Dabei findet eine Ausdehnung der trivialen Kulturlandschaft auf die historisch gewachsenen Kulturlandschaftsteile in den Tälern statt, welche den Kulturlandschaftswandel, u.a. durch die finanzielle Förderung und die Marktsituation besonders lukrativer Nutzungsformen (z.B. Milchwirtschaft statt Ziegenhaltung), teilweise verstärkt. Eine graduelle und strukturelle Überformung tritt ein, entweder durch die beschriebene Transformation oder aufgrund der kompletten Aufgabe der Sommerweiden. Neue Entwicklungsansätze, die den Kulturlandschaftswandel integrieren, werden durch diese jahrzehntelange Pfadabhängigkeit gehemmt und treten zunehmend als grüne Tunnel zutage. Die Landwirtschaft ist zum einen durch den gegenwärtigen wirtschaftlichen Druck (Intensivierung und sektorale Konzentration) gezwungen, die Produktion auszuweiten und dabei gewachsene Kulturlandschaft zu überformen (sektoral-politischer Lock-out), und zum anderen, durch formelle Institutionen angehalten, die landwirtschaftliche Nutzfläche im Sinne der historisch gewachsenen Kulturlandschaftsstrukturen zu schützen (institutionalisierter Lock-out).

Informelle Institutionen (Managementhandeln in Kulturlandschaften)
Demgegenüber stehen die Adressaten der formellen Institutionen (größtenteils Landwirte). Deren Handeln erfolgt auf Basis informeller Institutionen am Rande einer wahrgenommenen administrativen Regelungswut. Dieser Kulturlandschaftsleitfaden ist neben der ökonomischen Wertschöpfung in Landwirtschaft und Tourismus an Werte, Ideologien sowie an ein starkes Selbstverständnis von historisch gewachsener Kulturlandschaft gebunden. Angesichts des Zeitaufwandes und der Wirtschaftlichkeit wird eine traditionelle Landnutzung zum Erhalt der gewachsenen Kulturlandschaft dabei nur in geringem Umfang ausgeführt.

Toponym Inner Nordfjord
Im Rahmen der Analyse der Kulturlandschaftsgeschichte wird deutlich, dass die drei Untersuchungstäler durch die spezifische Lage am Ende des 101 km langen Nordfjordes und durch den Einfluss des direkt angrenzenden Jostedalsgletschers auf die untersuchte Siedlungsstruktur, die Landnutzungsformen, den Verkehr und einen früh einsetzenden Tourismus geprägt sind. Die kognitiv verankerte ortstypische Kulturlandschaft auf Basis der traditionellen Landnutzung (Almwirtschaft, Schneitelwaldwirschaft, Weidehaltung etc.) wird auf eine *Inner Nordfjordscape* überhöht und dominiert in der kulturlandschaftlichen Assoziation der Bewohner. Die residual vorhandene Objektebene dieser assoziativen Kulturlandschaft ist in den Untersuchungstälern massiv durch Übergrünung bedroht.

Aktions-, Kommunikations- und Identitätsraum Kulturlandschaft
Anhand der Fallstudientäler wird gezeigt, dass Kulturlandschaft als relativer und identitätsstiftender Raum konstruiert ist. Dabei sind folgende kulturlandschaftliche Aktionsräume ein vielversprechender Ansatz für mögliche Governanceformen:

- Im Rahmen eines Labelings könnte das Toponym Nordfjord zu einem *Inner Nordfjord* überhöht werden. Eine überregionale Vernetzung ähnlicher Kulturlandschaften um den Jostedalsbreen zu einem Verbund, mit dem Ziel des Erhalts der Kulturlandschaften unter dem Toponym *Inner Nordfjordscape*, wäre denkbar und könnte verschiedene gesellschaftliche und wirtschaftliche Kräfte vereinen.
- Durch eine regionale Dachmarke (z.B. *Inner Nordfjordscape*) können weitere Ansätze zur Vermarktung von Produkten und Dienstleistungen aus der Region etabliert werden. Hier gibt es bereits Erfahrungen durch bestehende

Brands (*Destination Stryn&Nordfjord)*. Eine Vermarktung von Lebensmitteln im Rahmen der *produits du terroir*[3] wäre auf Basis der Setrakulturlandschaft denkbar.

- Die Kulturlandschaft in den Tälern ist prädestiniert, in Verbindung mit dem Jostedalsbreen Nationalpark, Themenorte der kulturlandschaftlichen Landnutzung (Setrakulturlandschaft) zu kreieren, die die historisch gewachsenen Strukturen interpretieren und erhalten.
- Die Erfindung neuer oder Revitalisierung bestehender Traditionen durch z.B. Events (traditionelle Almziegenkäseherstellung, Schneitelwaldwirtschaft etc.).

Anhand der durchgeführten Experteninterviews wird erkennbar, dass unabhängig von der institutionellen Einbindung die jeweiligen Stakeholder über ein ähnliches physiognomisches Bild von der Gestalt der Kulturlandschaft verfügen. Der Identitätsraum Kulturlandschaft auf Basis des Toponyms *Inner Nordfjord* kann sich verfestigen. Darüber hinaus ähneln sich die Ansichten der befragten Stakeholder bezüglich der Zweckerfüllung von Kulturlandschaft im Bereich Landwirtschaft, natürlichem und kulturellem Erbe, Erholung und Tourismus. Die Untersuchung zeigt weiter auf, dass es bezüglich der Kulturlandschaftsinterpretation Gegensätze zwischen den *Stakeholdern* und den sektoral gesteuerten Institutionensystemen gibt.

Ausblick

Der voranschreitende Kulturlandschaftswandel und die Zunahme der grünen Tunnel bieten, als gemeinschaftlich wahrgenommenes Problem, ein einmaliges Zeitfenster das gegenwärtige sektorale und top-down gesteuerte Kulturlandschaftsmanagement an die Herausforderungen des Kulturlandschaftswandels anzupassen. Dabei steht weniger die Generierung neuer Managementregeln durch sektorale Politiken (insbes. der Agrarpolitik) im Fokus, sondern vielmehr die Maximierung des Managementhandelns durch die beteiligten gesellschaftlichen und wirtschaftlichen *Stakeholder*, basierend auf den genannten kulturlandschaftlichen Aktionsräumen. Entstandene Konfliktlinien, sich ähnelnde Assoziationen von Kulturlandschaft und die starke Verankerung der lokalen Identität sind die besten Voraussetzungen, einen Kommunikationsraum um räumliche Qualitäten zu konstituieren. Wenn das sektoral geprägte Kulturlandschaftsmanagement in ein lokales/regionales Kulturlandschaftsmanagement übergeht, spielt die Be-

3 Dieses Fragestellung wird zur Zeit von BIOFORSK in Norwegen untersucht. HANNE SICKEL et al. (2015): *„Local food identity and quality - landscape and ecosystem services from Norwegian semi-natural grassland and rangelands.“*

reitstellung und das Allozieren finanzieller Produktionsmittel zum Kulturlandschaftserhalt durch den Staat eine immer geringere Rolle. Leistungen in Abhängigkeit von finanzieller Entschädigung privater Güter weichen Leistungen, die auf einen zu erwartenden Gewinn durch das heterogene und multifunktionale Gemeinschaftsgut Kulturlandschaft abzielen. Um dies zu erreichen, sind grundsätzlichere Hürden als die sektoral gesteuerten top-down initiierten formellen Institutionen des Kulturlandschaftsmanagements zu nehmen. Die Mensch-Kulturlandschaft-Lebenswelt-Verbindung, insbesondere in so hoch entwickelten Industrieländern wie Norwegen, muss revitalisiert werden. Dabei stellt sich vor allem die Frage nach der zukünftigen intendierten Entwicklung der Kulturlandschaft. Dies kann durch ein gemeinschaftliches Verhandeln, Austauschen und Lernen über räumliche Qualitäten von Kulturlandschaft auf lokaler Ebene stattfinden. Ziel ist es, dass Governanceformen einen strategischen Austausch über bedrohte Kulturlandschaften im Untersuchungsgebiet zwischen allen Beteiligten zulassen sollen. Dabei steht nicht die Verlusterfahrung von Kulturlandschaft im Vordergrund, sondern die Etablierung eines neuen Handlungsrahmens Kulturlandschaft (GAILING 2012: 201; SCHENK 2011: 115).

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Glossary

List of Abbreviations

AKS	Cultural Landscape Scheme *(Tilskot til kulturlandskap)*
ALA	Agricultural Land Act
ARL	Academy for Spatial Research and Planning Leibniz Forum for Spatial Sciences
AMTU	Act Relating to Motor Traffic on Uncultivated Land and Watercourses
BU	Central Rural Development Funds (*Bygdeutviklings Midlar)*
CA	Concession Act
CHA	Cultural Heritage Act
DA	Discourse Analysis
DNT	Norwegian Trekking Association *(Den Norske Turistforening)*
DPSIR	Driver-Pressure-State-Impact-Response-Modell
DYLAN	Dynamic Landscape Project *(Dynamisk Landskap)*
ELC	European Landscape Convention
ESDP	European Spatial Dimension Programme
EU	European Union
FM-LA	Agricultural Department County Governor *(Fylkesmannen i Sogn og Fjordane, Landbruksavdelinga)*
FM-MA	Environmental Department County Governor *(Fylkesmannen i Sogn og Fjordane, Miljøvernavdelinga)*
FOR	Regulation *(Forskrift)*
IA	Institutional Analysis
JBNP	Jostedalsbreen National Park *(Jostedalsbreen Nasjonalpark)*
LNF-R	Agricultural. Natural and recreational areas *(Landbruks, Natur- og Friluftsformål)*
LOV	Act *(Lov)*
Meld. St.	White-paper *(Meldninger til Stortinget)*
NDA	Nature Diversity Act
NMP	National Environmental Scheme *(Nasjonalt miljøprogram)*
NOK	Norwegian Kroner *(Norsk Kronor)*
NOU	Reports *(Norsk Offentlig Utredning)*
NRF	Norwegian Red Cattle *(Norsk Rødt Fe)*
NRK	Norwegian Broadcasting Corporation *(Norsk Rikskringkasting)*
NSG	Norwegian Sheep and Goat *(Norsk Sau og Geit)*
NVE	Norwegian *(Norges Vassdrags- og Energidirektorat)*
ORA	Outdoor Recreation Act
PBA	Planning and Building Act
Prop. St.	Bills *(Proposisjoner til Stortinget)*
QCA	Qualitative Content Analysis
RA	Directorate for Cultural Heritage *(Riksantikvaren)*
RC	Regulations on Cultivation
RMP	Regional environmental Programme *(Regionalt Miljø Program)*
RMPSF	Regulation Regional Environmental Programme in Agriculture Sogn og Fjordane County *(Forskrift om Tilskot til Regionale miljøtiltak i Jordbruket, Sogn og Fjordane)*
SEFRAK	Registration of Fixed Cultural Heritage *(SEkretariatet For Registrering Av Faste Kulturminne i Noreg)*
SLF	Norwegian Agriculture Authority *(Statens Landbrukforvaltning)*
SMIL	Special Environmental Measures in Agriculture *(Spesielle Miljøtiltak i Jordbruket)*
SNO	Norwegian Nature Inspectorate *(Statens Naturoppsyn)*
SSB	Statistics Norway *(Statistik Sentralbyrå)*
UKL	Selected Cultural Landscapes *(Utvalgte Kulturlandskap)*
VF	West Norwegian Fjord-cattle *(Vestnorsk Fjordfe)*

1. Introduction

Residents in the fjord valleys around the Jostedalsglacier in West Norway, Europe's largest mainland glacier, experience a significant change of their identity attached surrounding. Alleged green-tunnels[4] or green-hells, which are increasingly dominating the landscape view[5], exemplify this shift. Green-tunnels represent the process that grassland and dairy based semi-natural Nordic-mixed farming landscapes alter their appearance by progressive overgrowing[6] vegetation (STRYN KOMMUNEPLAN 2006: 28). Once open and agriculturally used meadows, slopes and summer farm pastures revert to forest. Climate change promotes the rate of overgrowing with the effect that numerous invasive species are spreading (HJELLE et al. 2012: 321). Abandonment and fallowing of the traditional summer farms[7,8] amplify this process (SETTEN and AUSTRHEIM 2012: 288; MURPHY et al. 2009: 225, 1973: 227; AUSTAD and HAUGE 2008: 372; VOS and MEEKES 1994: 4).

Change - the agent of cultural landscapes?

Without ambiguity, change characterises the nature of pristine and humanly modified landscapes, particularly around glaciers, and aggravated by reciprocal dynamics caused by various driving factors[9]. Abandonment, overgrowing and

4 These terms circulate among Norwegian spatial planners, and it was introduced and associated with the present research by Lars-Birger Holmøyvik (Planning and Construction Department at Stryn Municipality) in 2008.

5 The administration in Sogn og Fjordane considers the landscape as prominently exposed and circumpolar from the sea side and the road routes (REGIONALT BYGDE-UTVIKLINGSPROGRAM 2013-16: 25).

6 *Gjengroing* is the Norwegian expression for overgrowing.

7 *Seter*, *Setra* or *Sætra* are the Norwegian expressions for summer farm areas. A summer farm hut is called *Støl.* Summer farming (s*tølsbruk*) is comparable to the German term *Almwirtschaft* that describes an alpine pastoral system. Summer farming is based on animal husbandry, pasturing, milk and dairy production.

8 Transhumance is often a misnomer for the West Norwegian summer farming system. Several documents and official brochures employ this misapprehension. Transhumance describes a constant drift of animals between outdoor summer and winter pastures. Summer farming in Norway is a system that considers winter fodder production as its critical factor. Implying that the animals are kept outdoor during the summer and indoor during the winter. In wintertime, the farmer has to provide fodder that was collected on the mountain pastures during summer (MONS KVAMME 2009).

9 Drivers are anthropogenic and natural influencing factors that circumscribe social, agricultural and climatic dynamics.

disappearance imperils the visual aspect and structure of elements and components[10] designing these unique culturally imprinted landscapes of West Norway. In a socio-environmental context, the loss of the familiar landscapes associate to more than the modification of the traditional scenery and the respective anticipation by local communities to the change. It is affected less visible than by botany transformation or disappearing structures bespeaking the historical grown cultural landscape.

Inhabitants of the fjords adjoin their local identity to the evolved cultural landscapes that inherit tangible and intangible spatial qualities. Furthermore, the fjord landscapes operate as a container of traditions, beliefs, customs and self-awareness. An anxiousness of losing the percept and over generations handed down cultural landscape is latent. Intertwining natural, economic and social parameters arouse discourses, conflicts, dilemmas and paradoxes around the highly contested construct of cultural landscapes. That affects, in turn, the contemporary physiognomy and the future intended development of cultural landscapes significantly. SCHENK (2011: 110; 2008: 9) addressed that it is not the change per se conveying the fear of losing the emotionally attached cultural landscapes among communities, rather than the rapidity and the irreversibility of the entire dynamics. SELMAN (2012: 29) mentioned on this subject that the technological capability has overwhelmed the regenerative capacity of landscapes to cope with these changes. Urbanisation and industrialisation have created landscapes, particularly in industrial countries, where reclamation needs assistance and acceleration to happen within human political time scales.

Fjordscape – between spatial reality, identity and social construction

Fjordscape[11] is a term, which depicts and describes the space of the related associative cultural landscape in the present investigation. The term Fjordscape is further super-elevated to an Inner Nordfjordscape according to the cultural historic and geographical characteristics of the three case study valleys

10 Elements and components of cultural landscapes are terms based on the notions of BURGGRAAF and KLEEFELD (1998).

11 Fjordscape is a neologism composed of the terms fjord and landscape by AUSTAD and HAUGE (2008).

Briksdalen, Bødalen and Erdalen[12] below the *Jostedalsbreen*[13]. The dwellers past livelihood and the adopted land use practices generated cultural landscape patterns that are paying tribute to the harsh living conditions beneath the glacier complex. AUSTAD and HAUGE (2008: 372) noted a determined reciprocation: "*The natural conditions have both set limitations and provided possibilities for the people living there*".

Cultural landscape features or landmarks in the distinct surrounding of the fjord-glacier area appointed names to farmhouses and farm entities, which then served as surnames for the inhabiting families. Moreover, the West Norwegian Fjordscape played a significant role in the Norwegian nation-building process during the 19th century. By distilling a very national romanticised Norwegian identity, facilitated by Norwegian poets, painters and writers, recourse to the rural and remote parts of the country took place. Those landscapes were considered original and true. The local culture conserved Norwegian language and traditions despite foreign domination (AUSTAD and HAUGE 2008: 392). Distinct West Norwegian cultural landscapes created area specific symbols and traces (ibid.). A genius loci conjured up (ALUMNÄE et al. 2003: 125). To this effect, it equals a contemporary raison d'état to inscribe national efforts to protecting and managing these types of cultural landscapes in Norway[14].

Today, the genius loci in the Fjordscape is, for one thing, epitomised by the detectable residues of such. They function as reference points; a symbolic representation of past land use and serves to normative constructions of spatial images (GAILING 2012[1]: 195). For another thing, cultural landscapes express forms of cultural and social practices (ibid.). Concomitantly, cultural landscapes transmit tangible and intangible cultural and natural heritage. They are an anchor to what was and what is, particularly within the world very much affected

12 The spelling **dalen*, as in the three valleys' names makes mentioning the term valley redundant (e.g. Erdalen valley). **Dalen* is the Norwegian form of valley. To avoid redundancies the Norwegian names are principally used.

13 The same case is with the term **breen* as in *Jostedalsbreen*, which means glacier.

14 In this context, the highest form of predications are the UNESCO WORLD HERITAGE sites Nærefjord and Geirangerfjord in the close vicinity of the research's case study valleys in West Norway. These areas are excluded from the present examination as they benefit from an exceptional attention regarding management, maintaining, upkeeping and safeguarding of cultural landscapes.

by cultural homogenisation tendencies and globalisation (SELMAN 2012: 32; OLWIG 2011: 401pp, SCHENK 2011: 110; OLWIG and JONES 2008: ix).
Simultaneously, these cultural landscapes are applied to spin-off regional development processes promoting agriculture, recreation, cultural and natural heritage and the economy of small-and-medium-sized enterprises in the remote and rural mountainous regions in West Norway by an increasing tourism. Consequently, local communities anticipate a growing vulnerability to the detected overgrowing of their cultural landscapes Either by fearing the loss of the identity-related surrounding or by omitting economic development potential.

How to manage cultural landscape dynamics?

Safeguarding, maintaining, upkeeping and conserving are terms that describe various attempts of cultural landscape management[15], codified by acts, laws, regulations and financial distribution systems (subsidies). Norwegian policy and planning authorities developed a rigorous normative-descriptive apprehension of the terminology cultural landscape. Primary management targets pertain the agricultural sector as the appointed leader to managing cultural landscapes of food and fibre production. Other approaches are based on the conservation of the status quo of selected cultural landscape sites representing a museum character. Then again, some other applied preservation measures aiming at specific natural and cultural values pending to these humanly modified environments. Within the frame of these institutive actions to manage cultural landscapes, the change is in some parts even reinforced. Conflicts between diverging motivated actors occur, because farmers feel irritated, restrained in their property rights and disregarded to their views, customs and traditions about the compulsory management rules enacted by the state. The green-tunnels also symbolise the fainting human-cultural-landscape-environment nexus in the case study valleys that comes about to be hardly manageable. Cultural landscape change and the respective dynamics, as depicted in the work at hand appearing mainly in highly industrialised countries (PLIENINGER and BIELING 2012: 12; VOS and MEEKES 1999: 6). Unambiguously, the

15 These terms are comprised under the notion of cultural landscape management measures and efforts in the research at hand.

administration allocates top-down management and financial resources to succeed cultural landscapes. For the purpose of preserving and developing cultural landscapes as a source of identity, as a promoter of economic development and, evidently, as a tourist attraction, the state should reassess its top-down attempts and partially refrain from its monopoly position in directing cultural landscape management rules. Instead, non-governmental and civic actors acquire cultural landscape management action. Civic stakeholders gain the chance to lead discourses in cultural landscape communication arenas. Debates about cultural landscapes can emerge out of conflicts, dilemmas and paradoxes that emphasise a communicative function. At the same time, stakeholders express thoughts and opinions that direct to coordinating services (governance). New ideas may provide a mechanism for multiple actors to achieve agreement on norms and values and thus, create change in cultural landscape management, which in turn adjusts to the proceeding cultural landscape dynamics (SCHMIDT 2010: 15). Cultural landscapes become a space of action, communication and identity. Under these conditions, communities may discharge internal power to manage and develop cultural landscapes without solely consuming allocated financial measures distributed by the state. Civic commitment replaces administrative obligation. Increasing overgrowing of identity-related cultural landscapes and the perception among the inhabitants represents a window of opportunity for such civic organised governance approaches (FÜRST et al. 2008: 317). The research at hand examines the dynamics of cultural landscape change on the small scale of the case study valleys Briksdalen, Bødalen and Erdalen by analysing the cultural history, the present state of the cultural landscapes and the relevant driving factors of change. An assessment of the currently applied cultural landscape management efforts by examining the respective institutional framework is aligned. The main examination interest arises from the questions: Whether the institutional framework of the present cultural landscape administration fits the challenges of changing cultural landscapes on-site? If the current management copes the regional development potential that the associative cultural landscapes inherit? What are the conflicts, dilemmas, and paradoxes around

cultural landscape management and spatial development that facilitate the green-tunnels? Conclusively, the motivation of the inquiry is driven by the central analysis objective: If cultural landscape governance framework offer an alternative path and instruments that will empower civil stewardship and intended development of cultural landscapes to contain the green-tunnels in the case study valleys? Seven chapters subdivide the present research.

Chapter 1 commenced with an introduction to the subject and elaborated the central research question. A brief preview of the following chapters is given.

Chapter 2 outlines the theoretical scaffold of the present scientific approach. It examines the apprehension levels of the terminology cultural landscape from contrasting perspectives. Theory of goods, institutional and governance theory approaches confer with the constitution of cultural landscapes as action, communication and identity arenas, in which governance measures take place, are exemplified to make the terminology scientifically operational. Followed by a synopsis of the state of cultural landscape governance research in Germany and Norway. A preliminary summary concludes the theory chapter by raising the central research aims and objective.

Chapter 3 notions the methodical approach of the study. It commences with the research design, which presents the designated methods and the empirical background. Data acquisition, processing and analysis explanations in reflexion to the theoretical and methodical background of the aims and objective follow. Reliability and validity claims end the chapter.

Chapter 4 reviews the spatial scale and scope of the case study areas. Particular attention is paid to a cultural landscape itemisation comprising the physical framework of the case study area and certain aspects of the cultural landscape history. The chapter ends with a brief entry of the Jostedalsbreen National Park, in which the three case study valleys are partly placed.

Chapter 5 presents the results, displaying the state of the contemporary cultural landscape of the case study valleys and discusses key driving factors that origin cultural landscape dynamics. Further, the participating stakeholders and their constellations regarding cultural landscape management are outlined. The results of the institutional analysis portray the present-day framework of cultural landscape management on-site. Outcomes of the discourse analysis presume an informal apprehension of active cultural landscape management measures in the case study sites. As discourses around cultural landscape management are issued, the possible constitution of cultural landscapes as communication and identity arenas is described. Subsequently, various suggestions for cultural landscape action arenas on-site are projected to examine specific cultural landscape governance approaches.

Chapter 6 discusses the results. To answering the central research question supported by the outcomes of the empirical examination, limitations of the current examination regarding governance frameworks on-site are discussed. Recommendation for future cultural landscape research terminates the chapter.

Chapter 7 concludes the research with remarks about the results and the examined aims and objectives.

2. Theoretical Principles

The subsequent chapter presents the theoretical arrangement of the research at hand. It commences with general remarks on the study approach and a review of selected concepts regarding the terminology landscape and cultural landscape from a historiographical and spatio-social viewpoint with a particular interest in Norway. Ensuing passages display the theoretical formulation to constitute cultural landscapes as action, communication and identity arenas for cultural landscape governance approaches. Theoretical constructions of the research focus on the theory of goods, institutional and governance theoretical accesses in cultural landscape research. A preliminary conclusion will terminate the chapter and elaborate the study aims and the study objective in recourse to the outlined theory.

2.1 General remarks

The primary purpose of the study at hand is the analysis of cultural landscape governance approaches in to be constituted cultural landscape identity, action and communication arenas for local communities on the example of the case study valleys Briksdalen, Bødalen and Erdalen. As part of such arenas, current effects of cultural landscape change become manageable by a joint cultural landscape governance strategy. To design cultural landscapes as such arenas, theory of goods, institutional and governance theory reflections are adduced. According to GAILING and RÖHRING (2008: 105), the appointed theoretical path of the current study widens spatial science by social science approaches. This fact becomes important, as cultural landscapes are perceived, understood and mentally structured individually by various groups in society (PLIENINGER and BIELING 2012: 15; SCHENK 2011: 111; WIDGREN 2006: 57; JONES 2003: 47). Disseminating to social science admissions gives the opportunity to operate with the term cultural landscape more adequately, particularly within the range of spatial and societal behaviour. To that effect, JONES and STENSEKE (2011: 8) acknowledged that public participatory accesses shall break down the

comprehension of cultural landscapes onto the widest possible foundation. It is considered as *"an area as perceived by people"* (ibid.).

Cultural landscapes are advised as distinct spatial-social patterns, relying on perceptions, ontologizations and reifications. Therefore, they are regarded as social constructs (GAILING 2012[1]: 196, 2008: 25; SCHENK 2011: 112; OLWIG and JONES 2008: xi). Not least because social construction takes place as a result of discourses among communities about cultural landscapes and their intended future development (SCHENK 2011: 112). The theoretical and practical impulse of the present work grounds on research that is conducted by the German Leibniz Academy for Spatial Research and Planning[16] (ARL) in Erkner. The analytical remarks of the study take recourse to the theoretical and practical placement outlined and executed by research staff of the ARL[17].

The selected enquiry combines the conceptualisations drawn by the ARL with the aim to analyse a similar formulation on the example of the three case study valleys in West Norway. The analysis and implementation of governance frameworks presuppose the examination of the contemporary cultural landscape management efforts. Furthermore, it must be examined to what extent the current cultural landscape management meet the natural, social and economic demands on cultural landscapes.

Comparable theoretical and practical approaches have not been prior employed in the selected case study valleys. Based on a common conceptional ground of terminology, the theoretical agenda is transferred from a German to a Norwegian perspective[18] centring on bottom-up governance frameworks instead of top-down planning and management regulations of cultural landscapes. The application of the case study sites helps to typify and to examine the designated theoretical entries empirically. Theoretical access and the respective analysis is mainly organised on the examination of:

16 It is a German research institute for spatial science located in Erkner.

17 To illustrate and empirically approve the theoretical considerations, case studies were performed by ARL researchers in cultural landscape regions, for example, the Oderbruch, the Barnim region or the Oberpfälzer Jura in Germany.

18 Research at hand is written in English to present the results to a German and a Norwegian audience. Concomitant effect of the work is to support and provide Norwegian authorities with a new methodology, which examines cultural landscape change and management in Western Norway from an outside perspective.

- Present-day strategies in planning, developing and managing cultural landscapes.
- An anticipated added-value by cultural landscape governance on-site regarding economic regional development processes.

For to appointing cultural landscape terminology in the respective theoretical set-up, an examination of contrasting apprehensions and a general overview of the keywords landscape and cultural landscape is given next.

2.2 Comprehension categories landscape & cultural landscape

Language and the usage of terminology cope a vital role while discussing concepts around highly contested phrases, such as cultural landscapes, landscapes, culture and governance, in a variation of ways, from distinct scientific disciplines, practical policy designs and among different countries, the terminologies are applied. It is essential to outline different meanings of an apparently commonly used scientific and social term in a broader context, in particular by implementing a practical study approach. Experts' comprehension, either out of science, policy or spatial planning perspective need to be reviewed to avoid evolving or contain ongoing conflicts, dilemmas, and paradoxes around its meaning and application. Society, or precisely communities, have differing imaginations and definitions affiliated to the assessed terms. Research at hand does not claim to present a wholeness of existing concepts of the terms, nor will it introduce new perspectives of both. The pursuing summary on diverse apprehensions of the term landscape and cultural landscape intends to classify the terminology by the selected theoretical path. Examination of vocabulary shall reflect the alignment and context-related applications of cultural landscape concepts in spatial planning and science, in regional development and politics, and in the perception of local communities and individuals.

A general placement on main (cultural) landscape[19] understandings is adjacently presented. Ensued by displaying a proper Norwegian perspective on the terminologies from the time the terms appeared until today. A large number of authors have examined, evaluated and reviewed the related concepts of (cultural) landscapes for close to 120 years. After peeling off any particular

19 (Cultural) landscape implies the simplified spelling of landscape and cultural landscape.

scientific meaning, researchers from varied subjects[20] are talking in an essence of a human-environment participation in a landscaping processual setting.

Focus of the following synopsis of (cultural) landscape comprehension categories in the present study persist to remarks made by:

GAILING and LEIBENATH (2012) and their systematisation of (cultural) landscape typologies, outlined in the article: *"Semantische Annäherung an "Landschaft" und "Kulturlandschaft"*[21]*."* Those formulations are advantageous to giving emplacement on divergent typologies of both terms. They introduced an orientation frame of two orders of observations and four additional layers providing an expansible categorisation.

SCHENK (2008, 2011), who performed considerable research on the terminology as regards to safeguarding efforts of cultural landscapes[22] in Germany. His clear intentions are based on cultural landscape management as a civic task and the access to cultural landscape concepts based on reflexive-discursive formulations in science that correspond to practical efforts by policy and planning for future intended development.

JONES (2003), who compared in the article: *"The concept of cultural landscapes: discourses and narratives"* assorted approaches to the conception of cultural landscapes. By centring from a geographical and historiographical background, he further examined the use of the terminology in Norwegian administration systematically until the turn of the millennium[23].

Figure 1 (p. 12) presents an overview of the terminologies' comprehension categories. The term in the first category (1.) comprehends landscape as space, an ecosystem or as a physical-material entity that is composed of abiotic, biotic and anthropogenic elements. Category two (2.) focuses on a human-environment relation that mostly comprise any part of the surface that humans influence (LEIBENATH and GAILING 2012: 62). Sub-category 2.1 characterises

20 For instance, agriculture, archaeology, biology, geography, spatial planning and cultural heritage.

21 The article is a contribution to the reports on research and meetings of the ARL and subsumes major classifications of (cultural) landscape terminology used in German (cultural) landscape politics, planning and science.

22 SCHENK attributed the *Kulturlandschaftspflege* in the German research community.

23 In collaboration with KAROLIN DAUGSTAD (1997).

the human-landscape interactions and the respective impact on the landscape (ibid.).

Essentialist-ontological terms
(Based on observations of 1st order)
1. *Landscape* as a physical space or an ecosystem (-complex)
2. (*Cultural) Landscape* in the context of person-environment relations
2.1 Physical aspects 2.2 Mental aspects 2.3 Social aspects 2.4 (*Cultural) Landscape* as a symbol
3. (*Cultural) Landscape* as a metaphoric expression
Reflexive-constructivist terms
(Based on observations of 2nd order)
4. (*Cultural) Landscape* as an area of communication

Figure 1 Overview of (cultural) landscape comprehension categories (by LEIBENATH and GAILING 2012: 62).

The design of the terminology in 2.2 approximates the mental and subject related aspects and depicts (cultural) landscape as an aesthetic category. In category 2.3, the (cultural) landscape term is centred as a manifestation of social circumstances. It can be acknowledged as a form of social space. It marks probably the most refined comprehension, combining the physical-material stage of (cultural) landscapes and the socially constructed unit[24] (GAILING 2012: 63, 2008: 131; SCHENK 2011: 112). Thereof, the identity generating feature of (cultural) landscapes comes into effect, as much as regional development potentials. Terminology in 2.4 apprehends (cultural) landscape as a symbol. Literature includes physical-material implied (cultural) landscape and the meaning of it in social interaction processes synonymously. Metaphoric use in category three (3.) includes:

- Landscapes as metonymy that describes the process, which mentally transforms the expression (as in architectural landscapes), and
- Landscapes as metaphors (as in knowledge landscapes).

The connotation of (cultural) landscape terminology in category four (4.) adjusts from an essentialist-ontological terminology to a deontological and non-essentialist comprehension. It targets on the reflexive-constructivist perspective

24 The social construction of cultural landscape constitutes a significant part of the current examination and will be outlined closer in Chapter 2.4 (p. 17p).

and interrogates how the terms are applied, and in which paths language, social reality and authenticity are generated. Further, it questions how perception and assessment are channelled in certain ways. Scientific discourses reflect (cultural) landscape terminology objectives (SCHENK 2011: 112, 2008: 11). (SCHENK 2011: 112, 2008: 11). While reflecting the constructions of cultural landscape ontologies, interrogating questions constitute (LEIBENATH and GAILING 2012: 66). A central question evolves concerning semantic differences between the expressions landscape and cultural landscape. LEIBENATH and GAILING (2012: 71p) elaborated three scientific attitudes while inquiring this conclusion.

- Rejection of the term cultural landscape

The first attitude implies that the terminology is a tautology and both terms[25] are equal in their meaning. Hence, they are synonymously usable. In this regard, SCHENK (2011: 14) indicated the terminology cultural landscape as a strategic pleonasm. Accrediting the terminology landscape an openness to comprising both terms. Subsuming that cultural landscapes equal the effects of humans on space. He further noticed an increased equal or at least similar employment of both terms (ibid.).

- Presupposing an additional quality of the term[26] cultural landscape

Next attitude mentions a pragmatic understanding of the terms, considering the terminology as helpful concerning a strategic or systematic use. Special aspects of the landscape are explained, such as the construction by humankind, the historical dimension, the cultural value, the socio-economical impact of humans, or the social structure defined by social and political institutions. Cultural landscape terminology can be employed in a strategic political sense also. Accordingly, particular characteristics of the economy, politics, management, perception or aesthetics of something natural versus cultural are accentuated.

- Exclusion of the same meaning of both terms

The third attitude refuses the same significance of both terms. It is argued that the definition of culture as a sub-domain of human life is depicting cultural landscape as a space connected with cultural institutions and related to cultural

25 Landscape and cultural landscape.
26 Regardless of an equivalent signification.

life. Cultural landscape as a qualitative feature assesses landscape positively. It implies planning and classification criteria that are not applicable to any landscapes. In particular, culture describes a selective human action indicating a planning intention. Culture recurs to cultivation according to an agroforestry use of the landscape. Connoting that cultural landscapes stand in contrary to natural landscapes as a subspace or specific observation horizon (LEIBENACH and GAILING 2012: 73).

The present research will not give a conclusive resume on the question of semantic discrepancy between the terms. Both terms, particularly in reflection to the case study valleys are frequently used synonymously and sometimes the intention depicts a similar attitude. Henceforth, the spatial relevance of humans in historical perspective and their impact on landscape becomes the centre of attention (SCHENK 2008: 14). Technically reviewed and particularly in the field of geography, a self-evident geographical content of both terms becomes apparent (JONES 1988: 153). COONES (1992: 75 cited in SCHENK 2011 p. 11) pointed to that magnitude: *"Subjects (…) so innately geographical in their content, significant and ramifications as the study of landscape, involving the physical and the human, the past and the present, the reality of the environment and the realm of ideas, and, not at least, in this period of concern with 'relevance' the pure and the 'applied'."*

2.3 Cultural landscape terminology in a historic-geographical synopsis

Consecutive section reflects the previous remarks regarding the terminology (cultural) landscape in a historic-geographical context. By taking a closer look at the etymology of the word, landscape derives from a Germanic linguistic heritage and conveys a similar background in Germany and Norway[27]. In Medieval times, landscape described a particular political territory reckoning the

27 The German expression for cultural landscape is *Kulturlandschaft.* In Norwegian it is called *kulturlandskap*. Both terms show a very high conformity. As a matter of fact, the term *Kulturlandschaft* was first used in German geography research community, characterised by Friedrich Ratzel in 1895. He described an area altered by human activity that stands in direct opposition to primeval landscape (JONES 2003: 33). The Germanic origin of the term dates back to the original significance of the term landscape, as it is described further in the context of the study.

people located on that land (LEIBENATH and GAILING 2012: 59; SCHENK 2011: 12, 2002: 7; JONES 2008: xiv, 1988: 153; COSGROVE 2004: 60; OLWIG 1996: 630p). The Renaissance conjoined the visible landscape, its aesthetic view and the imagination of landscape in a national romantic comprehension referring to paintings, arts and literature at that time (LEIBENATH and GAILING 2012: 59; SCHENK 2011: 13; 2003: 38; COSGROVE 2004: 60; JONES 1988: 153). In the 19th and 20th century, the term landscape became part of the general language. Notably during the Industrialisation, a contradiction evolved and described landscape as something that happens to be opposite to urban containing aesthetic world views (SCHENK 2011: 13). Such an ideographic landscape idea solidified during the 20th century, which also represented the beginning of the classical idiom of the landscape, describing a special character of space (LEIBENATH and GAILING 2012: 59).

Spatial sciences comprehended the term cultural landscape as something man-made and differentiable from natural landscapes. This viewpoint became prevalent throughout the research community of geographers. Nature versus culture persisted in a diachronic approach. FRIEDRICH RATZEL engaged cultural landscape for the first time in his article (1895: 258p): *"Die deutsche historische Landschaft"*. RATZEL's comprehension interpreted landscape as formed and influenced by human activity. The term stood in direct opposition to primaeval natural landscapes (SCHENK 2011: 13, JONES 2003: 33; DAUGSTAD and JONES 1997: 267). OTTO SCHLÜTER (1903) claimed that the effect of human activities on landscapes, as represented by RATZEL lacked a potential natural determinism (SCHENK 2011: 13; JONES 2003: 33). In 1922,

Norbert KREBS (1922: 81pp) expanded the approach by entitling cultural landscapes as the *Ökumene*, meaning a settled region transformed by human activity. He formulated that expression in contrary to the *Anökumene*, describing a non-settled landscape, in which human life is subordinate to nature. The terminologies and the concept of natural and humanly influenced landscapes submerged in the Anglophone scientific world.

CARL SAUER (1925) apprehended cultural landscape as: "*the work of man, that express themselves in the cultural landscape"*. SAUER (1925: 309)

stated culture as the agent, the natural area as the medium and the cultural landscape as the result (SCHENK 2011: 8). His notion amplified the bisection of landscapes in natural and cultural ones. Culture in this respect implicitly highlights the configuration of space as a cultural achievement by humanity (SCHENK 2008: 271). Cultural landscape terminology with its ambiguous definitions became at the heart of geographical enquiry since then. In the late 1930s, critics on the presented concepts of the term were articulated. BROEK (1938 cited in JONES 2003: 34) preferred to differentiate between natural and cultural elements in the landscape. HARTSHORNE suggested to call areas, which were unaltered by humankind wild landscapes. On the contrary, he proposed to call areas that were altered by humanity as cultivated landscapes (1939: 348 cited in JONES 2003: 34). Aside the dichotomised conception of cultural landscapes, the necessity of a functional assignment according to research disciplines became evident and very much effective ever since then (SCHENK 2008: 14).

2.4 Cultural landscape concepts in modern geography

Landscape transformation by humans and the resulting consequences became the focus of cultural landscapes research (JONES 2003: 36). The morphology of cultural landscapes, very much promoted by the US American geography adjusted the cultural geography (SCHENK 2011: 8). SALTER (1978: 71 cited in JONES 2003: 35) defined cultural landscape as "*that segment of earth space that lies between the viewer's eye and his or her horizon*". Therefore, he referred to both the material forms and the human response to it (JONES 2003: 35). ROWNTREE (1996: 133p) stated that the intention arose to apprehend cultural landscape during the 1970s as: *"(...) a major vehicle to analyse the ties between culture and environment."* Landscapes and cultural landscapes were studied with historical methods to examine the visual and concrete details. Until that time, landscape was widely recognised as a concept of absolute space, as a container for varying geographical inquiries (GLASZE and MATTISEK 2009: 40; COSGROVE 2004: 59). Geography was led, as COSGROVE (1998: 67) stated: "*to identify, map and describe the characteristic features of local landscapes, seeking to explain their emergence from long historical continues*

of local settlement and interactions between land and life". Landscape and cultural landscape terms are assigned to an areal unit with a special character (COSGROVE cited in JONES 1988: 153). SCHENK (2011: 12) noted that some geographical sub-disciplines discarded the research focus on landscape during the 1970s. Nonetheless, cultural landscape remained the key concept in historical geography. Correspondent to the remarks in Chapter 2.2 (p. 13p), ROWNTREE (1996: 130 cited in JONES 2003) expressed that: *"(...) there is no precise definition of cultural landscape. Instead, there is a certain definitional ambiguity that allows varied uses and research emphasis. If this is bothersome for some, it provides creative license for others to explore the complicated interface between humans and our varied environments."*

In summary, the notions regarding the terminology commenced to changing since RATZEL. Were they typewriting the past and present human impact processes on the landscape in several graduations with a profound concern about the development of the connection of societies and natural landscapes, the apprehension and access in highly industrialised countries, particularly after the Second World War, started to recognise cultural landscapes as ephemeral. An intensive theoretical debate in human geography took place about the perception of an objective given space during the 1980s. Theoretical enhancement of the terminology is attributable to the cultural turn debates in geography and the spatial turn debates in sociology that reworked the relation between geography and social science. COSGROVE (2004: 57) outlined that geography has emerged as an essential reference point within this disciplinary convergence. The spatial turn labels the interaction of social relation and the kind of how concepts of space are thought, perceived and designed in social sciences (BAURIEDEL 2007: 1). Accordingly, the terminology of space and spatial structures was not presumed solely objective any longer. Instead, they were acknowledged as socially constructed (GLAZE and MATTISSEK 2009: 15). Cultural landscapes as social constructs conceptualise the socio-spatial relation that connects local identity, local cognition and historical awareness to the physical-material cultural landscape on site (SCHENK 2011: 111, 2009: 12; 2008: 271; JONES 2003: 32). JACKSON (1986) engaged the vernacular

landscape: "(...) *the landscape not so much looked at as lived in and shaped by ordinary people*" (cited in JONES 2003: 35). Hence, cultural landscapes have been equipped with an ideological imperative (JONES 2003: 38). JONES (2003: 32) stated: *"(…) Cultural landscape thus has both a physical dimension - traces of human activity in the landscape as humans have influenced and modified "nature" through time; and a cognitive dimension - cultural landscape meanings that humans attach to their physical surroundings, both natural components and human components."*

It is indispensable to note that society had and still has an immediate impact on cultural landscapes. Vice versa, landscapes influence societies' adoption to the natural surrounding to a certain extent, comprising regional customs and traditions that derived from particular land use, as some examples of the current work elaborate. "*Human landscape perception, cognition, and values directly affect the landscape and are affected by the landscape"* is one of the principle comprehensions outlined by NASSAUER (1995: 229). Further cultural landscapes propose a framework for a human-landscape interaction, in which culture and landscape react in a form of a feedback loop. To that effect, cultural landscapes become a melange of physical-material structures and functions on an immaterial meta-level, also considered as intangible cultural landscape qualities. SCHENK (2009, 15) noted: *"(...) cultural landscapes are an amalgam of natural and cultural heritage, which always needs an observer ascribing values from an individual position".* Relating to this, diverse observers with differing values towards cultural landscapes form the centrepiece of the inquiry in the study at hand. Existing discourses and narratives referring to terminology and conception of cultural landscapes are manifold. The intended ways to safeguarding, managing and counteracting cultural landscape change are just as numerous, accrued by various politics and planning authorities dealing with the matter of fact.

Ensuing paragraphs elaborate cultural landscape concepts in Norway and the specific national formulation to the issue of cultural landscape management approaches.

2.5 Cultural landscape concepts - a Norwegian insight

Three case study valleys in the inner fjord areas of West Norway are the spatial focus of the current research. 6000 years lasting settlement process developed in the mountain areas of Norway that emerged correspondingly to the continental European cultural area (GAUKSTAD 2005: 69; DIERßEN 2004: 122; GEELMUYDEN 2004: 14; ORLUND 2000: 75). Milk cows, goats, and sheep played a significant role in the case study areas, as well as in other traditional agricultural systems around Europe. From Scandinavia to the Alps, the Pyrenees, the Celtic fringe and the Massif Central, dairy production developed (MURPHY et al. 2009: 273pp, 1973: 224).

Climate, natural landscape features and landforms configuration, latitude and altitude and the local historical evolution of the geographical area restrain idiosyncratic cultural landscape patterns. Societies were forced to adopt land use to the surrounding. Adoption became visualised in the historical grown cultural landscape that is today categorised as the Nordic-mixed farming mountain landscapes (VOS and MEEKES 1999: 4). Summer dairy farming became the common type of land use providing a livelihood for the inhabitants until the beginning of the twenty-first century. The centuries lasting adoption, consolidation and improvement of land use on natural preconditions influenced landscape composition and the dwellers' perception vice versa (AUSTAD and HAUGE 2008: 372; VOS and MEEKES 1999: 4). Cultural landscape imprinted in the Norwegian self-awareness until today. Such a conception refers to an assumable collective cultural landscape comprehension that primarily originated by the farming societies of West Norway and is deeply connected to agriculture. These landscapes contributed significantly to the Norwegian nation-building process in the 18th century, vastly supported by the national romantic and the superelevation of the meaning of Norwegian cultural landscapes (GAUKSTAD 2005: 70; LYSSANDTRÆ 2005: 77). A concise abstract in the section ahead gives a closer look at the evolution of apprehensions towards the terminology cultural landscape in Norway.

2.5.1 Norwegian access to cultural landscapes

Referring to the outlined historiographical and geographical development of the terminology (cf. Chap. 2.3, p. 14), the basic German and English speaking scientific approaches are retrieved in the Norwegian conception since the very beginning of the terminology's application (JONES 2003: 29).

The researcher AADEL MARIE BRUN TSCHUDI introduced the concept of *kulturlandskap* in Norway in 1934 in the publication: "*Avfolkningen i Vest-Agder og in Nedlegningen av Heiegardene, Sjerlig i Sor-Audendal og Spangereid*" (CALCATINGE 2012; JONES 2003: 30, 1988: 153). Her study objective related the loss of cultural landscapes to the depopulation of the rural areas in Norway at that time. The notions drew a contrast between growing urban industrialised regions and the change of countryside. Hereto, SAUER'S constructs of *Økumene* and *Anøkumene*[28] were indicated (TSCHUDI 1934: 207 cited in JONES 1988: 154). Since the initiative by TSCHUDI in engaging a cultural landscape concept in Norway, terminology reappeared and was propagated in a similar context of increasing urbanisation thirty years later (JONES 1997: 267; 1988: 154).

The perspective on the term cultural landscape enhanced on aesthetics and was driven by architects, landscape architects and geographers (DAUGSTAD and JONES 1997: 267). The related cultural landscape change arouse attention on account of the cultural-historic implication and the related ecological importance among conservators and biologists. As particular cultural landscape sites began to vanish (ibid.). During the 1970s and 1980s, cultural landscape terminology was academically promoted among a broad range of disciplines, such as zoology, agricultural science and economy in the country (JONES 2008: 283; DAUGSTAD and JONES 1997: 267).

- Cultural landscape conception in Norwegian administration and spatial planning

At about the same time and within the frame of Norwegian subsidy negotiations, adjustments on agricultural policy and due to increasing abandonment of outfield areas, Norwegian governing bodies and planning authorities

28 Referring to SAUER'S expressions (cf. p. 15).

incorporated the term cultural landscape exceedingly in their administrative and planning practice (DAUGSTAD and JONES 1997: 268). Under Norway's contribution to the European Campaign for the Countryside, national authorities initiated a National Cultural Landscape Campaign.

To implement future measures on cultural landscapes, the Directorate for Cultural Heritage[29] installed a cultural landscape department in 1988. The following years acquainted new payment measures for farmers regarding cultural landscape maintenance and safeguarding. Thus, agriculture, nature, and heritage conservation institutions were confronted with upcoming cultural landscape management challenges. Alongside an expanding academic interest in the terminology, the expression attained more and more quality in politics and planning and was applied likewise in slightly differing contexts.

1. Area category (contrast natural landscape vs. urban landscapes)
2. Chronological stage of development
3. Human components in any landscape
4. Countryside
5. Heritage
6. Scenery with aesthetic qualities
7. Elements in the landscape with meaning for human activity

Figure 2 Principle meanings of the term cultural landscape used in Norway (source JONES 2003).

To that effect, JONES (2003, 1997, 1988) compiled a synoptic overview by comprising all meanings of cultural landscapes in Norway since the first employment of the term by TSCHUDI until the 1987. The analysed documents compile a list of seven principle meanings, depicted in Figure 2 (JONES 2003: 30p, 1988: 154p).

Additionally, JONES grouped the principle meanings of *cultural landscapes* in three broad categories of apprehension (JONES 1988; 1991; 2003: 31):

- Firstly, modified landscapes by human activity (cf. Fig. 2 1., 2., 3.);
- Secondly, a ranked characteristic of human landscape, which is threatened by change or disappearance (cf. Fig. 2 4., 5., 6.); and

29 *Riksantikvaren*.

– Thirdly, elements in the landscape with meaning for a human group in a given cultural or socio-economic context (cf. Fig. 2 7., p. 21).

These categories are still persistent in the understanding of the terminology within central sectoral policies affecting cultural landscape management. Corresponding to the conservation efforts that were implemented during 1991 and 1995, the project National Registration of Valuable Cultural Landscapes[30], initiated by the Norwegian Ministry of Environment started to register nationwide important cultural landscapes (VERDIFULLE KULTURLANDSKAP 1994).

a) Areal category (modified by humans), often limited to rural or agrarian landscapes
b) Physical traces of human activity throughout time
c) Selected elements in the landscape (frequently threatened semi-natural vegetation, historic buildings or cultural heritage)
d) Managed landscapes (e.g. cultural landscape of agriculture, natural and cultural heritage)
e) Beliefs and traditions associated with certain localities
f) Elements in the landscape with meaning for human activity

Figure 3 Various meanings of the concept cultural landscape in Norwegian administration (by JONES 2003; DAUGSTAD and JONES 1997).

Incessantly, planning authorities, administration and sectoral politics integrated cultural landscape terminologies. Nonetheless, an overall approach to a broad and adaptable conception in spatial planning and rural development attempts was missing. In the early 1990s, the term cultural landscape transformed into a major battleground for applied research in what consultants and scientists bustled and fought about funds and the prerogative of interpretation.

Beyond, media and society captured this mass-appealing terminology. A follow-up research by JONES and DAUGSTAD (1997) covering the period from 1987 to 1993, examined over 40 Norwegian administrative and applied research documents (JONES 2003: 31; JONES and DAUGSTAD 1997: 271). The aim was to disentangle the varying employments of the terminology in Norwegian public administration and spatial management. JONES and

30 *Nasjonal registrering av verdifulle kulturlandskap* comprises approximately 290 valuable cultural landscape sites in Norway.

DAUGSTAD (1997; 2003: 31) identified several meanings of the conception of cultural landscape, reflecting the preceding applications by governmental and municipal institutions, as conferred in Figure 3 (p. 22). Amongst this variety of meanings and applications of cultural landscape in Norwegian administration, JONES and DAUGSTAD sized four key discourses about the cultural landscape terminology in Norway (JONES 2003: 31p; JONES and DAUGSTAD 1997: 278):

1. Understanding cultural landscapes as the meaning of cultivated land enhanced towards a broader comprehension of agricultural landscape producing environmental goods, stressing out the economic values.
2. Nature conservation sector primarily considers the cultural landscape as landscapes influenced by humans, and as semi-natural ecosystems of significance to biodiversity, focusing on aesthetic and historical values.
3. Cultural heritage sector defines cultural landscape as all landscapes modified by human activity with an emphasis on monuments, historic buildings and other structures.
4. Local environmental planning associates cultural landscapes with trees and green, comprising aesthetic and cultural-historical aspects.

Particularly the first discourse within the agricultural sector leaves an ample scope of interpreting cultural landscapes as a common good developed by external effects of a multifunctional agriculture. Furthermore, it conveys that sectoral perspectives characterise and specify material path progression in a cultural landscape context widely. Until today, policy documents and literature negotiating cultural landscapes in Norway have focused almost exclusively on implicit or explicit normative awareness of the terminology.

In summary, it can be stated that the cultural landscape formulation is strongly associated and perceived to farming landscapes and agriculture in Norway. Speeches by the government, the administration, the farmers union and other governmental, social and economic stakeholders reproduced the term massively in this context (RØNNINGEN, FLØ AND FJELDAVLI 2005: 3). In contrast to this, a more holistic and general definition outside the agricultural domination of the terminology came up in 2014:

"Every landscape that is influenced by humans. The term is used when focusing on the human impact on the landscape, and very often about agricultural landscapes in general" (NORWEGIAN AGRICULTURAL AUTHORITY; NORWEGIAN CULTURAL HERITAGE FUND; DIRECTORATE FOR CULTURAL HERITAGE 2014).

With the main objective of the present study on the contemporary cultural landscape management, the consciousness about the terminology is exceedingly broad. Work at hand examines cultural landscape management approaches in Norwegian policy and planning issues. Supplementary to national concepts, which are mainly influenced by domestic administration and planning, Norway applies cultural landscape ideas in international collaboration.

International cooperation and postulation of the terminology takes place in several bi- and multilaterally contexts. The efforts comprise cross-border projects, as well as the compliance with international statutory regulations or conventions Norway commits to (BUGGE 2011: 60). On the example of cultural landscape management, the effort to apply international liabilities to a national law can cause opposing effects. Vice-versa, international collaboration impacts the national administration and planning of cultural landscapes and therefore its conceptual design. A Norwegian perspective needs to be applied, identifying the general principles with particular attention towards the constitution of cultural landscapes as action, communication and identity arenas. Pursuant paragraphs present the main areas of international cooperation around cultural landscapes in Norway.

2.5.2 Cultural landscape application in transnational cooperation

Norway took part in many transnational negotiations and projects, mainly in the field of natural and cultural heritage. The most prominent examples of such international commitments resulted in the World Heritage sites Geirangerfjord and Nærøyfjord[31] and the European Landscape Convention (ELC). Regarding

31 The examination excludes the cultural landscape management measures in the two World Heritage sites. They are considered as lighthouse projects and obtain a maximum of attention (financially, medially and management-wise) by the national and regional administration. The government wants to promote the handling of these areas as an example of best practice regarding cultural and natural heritage management.

"We have the responsibility for coordinating the management of the cultural landscape of the World Heritage Nærøyfjorden, where we have a close dialogue with the participating farmers and municipalities, and processing the environmental grants for different efforts concerning cultural landscape in the area. Yearly budget is approximately 3 million NOK" (INT VII 2013: 3).

international treaties and conventions, Norway deploys the dualist principle that explains the relationship between national and international laws, treaties and conventions. The country formally adopts the signed international conventions to domestic law. Another requirement in this regard is the principle of presumption claiming that Norwegian law is presumed to comply with the international legislation and conventions (BUGGE 2011: 60). Ensuing sections highlight the application of cultural landscape terminology in the international cooperation based on negotiations and treaties. Cross-border cooperation on cultural landscapes is a significant matter between Norway and its neighbouring Scandinavian countries, not only because they share characteristics such as vast areas and scattered population of most of the Nordic landscapes and the problems they have to cope with (MOSTRÖM and MOFLAG 2012: 6).

- Nordic cooperation

Regarding the traditionally and historically founded close ties between the countries of the Scandinavian Peninsula, trans-border cooperation on various levels between the neighbouring states is strong. The Nordic Council[32] organises a joint Nordic access to landscape and collaboration (MOSTRÖM and MOFLAG 2012: 6) primarily. A council working group on nature, open air and cultural environment cover the topics biological diversity, landscape, cultural environment and outdoor recreation. Cultural landscape wise, particular attention is paid to the Nordic grasslands that are considered as species at risk (NORDEN 2010). Respecting the joint use of terminology, a Council of Ministers report from 1987 defined landscape as: *"The total physical surroundings outdoors"* (HAVERAANEN 2002: 50). Until the Norwegian administration took direct policy measures towards cultural landscapes in the mid-1990s, the term's theoretical conception by the Nordic Council of Ministers formed a key comprehension category in the Norwegian government (ibid.). A landscape classification by the Nordic Council of Ministers according to their varying conservation values and their equivalent planning scopes from 1992 came up. Statutory regulations for cultural landscapes with high conservation qualities

32 The Nordic Council is an official inter-parliamentary body of the Scandinavian states. It was formed in 1952 and has 87 elected members from Denmark, Finland, Iceland, Norway, and Sweden, as well as from the three autonomous territories of Greenland, the Faeroe Islands and Åland (NORDIC COUNCIL OF MINISTERS 2012).

grasp management measures; these cultural landscapes with special values should be managed in contrast to ordinary agricultural landscapes shaped by economic activities (OLSSON and RØNNINGEN 1999: 8).

These understandings became the scaffold of an attitude of awareness by a Norwegian cultural landscape policy. Until Sweden, Denmark and Finland became members of the European Union (EU), the Nordic Council provided a common conceptional foundation for the advancement of the Northern Periphery within the EU to which Norway numbers among (ESDP 1999: 78).

- Norwegian collaboration with the European Union

The European Spatial Development Perspective (ESDP) assign Norway to its spatial vision of the Baltic Sea region (ESDP 1999: 79). Further, Norway is associated to the Northern Dimension (EUROPEAN COMMISSION 2014: 4). As a member of the Agreement on the European Economic Area (EEA), Norway cooperates closely with the EU. The country makes an effort to meet the rules and obligations within the EEA, which essentially reflect EU regulations and commitments (BUGGE 2011: 60).

Notwithstanding, Norway is a non-EU member country and was not obliged to employ the in 1999 agreed ESDP with the relevant cultural landscape conceptions (§ 151-159 ESDP). ESDP expresses the understanding that landscape includes socio-cultural aspects. § 151 ESDP states that: "*Cultural landscapes contribute through their originality to local and regional identity and reflect the history and interaction of mankind and nature*". Regarding cultural landscape management, the ESDP proposes a creative management of cultural landscapes. Further, it challenges the members to develop cultural landscapes intentionally by combining a preservation emphasis with an economic valorisation approach of cultural landscapes. Action arenas deduce general principles for constituting cultural landscapes. Valorisation takes place on integrated spatial development strategies (EUROPEAN COMMISSION 1999: 35f cited in GAILING and RÖHRING 2008: 5). A significant value recognition of the ESDP rhetoric is acknowledgeable in the revised Norwegian Planning and Building Act[33] from 2005 (AMDAN 2005: 5). Beyond the application of ESDP

33 Change in the Planning and Building Act are based on the white paper no. 21 "*Improving Urban Environment*" from 2001.

diction, Norway employs ESDP propositions of priority areas within INTERREG III A and III B programmes pro-actively. Currently, Norway participates in 13 INTERREG programmes (NORWEGIAN FOREIGN MINISTRY MELD. ST. 5 2012: 533p). None of the programmes takes place in the study area. Besides, Norway was eligible for the INTERREG IV Northern Periphery Programme (NPP). The largest NPP contributors in Norway are the counties of Nordland and Troms. "*Before and over the borders - long-term changes in the Sami society*" is a project[34], that reflects the change in Sami society by the use of the cultural landscape from prehistoric to modern times (EUROPEAN UNION PROJECT PORTFOLIO INTERREG IVA North 2013: 121).

At present, Norway is associated with the EU through the EEA Agreement and cooperation takes place in many sectors (TANIL 2013: 446p). Regarding landscape and spatial planning, Norway postulated to apply the two EU directives (2001/42/EC and 2011/92/EC)[35] concerning environmental impact assessment[36] and strategic environmental assessment of the Planning and Building Act. Environmental impact assessment became mandatory for the entire regional and municipal planning processes (BUGGE 2011: 46p). Therefore, the protection of cultural and natural heritage represents central aspects. Through the EEA financial mechanism on cultural heritage, the Department for Cultural Heritage[37] contributes to environmental projects in Estonia, Hungary, Latvia, Lithuania and Romania to strengthen bilateral cooperation (DEPARTMENT FOR CULTURAL HERITAGE 2014; EEA GRANTS[38]). Significant collaboration in cultural landscape management is not referring to the cooperation between Norway and the EU; far-reaching efforts recur to the Council of Europe and the European Landscape Convention (ELC).

- Implementation of the European Landscape Convention in Norway

34 The University of Nordland in Bodø is supervising the project.

35 An EFTA surveillance authority press releases by from July, 17th 2014 reported that: "*Norway has failed to correctly implement the two environmental directives*." (EFTA SURVEILLANCE AUTHORITY 2015).

36 Large industrial projects are subjected to the regulation of environmental impact assessment since 26th, June 2009 (BUGGE 2011: 46p).

37 *Kulturminneavdelingen* is the Department of Cultural Heritage Management. It is one of five departments belonging to the Ministry of Climate and Environment (MINISTRY OF CLIMATE AND ENVIRONMENT 2014).

38 In the frame of the EEA Agreement, Norway provides funding to reduce social and economic disparities within the EEA (EEA GRANTS 2015).

Concerning an associated effort to cultural landscapes, the ELC is marking the essential groundwork for cultural landscape apprehension and management application in European cooperation. Norway, as a member of the Council of Europe, signed the European Landscape Convention on October 20th, 2000 as the first country and ratified the document on October 23rd, 2001 (JONES and STENSEKE 2011: 19; MOFLAG 2007: 13). ELC entered into force on March 1st, 2004 (cf. EUROPEAN LANDSCAPE CONVENTION in CETS No.: 176). Within the implementation framework, the convention was translated into Norwegian and Sami language, to raise awareness (cf. Article 6 a ELC) and to further warrantee a joint attempt in employing the convention (NORDLI and MORTENSEN 2012: 41; MOFLAG 2007: 14). Implementation of the convention takes place within the framework of the Nordic Council of Ministers. The foremost responsible institution coordinating Norway's attempt in implementing the convention is the Department of Regional Planning at the Ministry of Environment[39]. Additionally, the Ministry of Climate and Environment is in charge of cultural heritage[40], nature management and climate and pollution (MINISTRY OF CLIMATE AND ENVIRONMENT 2013). In conformance with the ELC, Norway attends the principle of subsidiary and divides roles and tasks for landscape policy based on spatial planning between the administrative levels in the country[41] (cf. **Chart 1** App.). Most consistent levels of administration regarding land use planning and landscape protection and management are the regional[42] and local authorities[43]. The current modus operandi of the ELC materialise an issue. Norway is not mapping land use at a national level. Regional and local administrations that do so, have to response to the central government according to appreciated policies and instruments for planning and

39 Since the Solberg government (16.10.2013) took office, the institution is renamed in Ministry of Climate and Environment.

40 Regarding cultural heritage in cultural landscapes, the Department for Cultural Heritage Management is responsible for following up on the European Council conventions on cultural heritage.

41 Norway as a traditional centralised state can also be considered as a supermarket state. Appertaining to the political-administrative control providing services that emphasise efficiency and quality and conceiving the people as consumers, users or clients (HOOD 1998: 98 cited in CHRISTENSEN 2005: 276).

42 County governor of Sogn og Fjordane and the Sogn og Fjordane County Council.

43 Stryn Municipality.

landscape development, comprising measures on an intended cultural landscape management (NORDLI and MORTENSEN 2012: 39).

Instruments for implementing the ELC into local planning policies are the county comprehensive plans as well as the thematic and area county plans. Integration of landscapes into area planning policies is executed by the municipal comprehensive plans, land use plans and the respective zoning (CORINTO 2011: 5pp). Norway is immensely challenged by the ELC implementation process as 430 municipalities are equally responsible for local planning and development regardless of the individual size of the municipality. Ministry of Agriculture and Food accentuates in adherence to the convention and the significant meaning of cultural landscapes on the local level:

> *"(...) to increase the municipalities' awareness for the farming landscape's importance in landscape design, a rural area's "aesthetic expression" and biodiversity and for this landscape's role in identity building (…)" (ENVIRONMENTAL STRATEGY 2008-2015 MINISTRY OF AGRICULTURE AND FOOD 2008: 18).*

About the application of the ELC in Norway and a broader expansion of cultural landscape apprehensions by sectoral policies, the Planning and Building Act was revised in 2005. Since the review of the Act, impact assessment is mandatory for all planning projects in landscapes that are undergoing building and construction measures. Advanced tools for the protection and safeguarding of cultural landscapes are provided by taking them implicitly into consideration within all planning processes and tasks. Certain areas are designated to special considerations according to land use comprising applications and permits for constructions. The 2005 revised Planning and Building Act is acknowledged as one of the major tools for the implementation of the ELC (NORDLI and MORTENSEN 2012: 39). Nature Diversity Act, the Cultural Heritage Act, the Land Act and the Forestry Act are additional regulations with one or more provisions substantiating cultural landscapes that need to comply with the ELC goals and objectives. Furthermore, the installation of national parks or protected landscapes emerges as an effective tool for safeguarding landscapes according to the ELC alignment (NORDLI and MORTENSEN 2012: 39p).

European-Cooperation (Art. 7 ELC) transpires extensively on the level of the Nordic Council of Ministers in the fields of following-up to the convention,

information dissemination and a joint priority identification (MOSTRÖM and MOFLAG 2012: 6). Article 8 ELC requires ensuring the exchange of information, at central government level, sectoral policies report to the Parliament (CORINTO 2011: 5pp). Efforts made by the Norwegian government to implement the ELC are indicated in the reports[44] to the Council of Europe in 2002, 2007 and 2011. It occurs prominently that aside the revised Planning and Building Act from 2005 and some sectoral policy adjustments no fundamental legislative tools proposed the implementation of the ELC in Norway. By ratifying the convention, the country is legally obliged to acknowledge cultural landscapes as entities for managing ecological and social matters at once (SETTEN et al. 2012: 306). Cultural landscapes need to be recognised as social constructs. Cultural landscape governance approaches can lock-in and be entitle to implement the strategic visions by the ELC. A joint opportunity among the Nordic countries is a common Nordic action programme that promotes a Nordic perspective on the ELC in a national context (MOSTRÖM and MOFLAG 2012: 7). Bestirring the transnational level of cooperation on cultural landscapes, many directional principles derived from the ESPD and the ELC mindsets, pertaining to creating cultural landscape communication and action arenas for governance purposes. Different scientific apprehensions that correspond to planning guidelines and the intended development of cultural landscapes need to be applied to widen the scope of cultural landscape management measures. Cultural landscapes as concepts are constitutional, at least, driven by the administration as the missing link between agricultural land, cultural heritage and environmental management. In the retrospective of the so far stated acquaintance and normative apprehension of terminology and management measures regarding cultural landscapes, Norway occurs to be still in an emplacement process. It is exceedingly important to introduce alternative analytical and apprehensive entries to cultural landscapes.

44 Received information concerning descriptive summary notes on the landscape policies pursued in the Council of Europe member states from 2002, the comprehensive presentation of the status of landscape policies prosecuted by the member states of the Council of Europe from 2007 and the report on landscape policies of the member states of the Council of Europe 2011.

2.6 New analytical approaches for changing cultural landscapes

The present inquiry examines cultural landscape change, the management measures coping with such and a future vision of an intended development by analysing the constitution of governance frameworks in cultural landscape action, communication and identity arenas in three valleys in West Norway. By assigning social sciences, new cultural landscape research areas evolve. The trailing scientific task is to find research perspectives that correspond to the practical day-to-day approaches of cultural landscape management. It is important to consider that practical planning and policy implications determine the Norwegian apprehensiveness of cultural landscapes than prolonged predefined theoretical elaborations. The scientific backbone of cultural landscape conception in Norway is, as SCHENK (2011: 113) refers to, as the result of sectoral policy dependence. Figure 4 (p. 32) displays that almost all cultural landscape comprehensions postulate normative aspects while ascribing inherent values and qualities to cultural landscapes. Normative aspects impute cultural landscapes a sense of identity to a particular group of people. Cultural landscapes conceive as heterogeneous and multifunctional goods that are providing services to contribute to the welfare of individuals and communities. Self-evidently change of cultural landscapes challenge individuals, communities and administrations to adopt an analogous apprehension and to apply actions respectively. There is no comprehensive institutional regime controlling cultural landscapes and their dynamics (RÖHRING 2011: 1; GAILING and RÖHRING 2008: 50). Dependence on sectoral policies creates institutional reliance and pertains to a legal and scientific justification for the top-down deduction of the values and spatial qualities of cultural landscapes (SCHENK 2011: 113; GAILING and RÖHRING 2008: 50pp). Frequently the normative apprehensions and the connected values assessed by politics and practice labelled with management regulations, stand in direct opposition to the ontological settings that influence the creation of regional images, identity and awareness within cultural landscapes. Undoubtedly, cultural landscapes inherent, intrinsic spatial qualities[45]. Conflicts between the benefit of individual property rights and the

45 Definition of the term is displayed and discussed in Chapter 5.7 (p. 249pp).

community benefit, mistakenly restricted by different levels of administration arise since affected stakeholders subdue cultural landscapes to numerous social and ecological functions. Cultural landscapes, as outlined so far, are frequently considered as a by-product or an impact of external effects adjusted by varying sectoral institutional systems[46] (SCHENK 2004: 114; APOLINARSKI et al. 2004: 15).

Correspondence and Normative Character of Cultural Landscape Terminology in Planning and Science (SCHENK 2008: 278, suggested by GAILING and LEIBENATH)

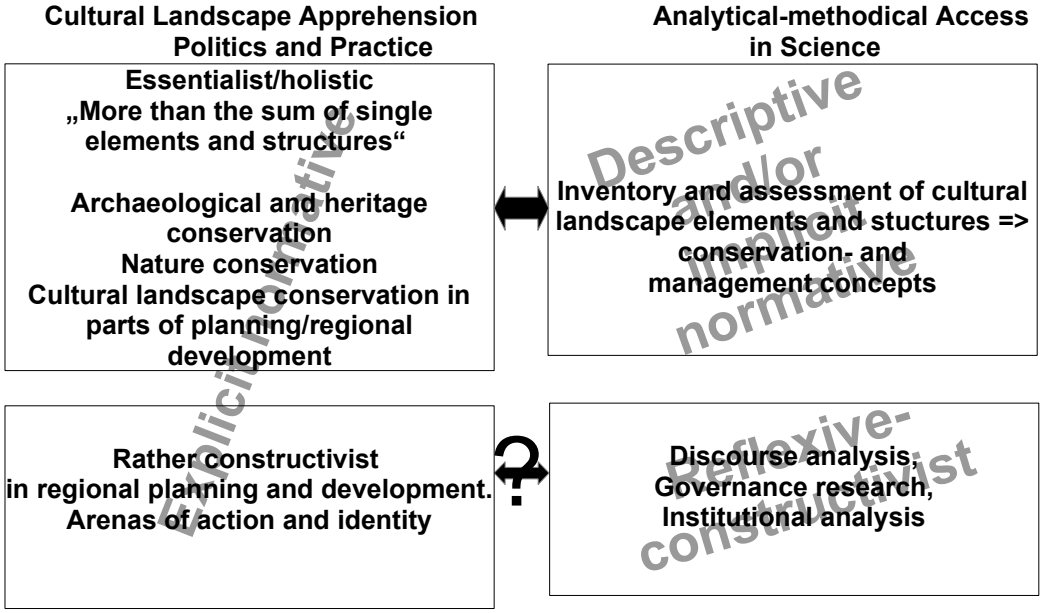


Figure 4 Correspondence and normative character of cultural landscape terminology in planning and science (source SCHENK 2008: 274).

The already addressed fear of losing cultural landscapes in local societies becomes a basis of communication for the future development of cultural landscapes (SCHENK 2008: 271). Material structures are construed as symbolic signs, to which statements and attitudes of stakeholders connect. Stakeholders with similar statements and attitudes about cultural landscape design discourse coalitions. Resulting interaction unfolds specific rules and evolves in an own, more informal institutional framework (SCHENK 2011: 114). Thence, cultural landscapes are obliged to be planned and managed by such

46 HAMPICKE (2013: 127) stated that the approved concept of external effects has been exceedingly removed by the common goods theory in modern economic theories. Common goods can analyse the evolving problems more consequently.

discourse coalitions, to satisfy the present needs of the consumers of cultural landscapes and to challenge future changes, simultaneously. It is important to highlight that cultural landscape research tends between upkeeping historical evolved cultural landscapes as remnants of past land use practices, on the one hand. On the contrary, the increasing importance of the multifunctional cultural landscape in rural societies for future and sustainable regional development, particular in tourism, is definite acknowledged. Archaeologists and spatial planners, for instance, display differing attitudes about the management practice of cultural landscapes, no matter what individual and non-sectoral policy related stakeholders conceive about cultural landscape development on-site. Communication about cultural landscapes as a physical-material space within an area that creates place, in which cultural landscape becomes the centre of attention[47], needs to be initiated. Process-bound stakeholders exceed their organisational borders and an interdependent management, a form of governance, takes place (SCHENK 2008: 114; GAILING and RÖHRING 2008: 7). SCHENK (2011: 15) made a significant contribution to such a reflexive-constructivist approach by grasping cultural landscape management out of a historical geography comprehension. To that extent cultural landscapes cover:

- An approach related to objects and components.
- An approach related to functional planning and policy decisions.
- An affirmative attachment of a constructivist approach[48].

Such a conception helps to elucidate that cultural landscapes, within the research at hand, are socially constructed and not bare physically-bound entities as such (SCHENK 2011: 15; WIDGREN 2006: 57). In Germany, for instance, spatial planning and regional development authorities, as well as private stakeholders subdue the terminology of cultural landscape to a constant conceptual expansion. The results are created out of a continual discussion amongst affected actors, communities and the society as a whole. Cultural landscape concepts are in a constant feedback loop with a natural, social and political framework that pretend a continual review of its feature as a tool for

47 The term space implies the physical area and place involves the social-emotional construction of space (FÜRST et al 2008: 71).

48 Recurring to matterscape, mindscape and powerscape by JACOBS (2004: 26pp).

regional development. Accordant to the term's heterogeneity, it is important to initiate a comprehension basis and conceptualisation to operate with it correspondingly. Hence, it is important to reflect cultural landscapes in a constructivist perspective. Pursuing social sciences with institutional theory approaches will give further assistance to create a meta-level, where cultural landscape change and management in Western Norway is encountered, without pre-arranged administrative boundaries and static policies that were defined by past discourses. At present, cultural landscape comprehension in research ranges from essential-conservative approaches (cultural landscape as a physical space, cultural landscape as the sum of its cultural landscape elements, cultural landscape as a product of human-environment interaction) to constructivist-reflexive approaches (cultural landscape as a social construct with spatial qualities, cf. Fig. 4, p. 32). Constructivist concepts of space are based on discourse-theoretical approaches (GLASZER and MATTISSEK 2009: 13). So far, comparatively few attempts have been made to integrate a constructivist-reflexive approach in the field of cultural landscape research in Norway. In 2008, a small-scale study based on the assessment of cultural landscape in Erdalen has indicated a substantial loss of the over centuries evolved cultural landscape by transformation and overgrowing. In a broad range of literature, Norway assigns agriculture the key role of an upholder of cultural heritage and cultural landscape (LYSSANDTRÆ 2005; GAUKSTAD 2005).

Adoption of specialisation and intensification took place in the country's primary sector affecting the cultural landscapes in some areas that are heavily socio-spatially charged. Obligatory and continuous agricultural land use are considered as an arrogated management effort to protect cultural landscapes. Not only a significant decrease in farm numbers in rural Norway had a changing effect on the grown cultural landscape in the case study areas. In this respect, ancient forms of land use were replaced by modern ones, transforming the evolved cultural landscapes from a palimpsest of past land use practices to an increase of green-tunnels. Legal regulations and subsidy payments on livestock management and land use could not stop the fast and perceptible change in the cultural landscape on-site. The installation of the nature reserve around the

Jostedalsglacier assumed cultural landscape management efforts within the Jostedalsbreen National Park borders. Anyhow, an ambivalent interaction between land use, financing mechanism and maintenance of necessary infrastructure for agriculture and tourism take place, without a clear path progression towards an intended future cultural landscape management. Conflicts around the cultural landscape within and outside the national park among various stakeholders, varying institutional regimes and sectoral policies might occur. These conflicts are of a passive nature because the cultural landscape is, in this respect, a multifunctional and heterogeneous construct, influenced by various intended and unintended purposes. Additionally, the cultural landscape change is a by-product of market forces and sectoral policies. The already mentioned passive conflicts derive from adverse effects, which often unintentionally evolved out of the institutional heterogeneity and complexity subsumed by the problems of institutional interplay (RÖHRING 2011: 1). Stakeholders involved in cultural landscape management and different actors on-site have a common perception of how cultural landscape has to appear, henceforward, how they have to be managed. According to the various interests of the stakeholders, preservation and a future development plan of the cultural landscape in the joint space of identity and perception is lacking. Unintentionally, the efforts to protect landscape by the Jostedalsbreen National Park increases the deficiency of a top-down management approach. An essentialist-holistic approach, integrating cultural landscapes in nature conservation efforts and, vice versa, applying the national park concept for regional development processes has not been attempted widely in practice. Parts of the endangered cultural landscape are on national park ground and integrated in the national park concept. National park management and laws connected to it inherent problems for the upkeep and future intended cultural landscape development, particular regarding the land use. Respectively more conflicts among cultural landscape stakeholders in the study area appear.

Conducive to answering the question raised in the heading, changing cultural landscapes require at least the empirical review of new perspectives regarding an analytical-methodical access of adopted management measures.

The adjacent section gives a placement of cultural landscape concepts in the selected theoretical frame.

2.7 Operationalisation of cultural landscapes

Subsequent sections pursue the objective to make the previously outlined and broadly contested term cultural landscape scientifically more operational by describing the theoretical foundations from the perspective of the link between space and social sciences. An aim is to make the term applicable and to set up a basis for reviewing and analysing the theoretical alignment empirically. The crucial theoretical foundation for cultural landscapes applied as action, communication and identity arenas, in which cultural landscape governance takes place, are debated in a theoretical setting of the theory of goods, institutional and governance theory. At that level, cultural landscapes have been significantly deflected from their pristine condition in a holistic consideration (SELMAN 2012: 29). Physical attributes are combined with associated values by individuals or communities. Cultural landscapes are regarded as spatial entities or social constructs, on the one hand, developed by the perception of individuals and groups. On the other hand, they exist physical-materially in space resulting in elements and components of social processes (SCHENK 2011: 15; OLWIG and JONES 2008: xi; RÖHRING 2008: 35; WIDGREN 2006: 57). The continuing paragraphs outline the selected theoretical conception of the study. They offer theoretical access to analyse the potential formation of cultural landscapes as action, communication and identity arenas in the case study valleys. Cultural landscapes designed as such, assist as a platform:

- For negotiating common and differing interests of stakeholders about cultural landscapes and resolving active and passive conflicts.
- For a balanced institutional framework and to purposely develop cultural landscape governance for managing the emerging dynamics and processes on-site.

2.7.1 Cultural landscape in the theory of goods

Cultural landscapes, as well as elements and components indicating the character of cultural landscapes, can be regarded as goods and services that

satisfy particular needs of consumers. RÖHRING (2008) delineated in his article: "*Gemeinschaftsgut Kulturlandschaft - Dilemma und Chancen der Kulturlandschaftsentwicklung*" the character of goods, services and functions of cultural landscapes. He compiled dimensions of goods and services provided by cultural landscapes, as acknowledged in Figure 5. In neoclassical economic theory, goods and services are distinguished by the criteria of competition in consumption (rivalry) and exclusivity (excludability)[49].

The two principles help to define the character of goods and services to a simplified range without reflecting the property rights (HAMPICKE 2013: 27). Simplification is necessary to point out stakeholders' behaviour while dealing with cultural landscape and the management of the related common and private goods and the respective effects (RÖHRING 2008: 36; APOLINARSKI et al. 2004: 3).

Provision	Rivalry of use	Non-rivalry of use	Excludability
Direct Provision	**Private goods/services** e.g. agricultural land use, forestry, private residential building	**Club/Toll goods/services** e.g. drainage and irrigation systems, golf courses	**Excludability of use**
Existing nature or provision of external effects	**Common Pool Resources (CPR)** ecosystem services, remnants of unspoilt nature, elements of cultural landscape	**Public goods/services** e.g. rivers and lakes, aesthetic appeal of landscapes	**Non-excludability of use**

Figure 5 Dimensions of goods and services of cultural landscapes (RÖHRING 2006: 4).

Rivalry indicates the limitation of consumption by competitive users[50]. Rivalry arises due to the property of a good itself, or its quantitative limitation. Precisely, two groups of goods need to be differentiated in the application of the criteria of rivalry and excludability (HAMPICKE 2013: 127; RÖHRING 2008: 35p).

49 Rivalry and excludability are the selected terms used in the present research. BERGE (2003: 6), for example, expands the typology to substractable and non-transferable resources. Anyhow, both standards describe a simplified form of reality.

50 An apple consumed by person A cannot be consumed by person B. Person A owns the property rights of the apple and can exclude B from consumption.

Private goods, signify a competition of consumption (a rivalry) and allow to exclude other users from consumption, (b excludability). **Common goods** do not fulfil one or both of the above stated criteria, a or b (HAMPICKE 2013: 127; RÖHRING 2008: 36) .Various cultural landscape elements and components are advised as **private goods**. Individual land use and the cultivation of goods, for example, are typical private goods. Prototypical, they exclude users and, secondly, they appear as marketable goods. Each farmer decides what is tilled on his field; he does not share the tilled field with another stakeholder. It is important to recognise when applying the theory of goods and services in expansion with social science that excludability is organised by regulations (institutions), which in turn are defined by society. In this particular case, the scope of action is always limited to the qualities of the good. Transaction costs[51] receive only significance concerning spatial bound and environmental goods (RÖHRING 2008: 35p).

Common goods are sub-categorised in **public goods** and **common-pool-resources** (CPR). Both categories describe cultural landscapes as an open asset for everyone, without reducing other users benefit during consumption. Self-awareness and identity relation to cultural landscapes are such public goods[52]. Territorial identity, either locally or regionally is pivotal for empowering cultural landscape as an endogenous force and potential stimulus for regional development (SCHENK 2008: 115; APOLINARSKI et al. 2004: 2).

Unfolding regional identity does not consume physical-material cultural landscape. Elements and components of cultural landscapes will adopt the character of a CPR, if the cultural landscape changes. Particularly, when the

51 HAMPICKE (2013: 126) explains transaction costs as costs, which generate an extra cost unit that deviates from the average costs. As a matter of fact, a simple trade-off is connected to transaction costs. Partners have to communicate and meet physically or virtually. In respect of the study scope, transaction costs evolve in complicated legal cases, for example.

52 External effects is more and more replaced by the common good theory, which allows a more consequent analysis of problems regarding common goods. Problems about external effects were mostly solved by the internalisation of external effects. An example: A farmer owns a field on which flowers are growing next to wheat. People, who are walking by the field are delighted by the flowers; a positive external effect is created. The farmer does not get any compensation from the people, who are walking along the field and enjoying it. If the flowers were part of a financial compensation program for environmental measures in agriculture, both the wheat production and the flowers would be economically accepted and beneficial to both (HAMPICKE 2013: 126p).

loss of elements or components that characterise the specific landscape is expectable and it is anticipated when interfering with the aesthetic quality of cultural landscapes. Regarding this, DIETZ et al. (2002: 18) defined a CPR as a: "*valued natural or human-made resource or facility that is available to more than one person and subject to degradation of over-use*". CPRs are also named impure public goods (HAMPICKE 2013: 128).

Club and toll goods are assigned to excludability or rivalry in use (cf. Fig. 5, p. 37). Rivalry in use is created by excluding other users in consuming the good. Regional brands, which are pursuing historical, landscape and image qualities connect to a membership and hereof, becoming a club good. Helping to prevent the brand from free-rider effect[53], as in the case of CPR degradation of overuse, becomes a critical issue. Everyone can benefit from the brand without contributing to the preservation of the initial value (RÖHRING 2008: 38; RÖHRING and GAILING 2005: 2).

Considering the common good aspect of cultural landscapes, it is inevitable to highlight the heterogeneous and multifunctional character of cultural landscapes and its elements resulting in various functions that anticipate particular goods and services (RÖHRING 2008: 38, 2005: 2). BERGE (2006: 70) illustrated mixed forms of goods and services cultural landscapes provide actuality: "*Real world goods such as pasture, wildlife, timber, water, landscapes providing recreation, environmental services, or biodiversity will usually be a mixture of the various types of analytical goods*". He further (2006: 65) characterised traditional common goods as: *"(…) essential for the survival of local communities"*.

Consumption and production functions of cultural landscapes as common or private goods create additional functions, such as biodiversity, recreation and aesthetic values, for example. Concerning this matter, the purposes are highly integrated with one another and the respective stakeholders cannot reduce the activity relating to a single function particularly respecting an intended use of cultural landscape (RÖHRING and GAILING 2005: 2).

53 Elinor Ostrom (1990) referred to in the article *"Governing the commons. The evolution of institutions for collective action"* to the free-rider problem as the tragedy of the commons. It has to be clarified that her notions evolve based on the issue of governing pure natural resources used by many individuals.

- Cultural landscape a heterogeneous and multifunctional common good

As so far elaborated, cultural landscapes and their constituent elements and components emerge as heterogeneous and multifunctional. They embody divergent characters of goods and services that interact[54]. Theoretically, the values of cultural landscapes are defined by the constitution of all elements and components and not by single ones (RÖHRING 2008: 39; EUROPEAN COMMISSION 1999: 80). In practical terms, individual rights on the common good cultural landscape are still existent and need, in this respect, to be considered whenever the reclamation of private goods emerge within an intended development of cultural landscapes. Elements and components of cultural landscape incorporate multiple functions that are interrelated. Functions of cultural landscapes are assignments that de facto fulfil the means of life for humans. These can be economic functions, such as agricultural production, ecological functions, such as the regulation of fluxes and energy cycles, or social functions, such as identity development (RÖHRING 2008: 39). According to a lack of operationalisation of such a definition, the work at hand is inspired by the approach of KNOEPFL and GERBER (2008: 17) that implicitly or explicitly describes the individuality of landscapes. Individuality is due to characteristic goods and services that create an identity among the observers, and hence spatial qualities. Cultural landscapes in the productive agricultural regions in east Norway, for example, differ significantly from the ones in the case study sites, as well differ impacts of cultural landscape change, for instance.

By recurring to the theory of goods, various functions and services have different characteristics and are subdued to different regulations. Cultural landscapes as a resource of tangible and intangible values often need an appreciation and assessment by outside experts. Tourist sites are often confronted with outside experts, who contribute to the creation of values on the local scale because the cultural landscape supplies specific qualities for tourism

54 In order to analyse the interaction of the elements and components on the one hand, and the holistic appearance of cultural landscapes, on the other hand, KNOEPFL and GERBER (2008: 13) decouples landscape constitutive resources from landscape resources. He defines landscape as a secondary resource that stands out from the primary resources soil, water or forest (RODEWALD and KNOEPFL 2005: 44p).

(ALUMÄE et al. 2003: 137). The elements and components constituting cultural landscapes contain heterogeneous characters of the distinctive goods and services (RÖHRING 2008: 40). A dilemma becomes obvious in developing cultural landscapes. Anyone, independent of participating in or contributing to the improvement of spatial qualities in a cultural landscape can benefit. RODEWALD and KNOEPFL (2005: 379) quote that landscapes and their values are always related to landscape change. Today, landscape change is mostly seen as a threat compared to the past, in which landscape change was recognised as a quality improvement because crucial conflicts of use were solved (ibid).

The introduction of the summer farming system equals an intensification of land use that solved the problem of winter fodder production. Cultural landscape development is mutually dependent on the human impact on landscape creating an identity and an individual perception, on the one hand. Development and management of evolved cultural landscapes influence identity and individual perception, on the contrary. Constituting cultural landscapes in this respect is a result of external positive and negative effects and a more or less intended use (RÖHRING 2008: 40, 2005: 2). Regarding an intended planning of cultural landscape and the respective physical-material elements and components, quite contrasting opinions exist. The tension between working, living, tourism, consumption, spatial planning and nature conservation dilemma, realities, demands and chances of cultural landscape development can be determined. A close connection between positive and negative external effects becomes apparent. Agriculture is seen as an upholder of cultural landscapes in Norway. Many landscapes are kept open by agricultural production and concerning this, it is acknowledged as a public good. In contrary, agricultural use is recognised as a public bad because of the type and intensification of land use in the last decades, for example, resulting in green-tunnels. Elements and components of cultural landscapes in their productive and consumptive function show characteristics of a heterogenous and multifunctional common good. These functions affect other functions offered by cultural landscapes, such as biodiversity, recreation, image and identity creation. This interconnection and

the different qualities influenced by positive and negative external effects show an association of private goods with club goods, public goods or CPRs. On that, cultural landscapes can be recognised as a by-product of human activities. These activities have differing aims, conducted by the effects of central sectoral politics, economic incentives and individual moral concepts (GAILING and RÖHRING 2008: 41). Common good theories support the operationalisation of the term cultural landscape particularly by approaching the expansion of spatial science by social science. It supports the fact that cultural landscapes regarding the provision of goods and services are holistically identified as heterogeneous and multifunctional. Although individual stakeholders subject their private goods, which are part of the common good cultural landscape, to an intended development motivation. The supervision of the heterogeneous and multifunctional common good is closely related to the institutional regimes regulating those to understand the composition.

2.7.2 Cultural landscape in institutional theory

Retrieving the applied conceptualisation and according to the remarks made, cultural landscapes are acknowledgeable as heterogeneous multifunctional common goods. Within this concept, rules and behavioural patterns influence the development and management of cultural landscapes consistently (GAILING and RÖHRING 2008: 49). Social science labels such rules and behavioural patterns as institutions. BERGER and LUCKMANN (2007: 58) invoked that institutions assume historicity, a reciprocal typecast of action induced over the course of time. It is indispensable to understand the historical process that brought the specific institutions up. They are considerable as an important stock of knowledge[55] (BERGER and LUCKMANN 2007: 71p). Institutions are advised as multilateral accepted regulation complexes, defined by principles, norms and proceedings. They form a base of reliable activity patterns of stakeholders[56] in specific reference areas (PRITTWITZ 2007: 276p; MOSS 2003: 28). A frame of social actions classifies institutions (GAILING 2012: 150; PRITTWITZ 2007). YOUNG et al. (2005: 27) specified institutions as

55 BERGER and LUCKMANN refer to the term stock of knowledge as an expression that was coined by SCHÜTZ (1996: 17 cited in BERGER and LUCKMANN 2007: 71p).

a "*system of rules, decisions making procedures, and programs*". Therefore, they comprise social standards, legal regulations and systems of allocation and distribution, as well as established patterns of ontological settings, action and dependency (GAILING 2012[1]: 196p; 2012[2]: 151; OSTROM 2011: 2; MAYNTZ and SCHARPF 1995: 40pp). Contemplating governance research and institutional frameworks, the affiliation of the analytic model of an actors centred institutionalism[57] (MAYNTZ and SCHARPF 1995: 46 cited in GAILING 2011: 150) combines the structure of institutions and the stakeholder's behaviour in one perspective.

Referring to this, the typology of institutions comprises formal and informal institutions (PRITTWITZ 2011: 6; RICHTER and FURUBUTON 1996: 7 cited in EINIG 2011: 120). By analysing the institutional setting of cultural landscape management, the role of sectoral institutional systems becomes crucial. Formal institutions are codified systems of rules, such as constitutions, laws and administrative codes of practice and financial distribution systems (EINIG 2011: 119). Informal institutions are non-codified systems of rules, such as traditions, handed down cultural standards, as well as perception and behavioural patterns (NORTH 1998: 43pp)[58]. GAILING (2012: 150) observes that informal institutions represent fundamental modes of reality interpretation. To that effect, they may have a deeper impact on stakeholders behaviour than formal institutions (THOMAS 2003 cited in GAILING 2011: 150). Formal institutions often do not coincident with the stakeholders activities or even stand in contrary to those (OSTROM 2011: 3). For the part of non-organisational stakeholders, their motivations regarding measures in managing cultural landscapes are often supported by informal institutions. Also, some parts of the examined cultural landscapes are located at the border or inside protected areas by the

56 The term stakeholder is defined in the work at hand as: "[...] *anybody who has a (positive) interest in cultural landscapes*" (FÜRST et al. 2008: 77). Such a broad definition correspondents with the comprehension of the ELC regarding the meaning of cultural landscape that: "(...) *the perception of landscape is largely the outcome of public discursive practice rather than scientific reasoning*" (OLWIG 2007: 579p). Including all groups (experts, locals, farmers) that are encountered with cultural landscapes and the respective management.

57 *Modell des aktuerzentrierten Institutionalismus.*

58 DIETL (1993: 71p), for example, differentiates between fundamental institutions (rules and norms) and secondary institutions (rational designable and predictable rules and norms).

Jostedalsbreen National Park (JBNP). National park administration set up binding rules that influence cultural landscape management in the bordering areas of JBNP. Hence, formal institutions controlling nature conservation regulate land use in the national park statutorily. The local farmers conduct various types of land use on National Park ground. Their actions concerning cultural landscape management, for example, are partially based on informal institutions and guided by principle patterns of an economic interpretation (GAILING 2012[2]: 150). A dilemma appears. Elements and components constituting cultural landscapes are considered as protection-worthy and incorporated by nature conservation and formal institutions. To carry out land use and maintenance of the elements and components, farmers act contrary to the formal institutional framework regarding the protection and maintenance of cultural landscapes, because of the economic pressure. Motivation to do so is either based on informal institutions, such as traditions or customs, or even due to profitability reasons. This kind of institutional feedback loop reinforce cultural landscape change and re-arrange the protection of single elements or components in cultural landscapes to a certain extent. In the frame of this apparent cultural landscape dynamics, formal institutions do not adapt to the same speed as change occur. Related to this process conflicts between stakeholders come about. Formal and informal institutional framework directing cultural landscape management in the case study sites is intensively discussed in the result chapter presenting the institutional analysis. Conflicts among stakeholders regarding cultural landscapes are presented and widely debated in Chapter 5.7 (p. 262). From an institutional perspective, the already mentioned conflicts and problems regarding cultural landscape management can be acknowledged as institutional problems (GAILING and RÖHRING 2008: 50). Specific constellations shape conflicts and issues. Due to the multifunctional and heterogeneous character of cultural landscapes they are not equipped with own complex systems of institutions in comparison to nature conservation, water management and agriculture, for example. Cultural landscapes, comprehended as a result of external effects or common good, are implied by the institutional theory as a by-product of sectoral institutions and systems of

institutions affecting cultural landscape elements and components (OSTROM 2011: 2; GAILING and RÖHRING 2008: 50). According to divergences in aim and objectives of institutions, two main groups of institutional systems regarding cultural landscape management can be assigned. GAILING and RÖHRING (2008: 50) separate between:

- Institutional systems that focusing on protection (nature conservation and cultural heritage preservation).
- Institutional systems that focusing on usage (tourism, agriculture, settlement and traffic development).

In the analysis at hand, forms of cultural landscape governance assume a moderation function between the two mentioned institutional systems in the arena cultural landscape. Institutional systems focusing on utilisation have a strong effect on cultural landscape development as they are economically motivated (ibid.). Institutional systems with a focus on protection are designed first and foremost to preserve by regulations. Formal institutions, codified laws and regulations offer a broad scope of action for stakeholders appropriate to the implementation of the regulations. In turn, the informal institutions configure and exploit this vast scope of action. Sectoral values, regional traditions, identities and images of the cultural landscape have a unrelenting consequence on the configuration of institutions. That is why values and mentalities can be scarcely regulated. Comprehension of the cultural landscape is instantly dependent on the behavioural patterns of the users. Their perception and assessment restrain their actions and decisions (ibid.). Further, it has to be taken into consideration that natural processes, natural hazards and climate change influence the development of cultural landscape without a scope of action. Cultural landscape development is a complex sphere of activity and very much dependent on informal sectoral institutions. Divergences and complementaries in values are decisive for the initial point of cultural landscape based conflicts. Positively subsumed, they become crucial in the valorisation process of cultural landscapes as an economic resource in regional development processes (GAILING and RÖHRING 2008: 51). GAILING and RÖHRING (ibid) noticed a significant fact while examining institutions. To a variety of concepts, the

comprehension of a particular cultural landscape concept is a powerful informal institution that is adjusted to the sectoral institution systems. Apparently substantial landscape in space can correspond to landscape in mind, based on informal institutions and cognition. Such types of landscape cognition follow individual and in historical periods elapsed coherent perception. Thereby, the world's complexity is reduced and based on a cognitive, emotional and aesthetic defined awareness of landscape (IPSEN 2002: 42pp cited in GAILING and RÖHRING 2008). In this cognition, images affected by history and transported by media, convey the picture of cultural landscapes created as a product of informal institutions. The tourism industry and regional marketing often operate with such images and they consolidate it. By recurring to this view, the perception of the cultural landscape is affected inside and outside the region, both local and authorities' stewardship of cultural landscape is influenced (GAILING and RÖHRING 2008: 51). Regional identity can be construed as collective identity, PAASI (2003: 478, 2002: 140) differentiates between the identity of a region and regional identity. He further elaborated (2002: 146p): "*The identity of a region refers to those distinguishing physical, cultural and historical features that make one region different from another. Regional identity (or regional consciousness) refers to the extent to which people identify themselves with the region as the whole of institutionalised practices, discourses and symbols. While these two exist simultaneously as part of the process of social reproduction, this distinction is helpful to understand and analyse both the structure and power elements hidden in discourses on regional identity and individual regional consciousness.*" The regional identity related to the physical-material landscape is considered as a derivate of such.

The interaction between numerous formal and informal institutions and the effects on cultural landscape perception needs to be examined, to create a regional identity based on cultural landscapes. A central point of examination is the question how to use the scope of action for an intended development of cultural landscape as a common good. A research group (KNOEPFL and GERBER 2008; RODEWALD and KNOEPFL 2005 cited in FÜRST et al. 2008:

71) at the University of Lausanne tried to answer the above-raised question. They accessed institutional economics to figure out suitable property rights[59] that transform free goods (such as cultural landscape as a multifunctional common good) in responsible goods. To do so, the user connects with the good and creates an interest in maintaining and developing the good for future use. Relatively independent from state influenced motivation by financial distribution systems or sanctioning by laws and regulations (FÜRST et al. 2008: 71).

FÜRST et al. (ibid.) discussed the same effect of transferring free goods in responsible goods in the case of the cultural landscape as a common good by place-making processes. Maximising the consciousness of the value of cultural landscape by stakeholders and intensifying the responsibility would create ownership relations among stakeholders. Expenditures and benefits would be equally distributed among themselves (ibid.). The formulation of FÜRST is substantial for the selected theoretical approach to the research at hand. To analyse a possible governance arrangement, theoretical considerations about the social-integrative function of place will be displayed next. The transformation from space to place to governance is depicted.

2.7.3 Cultural landscape in governance arrangements

Governance is a widely opposed term and concept. A single definition is not available. Academic literature often referred governance to the process, in which the state is resigning from its monopoly functions and integrating non-governmental participants in the implementation process (FÜRST et al. 2008: 75; PRITTWITZ 2007: 201). LAMPING et al. (2002: 34) named this process the co-production between the state and jointly responsible citizens. In the meantime, societal self-regulation forces are mobilised, stressing out the concept of an activating state (BEUNEN and OPDAM 2011: 324; LAMPING et al. 2002: 35p). Governance redesigns the cooperation between state, market and society to some extent. In contrast to the phrase government that describes management structures to a lesser extent, governance characterises the processes of collective action of assorted stakeholders combining the various

59 Property rights in the inquiry comprise the right of ownership, the right of disposal and the right of use (FÜRST et al. 2008: 71).

logics of action, at least within the study at hand. The applied logics of action comprise hierarchy[60], market[61] and solidarity[62]. It is indicative that constituted cultural landscape action, communication and identity arenas can envelop such powers of motivation among specific conditions.

Within the analysis process, governance is oriented to the common or public welfare regarding a good-governance. Such a concept comprises non-hierarchical and collaborative forms of coordination (PRITTWITZ 2007: 194). Governance is seen as an open process management approach. Traditional shapes and top-down structures of cooperation that are based on possible effects of public administration take a back seat in favour of process related interaction approaches (PRITTWITZ 2007: 198). The examined associative cultural landscapes constitute space and place at once[63]. A large body of literature indicates that the remembrance of locality and community gains increasing importance because of progressive globalisation tendencies in many areas of life (OLWIG and JONES 2008: ix). Inhabitants of the study area are highly attached to the space they live. It is assumable that the study area can already be considered as a socio-emotional charged place. Not only because of the identity-establishing function but also because of evolved traditions based on centuries lasting land use that formed the familiar landscape, substantiating the social-emotional affection to the surrounding by the inhabitants. Local and regional levels are utterly beneficial to create place. Social coherence on a local scale will amplify, if ethical and social bedding is homogeneous[64].

Place in the example of cultural landscapes is considered as a collective process with the aim to improve the use of a place, the quality of living and the social-emotionally acquaintance of space. (FÜRST et al. 2004: 38). Principle components of place-making processes advert a:

– Social-emotional loyalty to an area (neighbourhood, homeland).

60 Representing the sectoral policies directing cultural landscape management.
61 Displaying the economy.
62 Symbolising the society/community.
63 As previously outlined, space comprises the physical area and place describes the socio-emotional charged area by the dwelling communities.
64 Home owners affect place-making more than tenants, for example (FÜRST et al. 2008: 72; FORREST and KEARNS 2001: 2130p).

- Social integrative power of an area (generating social capital[65]).
- Form of governance that allows a self-responsible process configuration by communication.

Respectively, communication structures place. Meaning that space becomes charged with values and qualities while debating about them. Such debates can, vice-versa, constitute and increase local identity or, at least, identification with the place. A sense of responsibility for the place generates. Consciousness and a sense of community arise. The place can increase such a sense of community. A common identity creation via images and interaction processes that create community can change the peoples' attitude towards place by enforcing motivation. Images are relevant for regional marketing as they affect the place internally and externally. Internally, they bring the people closer together externally they transport a clear message. FÜRST et al. (2008: 74) stated that cultural landscapes are beneficial to create a commitment to place. They attract because of the landscape. The commitment of the locals to the place is historically imprinted and cultural landscapes are noticed beyond their aesthetic function as a resource for regional development (such as tourism, economy, recreation, maximising real estate value). Such a commitment is crucial to increase the motivation for community-based planning. The example of a cost-benefit ratio that will change the opinion of cultural landscape stakeholders explains the described commitment (FÜRST et al. 2008: 74). A subjective change in values that are ascribed to the place should aim at generating benefits for the community. The interest of the community to reclaim or upkeep cultural landscapes should be as high as to accept increasing costs because place relating interactions support a sense of place (FÜRST et al. 2008: 74; WILLIAMSON and STEWART 1998: 19). In the process, property rights are transferred to the place. Commitments are produced that extend from the economic dependency of place to socio-emotional identification with space. Enfolding the motivation to improve a quality of life or the protection of the local natural and cultural resources (FÜRST et al. 2008: 75). By then place can

65 Social capital refers in the present examination to: *"(...) features of social organisation, such as networks and trusts that facilitate coordination and cooperation for mutual benefit"* (PUTNAM 1995: 67).

transfer to an interaction catalyst. Place-making increases the common good character of cultural landscapes. Place gains significance to the stakeholder, his individual cost-benefit ratio will be reallocated according to the higher benefit of the place. A dilemma results regarding place-making. According to the theory of goods cultural landscape, in terms of image creation, turns into a club good (cf. Fig. 5, p. 37) that allows free riders to participate without contributions. If forcing the participants to contribute is omitted, negotiated contracts and individual incentives have to replace the enforcement by contribution. Additional benefits and values are organised when producing the common good. These additional values can be joint experiences or financial advantages. Additional benefits can also ignite assets by transferring management at a governance level. In this case, place-making generates additional advantages and values for the community of stakeholders exclusively via collective action. A moral constraint evolves that forces participants to take part in a collective action (RÖHRING 2008: 75). Governance, in turn, creates management resources. A blind spot regarding the theoretical and practical application of the outlined theory is the consideration of rising costs. Costs differ specifically in their amount and the individual estimation of what are high and low costs. The costs that are expressed in personal time and work effort are considered less grave than a quantified sum. Such costs come to be of a less amount because of the cooperative interaction. Collective interactions coincidently create social relations and communal experiences, and at the same time. An individual value and expected benefit alter in the place-making process. According to place-making related communication, it can be estimated:

- In-group/out-group effects (definition of an explicit group formation).
- Property effects (benefits of cultural landscapes are increased and acquired).
- Governance-effects (organisation of collective action) occur (KEMNIS cited in FÜRST et al. 2008: 76).

If place-making materialises, internal amplification effects will unfold. An intensification of stakeholders interaction takes place. Social capital is generated and the stakeholders develop an ideological bonding, called common

visions. Simultaneously, increasing consciousness of the meaning of place and the attachment to the place arise among the involved parties. Such theoretical assumptions need individual empirical verification (FÜRST et al. 2008: 76). Place-making in cultural landscapes can be considered as a pre-amplifier to evolve governance.

- Arranging governance in place-making processes

Governance approaches, as investigated in the current research, rely on fundamental power based media such as:

- Communities[66],
- Clubs[67],
- Networks[68].

Governance processes are arranged mainly based on rule contested media of governance, which are:

- Trading
- Negotiating
- Argumentation
- Publicity.

Subsuming the terminology of governance in the academic literature, a popular discontent with the traditional management system is recognisable. Governance occurs on diverse spatial scales[69] and in various forms of management[70] (FÜRST et al. 2008: 77; BANG 2003: 101p, 247).

By attending cultural landscape governance, various prerequisites need to discharge. Analyses of regional governance and place-making, which were

66 Communities repose according to habits on adoption, shared interests and values, as well as on an idea related collective memory and on power, such as families and neighbourhoods. As there are no protected control ranges, the most powerful can interpret and determine the rules of interaction. Social control is a governing instrument in such communities. Further, direct and indirect communication pressure exist. Communities are considered as enormously capable and efficient (PRITTWITZ 2007: 210p).

67 Clubs are considered likewise as communities. They differ according to the possibility to enter a club and to withdrawal it. The principle of cooperation accepts new members. Declared rules constitute the internal structure of clubs. The club resources are for all members equally accessible. The risk of oligopolistic power exists. Based on the combination of community formation and the obligation to proceedings. Clubs are often efficiency-oriented and prepared to compete (PRITTWITZ 2011: 211p).

68 Networks are a loose association of defined criteria of affiliation. Networks combine communal relationship with an individuality of their members (PRITTWITZ 2007: 212p).

69 Such as in local, regional or global governance.

70 Such as meta-governance, participatory governance, co-governance.

conducted in biosphere reserves in Germany and Great Britain, displayed that cultural landscape governance was fruitful by engaging:

- The aesthetic function (picture of the landscape and the landscape view).
- The function of resources (such as water, forest, potential for tourism, tangible and intangible natural, cultural and historical values).
- The gestalt function, as in homeland (FÜRST et al. 2006: 165p).

A systematic and organised communication between the participants is integral to achieve governance. For the purpose of facilitating governance, additional pre-requisitions compiled by the involved parties are necessary. Many occasions create collective behaviour. Pressure to act is based on a common affection for something or a common problem perception. By recurring to the fear of losing cultural landscapes as an identity anchor, new cultural landscape management efforts can form a mutual basis to act in the study area. In combination with the remarks on cultural landscapes in institutional theory, five main features respecting governance arrangements are decisive (PRITTWITZ 2007: 276p):

- Design: Governance frameworks are developed and arranged specifically. A goal-orientation serves problem solution. A common problem perception and the need to cope with that (PRITTWITZ 2007: 201) are determinative.
- Mutuality: Various stakeholders discuss, negotiate and trade within such governance frameworks.
- Complexity: A combination of diverse types of standards (principle declarations of intention, behavioural norms, rules of operations and rules of procedure) yield in governance frameworks.
- Validity: Institutional frameworks are designed as a valid set of issues, to which in practice is not made an effort to in any case. They rather express normative expectations and imply formal and informal sanctions in the event of compliance failures.

– Processuality: Appears in the decision-making process and are designed and considered as progressively modifiable complexes of rules.

Systematic communication based on a minimum amount of leadership are a necessity to create governance, as well as periodical participation and meetings (FÜRST et al. 2008: 78). Good examples for governance practice are regional branding processes. FÜRST et al. (2008: 77p) stated that they create a common consciousness for the value of the region. Internally they constitute identification and external pressure is generated to fulfil the constructed marketing image. Thus, systematic communication about cultural landscape in governance arrangements is necessary for:

– The formation of a network.
– The creation of intensified knowledge about natural and cultural goods that promote social capital.
– The subjective cost-benefit analysis that comes in favour of natural and cultural resources.

To obtain place-making as an instrument, it ventures on collective learning processes. These learning processes are considered as instrumental learning or know-how learning processes. The aim is to change the participants' attitude and the adherence to values to create a paradigmatic change. The object of learning is the relation to a particular space and the estimation of cultural landscapes establishing social capital.

WONDOLLECK and YAFFEE (2000: 5) indicated: *"(...) the new style of management helps to build up a sense of shared ownership and responsibility for natural resources"*. One of the main intentions of collective learning is to constitute a common perspective to cultural landscape among actors and formulating common aims mutually motivating to act commonly. The process of communication designs collective identity-building processes, WILLIAMS and STEWART (1998: 18) concluded: "*In fact, the concept offers managers a way to anticipate, identify and respond to the bonds of people form with places. By initiating a discussion about the sense of place, managers can build a working relationship with citizens that reflects the complex web of lifestyles, meanings,*

and social relations endemic to a place or resource. Sense of place can be the shared language that eases discussions of salient issues and problems and that affirms the principles underlying ecosystem management."

Evidentially intervening variables make the connection between place and governance of place more complex, particularly according to socio-emotional coherence and attachment. Cultural landscapes differ qualitatively and offer a differing potential for place-making processes. Particularly when considering cultural landscapes as an added value in tourism, the group of stakeholders appreciates it. Possible associates response to cultural landscapes in a different way. Environmental activist, house owners, women and students, for instance, show a higher response to the place cultural landscape than other social groups. Incentives, such as transfer payments by the government, affect individual commitment to cultural landscape because they are percept as compensation. Simultaneously the transfer payments increase the benefit of compensation, activating the leverage effect creating a multi-functional common good based on transfer payments that otherwise would not have happened. Leverage effect because compensation by the government activates multiple resources of private work and time. In some cases, place-making processes do not enfold governance arrangements. Public institutions limit private willingness committing to cultural landscapes, as they carry responsibility. At least, participatory processes may form admittance to the stakeholders in a right to participate. Multilevel policies based on varied administrative units lead to effects dividing it in sectoral policies than to holistic governance arrangements. Stakeholders are dependent on decisions made by public institutions that are often incompatible with the stakeholder's consensus found in governance arrangements. Finally, the degree of professionalism is displayed by voluntary work (FÜRST et al. 2008: 80). In general, the project cooperation exists more frequently than governance frameworks, this is also assumable for the case study valleys.

Place-making as an instrument has been successfully established in the USA, for instance. Place-making processes are linked with place-branding processes. The so far articulated collective learning process underlies, hence,

both place-making and place-branding. Basic conditions such as the opportunity for communication and the organisation of interaction processes need to be created. By comprising manageable arenas that are presented by a mediator, allow intensive interaction among the stakeholders and at the same time they occur to be as attractive enough to drag the stakeholders into the arena (for example, creating an economic value). Information needs to be processed attractively to create an appeal for the stakeholders who then vice versa embrace the information as their own. References to already best-practices and pilot-projects serve as a stimulus of how cultural landscapes can be developed. Finally, sources of finance need to be tapped as cultural landscapes are a heterogeneous and multifunctional good. Local or regional societies can not shoulder the costs on their own because of the manifold functions offering to the society as a whole. Public discussion helps to support the governance arrangements and they create a dynamic problem perception.

2.8 State of cultural landscape governance research

The research expands spatial science viewpoints on cultural landscapes by social science approaches. Broadly, this formulation marks a change of perspective in cultural landscape research. Within this alternative research frame, the relevant literature in the research field is reviewed subsequently.

2.8.1 Cultural landscape governance research in Germany

Theory, as engaged in the research at hand, is primarily conceptualised and applied in German spatial planning research (cf. Chap. 2.1, p. 8p). Numerous projects and regional development plans[71] have incorporated the utilisation of cultural landscapes as action, communication and identity arenas, in which forces of cooperative regional development based on cultural landscape governance advance (RÖHRING 2011: 3).

A cornerstone and an essential socio-spatial attempt to cultural landscape governance and spatial-regional development research marks the project

71 Such as the program *Regionale 2010* in the area Cologne and Bonn or the state development plan Berlin-Brandenburg, for instance.

volume issued by DIETRICH FÜRST et al. (2008)[72]. The publication presents results of several projects at the Leibniz Academy for Spatial Research and Planning (ARL) in Erkner and the institute for environmental planning at the Leibniz University Hannover. Respective project groups focussed on the construction and function of regional governance based common goods in the process of resource management. The issue takes a close look at institutional regulations, identities and place-making processes, intended development and the administration of cultural landscapes. Furthermore, the volume tackled the question, which governance arrangements in cultural landscape management are forthcoming promising. Besides the theoretical groundwork, the volume gives empirical examination of the example of several cultural landscape regions in Germany. To this effect, GAILING and RÖHRING (2008: 105pp)[73] carried out four qualitative case studies in three distinct cultural landscape areas in Germany to sustain the theoretically elaborated conclusions on a regional scale. Two other relevant articles typify central aspects, particularly in the field of cultural landscape and institutional research. LUDGER GAILING (2012)[74] examined the social construction and governance of cultural landscapes based on formal and informal institutions. In cooperation with the ARL, WINFIRED SCHENK (2008)[75] substantially enhanced the scientific perspective of cultural landscapes as social constructs. He pointed out that the management of cultural landscapes appears to be a civic task that requires conditional fundamentals to obtain favourable results. Further, SCHENK (2008: 10) adduces that an analysis of the cultural landscape characteristics and the driving factors need to be assessed according to the attached values to deduce management actions. Moreover, SCHENK (2011) subsumed the apprehension of cultural landscape terminologies in science and policy and spatial planning activities in Germany. He claims a correspondence between the respective approaches to each other (cf. Fig. 4, p. 32). As the various comprehensions of

72 *"Kulturlandschaft als Handlungsraum – Institutionen und Governance im Umgang mit dem regionalen Gemeinschaftsgut Kulturlandschaft."*
73 *"Methodik und Operationalisierung."*
74 *"Sektorale Institutionensysteme und die Governance kulturlandschaftlicher Handlungsräume. Eine institutionen- und steuerungstheoretische Perspektive der Konstruktion Kulturlandschaft."*
75 *"Die Pflege der Kulturlandschaft als bürgerschaftliche Aufgabe."*

cultural landscapes often differ significantly from their formal institutional framework, regarding an active application in policies and planning and scientific apprehensions. To create comprehensive planning approaches towards cultural landscapes, a reflexive constructivist formulation, in theory, is necessitated that comprise institutional, discourse analysis and governance research. Such a theoretical construction is helpful to answer the question, whether such reflexive-constructivist approaches resembles normative applications of the terminology in most politics and practical spatial-regional development processes. The goal is to insight new scientific approaches by combining spatial and social science, as there is a lack of an institutional anchor regarding the terminology cultural landscape to operate adequately with (SCHENK 2011: 114). The present research aligns itself with the so-far presented theoretical principles towards cultural landscapes.

2.8.2 Cultural landscape governance research in Norway

In comparison to the scope of cultural landscape research in Germany, academic literature in Norway is dealing with a scientific approach to cultural landscapes that focused almost exclusively on agriculture as the dominating sectoral policy field that in charge of managing, upkeeping and safeguarding cultural landscapes. DAUGSTAD et al. (2006)[76] investigated the connection between agriculture and cultural heritage expressed by private and public stakeholders. It appeared that the political agenda defined the management of cultural and environmental heritage, agriculture and tourism. Furthermore, they emphasised that cultural heritage in agricultural landscapes can be constructed as a collective good. This perception accentuates an attached ambiguity: Agriculture is considered as a threat to and a caretaker of cultural heritage at once. Hence, the cultural landscape is widely acknowledged as an external effect of multifunctional agriculture. Despite, the scientific enquiry of common goods in Norway has been so far dominated by economists (DAUGSTAD et al. 2005: 68p) and less by landscape and spatial planning research. Comparatively few attempts have been made within the field of cultural landscape governance

76 *"Agriculture as an upholder of cultural heritage? Conceptualisations and value judgement – a Norwegian perspective in international context."*

research in Norway. Theoretical approaches that enhance spatial science by social science and the respective application on cultural and natural landscape management, stakeholders behaviour, social and economic challenges in space, natural landscape dynamics and sectoral cultural landscape planning based on spatial qualities of cultural landscapes were not performed, nor theoretically constructed within the study area. Regarding the social construction aspect, BRYN and FLØ (2010) investigated the rapidly changing cultural landscape in Norway and the impact on tourists' perception in the project of cultural landscapes of tourism and hospitality: character, management and perceptions of the tourism-related cultural landscapes (COULTOUR).

TUNÓN et. al (2014: 53p)[77] refer to the term governance as a synonym for landscape management. In a comparative study examining summer farming in Sweden and Norway., they discuss the change in management of semi-natural vegetation sites based on grazing livestock regarding the importance of biodiversity by the respective Norwegian authorities. The essay demands long-term perspectives on governance, hence, management of summer farm landscapes in Norway (TUNÓN et. al 2014: 58). KAROLINE DAUGSTAD (2014)[78] has seized research upon cultural landscape practices, perceptions and values orientations of farmers' in the summer farming landscapes, through comparing two summer farm areas in Norway and Spain. By exceeding the material reality of such areas, DAUGSTAD'S research attempt constructed the distinct cultural landscapes quasi-socially. Significant research has been conducted in the field of landscape dynamics with particular recognition to cultural landscapes in Norway. The ***Dy****namisk* ***Lan****dskap* (DYLAN) project was introduced in 2009 and is the latest programme that analysed a holistic landscape approach in West Norway. It is a research project for evidence-based management and conservation of natural and cultural heritage. An affiliation with the previously discussed projects of the ARL is detectable as regards examining and broadening management efforts based on cultural landscapes. Supported by the Research Council of Norway and the programme

77 *"Views of landscape. Reflections on the governance of Scandinavian transhumance."*
78 *"Landscapes of transhumance in Norway and Spain: Farmers' practices, perceptions, and value orientations."*

MILJØ 2015, DYLAN involved interdisciplinary research groups covering the fields of archaeology, cultural history, palaeoecology and biodiversity. Universities of Oslo, Bergen, Trondheim and Tromsø, the Norwegian Institute for Cultural Heritage and the Scottish Natural Heritage are the participating institutions to this project. Erdalen is one of the project study sites. Examinations sketched long-term natural and cultural variability in cultural landscapes in upland regions in Norway at a small and a large scale. Further, the DYLAN research group tried to identify major driving forces intensifying landscape dynamics. Stakeholder perspectives were involved in the management of upland landscapes, and the examination of the evidence basis for the management of landscapes is included. Subsequently, DYLAN attempts to develop new guidelines for management and conservation of dynamic landscapes. The project provides new research-based knowledge to promote sustainable use and management of both culture heritage and landscape on short and long terms, which is also defined as one of the main aims in MILJØ 2015. Results of the project work are presented in the editorial, a research letter and five articles published in the special Issue of International Journal of Biodiversity Science, Ecosystem Services & Management in 2012[79]: *"Special*

79 Following articles are published in the International Journal of Biodiversity Science, Ecosystem Services & Management, 8:4, and are the result of the DYLAN project and the international conference on *People and nature in mountains: changing land use and landscape dynamics,* held in Trondheim 21-23 September 2011:
[1]*Gunhild Setten and Gunnar Austrheim: "Changes in land use and landscape dynamics in mountains of northern Europe: challenges for science, management and conservation, p. 287-291."*
[2]*H. John B. Birks: "Ecological palaeoecology and conservation biology: controversies, challenges, and compromises, p. 292-304."*
[3]*Gunhild Setten, Marie Stenseke & Jon Moen: "Ecosystem services and landscape management: three challenges and one plea, p. 305-312."*
[4]*James D.M. Speed, Gunnar Austrheim, H. John B. Birks, Sally Johnson, Mons Kvamme, Laszlo Nagy, Per Sjögren, Birgitte Skar, Duncan Stone, Eva Svensson and Des B.A. Thompson: "Natural and cultural heritage in mountain landscapes: towards an integrated valuation, p. 313-320."*
[5]*Kari Loe Hjelle, Sigrid Kaland, Mons Kvamme, Trond Klungseth Lødøen & Brith Natlandsmyr: "Ecology and long-term land use, palaeoecology and archaeology – the usefulness of interdisciplinary studies for knowledge-based conservation and management of cultural landscapes, p. 321-337".*
[6]*Per Sjögren & Andreas J. Kirchhefer: "Historical legacy of the old-growth pine forest in Dividalen, northern Scandes, p. 338-350."*
[7]*Thyra Solem, Egil Ingvar Aune, Marc Daverdin, Kristian Hassel, Per Sjögren, Lars Stenvik, Aud M. Tretvik, Dag-Inge Øien & Gunnar Austrheim: "Long-term land use and landscape dynamics in Budalen, central Norway, p. 351-359."*

Issue: People and nature in mountains: changing land use and landscape dynamics". As previously stated, the DYLAN programme is under the umbrella of the Environmental Research Towards 2015 programme (MILJØ 2015). It refers to a comprehensive, cross-disciplinary research programme designed to generate knowledge about key environmental questions and to create a basis for designating future policy. Within the research programme, the thematic area LAND aims at enhancing the knowledge base for long-term, cohesive use of the landscape and its natural and cultural assets and values. The thematic area SOCIETY generates insight into societal framework conditions for environmental development, as well as the conditions for political action and the interests and value choices of various players, nationally and internationally (FORSKNINGSRADET MILJØ 2015).

The so far addressed literature represent the present state of the German and Norwegian cultural landscape governance research. All mentioned projects in the literature examine the need for an advanced management of cultural landscapes and the intended development of those due to landscape dynamics and changing cultural landscapes. The work at hand proposes to enhance the Norwegian perspective by a theoretical based social science access, which has already been applied in Germany. Briksdalen, Bødalen and Erdalen are adduced as case study sites, in which the prompted theoretical premises are analysed.

To constitute cultural landscapes as action, communication and identity arenas on site, in which cultural landscape governance substitutes the contemporary cultural landscape management, an analysis of the present state of cultural landscapes precedes. Norway's perspective of cultural landscape management is strongly based on the maintenance of cultural landscapes of agriculture as an important contributor to the national food and fibre production and very much directed by agricultural policy. Sectoral logics of action are pivotal to examine, when considering cultural landscapes as a result of external effects. The key aspect is, whether the employed cultural landscape management concept facilitates discourses, cooperation and projects across

[8] *Anders Bryn & Lars Østbye Hemsing: "Impacts of land use on the vegetation in three rural landscapes of Norway, p. 360-371."*

the tight borders of science disciplines, sectoral planning and formal institutions (GAILING 2008: 22). Applying theoretical approaches of social science to cultural landscape research shall give an external view to the challenges, Norwegian cultural landscape management has to cope. The selected approach provides a common ground for communication between cultural landscape stakeholders in the area. Each stakeholder has specific access and assigns cultural landscape with specific functions, values and qualities. Conflicts about cultural landscape and its contemporary and future intended use occur either:

- Actively[80], to secure a quality by individual stakeholders, or
- Passively[81], due to the lack of management and institutions regarding the appointed cultural landscape change.

Cultural landscapes constitute as action, communication and identity arenas in which formal and informal institutions cope with the common asset cultural landscape beyond strict administrative scales and interplays.

It appears important to derive methodical access for future planning and intended development of cultural landscapes as spatial qualities of those be admitted for tourism, recreation, biodiversity and regional development.

2.9 Interim conclusion (study aims and objectives)

The research examines the central question, whether governance frameworks can be a future path for managing cultural landscapes and the corresponding cultural landscape change in the case study valleys.

Examination objective emanates by scrutinising the compatibility standards of the contemporary sectoral institutional system that directs cultural landscape management measures and efforts in reciprocity to the progressive cultural landscape change. The spatial perspective of cultural landscapes is expanded to theoretical aspects of:

- Institutional theory.
- Governance theory.
- Theory of goods.

80 Protected interests (nature protection) on the expenses of other interests (agriculture).
81 Other interest (agriculture) are influenced and centered on the expenses of the intended interest (cultural heritage), for instance.

The addressed cultural landscape is understood as an associative cultural landscape (SCHENK 2011: 112; GUNZELMANN 2001: 19) incorporating place making, visual and identity reference points, the actual material natural and cultural remnants of the historical grown cultural landscape and the cognitive dimension that appeals to intangible cultural landscape features, creating a common identity-building item. The examined cultural landscapes always relate to a level of objects regarding the residual cultural landscape elements and components in the physical-material space of the case study valleys.

One of the main characteristics of governance frameworks is the design of problem targeting institutional arrangements. Such designs serve the resolution of issues percept by individuals and the community as a whole. Governance frameworks support the solution of problems that happen to be insolvable by the presently available means (PRITTWITZ 2007: 201). This is the case with the percept cultural landscape change. Overgrowing *(gjengroing)* of cultural landscape indicates and materialises that kind of indissolubility to a great extent.

To approach issues tapped by cultural landscape change, it is hypothesised that contemporary cultural landscape management efforts based on formal institutions enacted by sectoral policies reinforce cultural landscape change on-site and advance conflicts around the common good cultural landscape. That case can be, in turn, beneficial for the constitution of cultural landscape action, communication and identity arenas. In the context of such arenas, governance frameworks take place to succeed cultural landscapes and the respective challenges. Moreover, the research pursues to the determination of spatial qualities in cultural landscapes on-site. Debates about spatial qualities of cultural landscapes can be used as an initialisation process for preceding the construction of the before mentioned communication arenas to action and identity arenas. By the same token, the study at hand will propose measures and methodology to introduce a cultural landscape governance in the case study valleys. Such governance approaches are rather integrable into the decision-making process instead of analysing possible improvement of the contemporary top-down management of cultural landscapes. Cultural

landscapes contribute to regional development processes beyond a merely explicit or implicit normative cultural landscape apprehension that is expressed by the formal institutions of present-day management efforts. By focusing on cultural landscapes as multifunctional heterogeneous common goods with integral spatial qualities, the central research aims are:

- The synthesis of a reflexive-discursive conceptualisation for cultural landscape management in the area.
- The investigation of cultural landscape governance frameworks for cultural landscape management and regional development strategies in the case study valleys.
- The assessment of a accomplishable and joint cultural landscape governance strategies in the area, to evaluate:
    1. Present and future challenges of cultural landscapes,
    2. The cultural landscape stakeholders' interaction, and
    3. Discourses and conflicts about cultural landscape management.

The present study analyses and proposes a possible theoretical framework for cultural landscape governance approaches in the case study valleys based on two empirical levels. Within the research impetus, the cultural landscape itself becomes an action arena and creates a space of communication and identity on an abstracted level.

3. Data Collection and Analysis

The consecutive chapter introduces the methodical alignment of the present examination. A description of the applied research design including the procedures, the material collection and the analogous analysis of the data is described. The methods recur to the theory and acknowledge the links between research problems, methods and results.

3.1 Research design

Subsequent paragraphs describe the methodical approach of the work at hand. A diverse scope of materials related to cultural landscape management and governance were acquired to analyse the institutional framework of cultural landscape management, to expose potential discourses and to find new elements and features that ought to be included in cultural landscape governance research in the case study valleys. The research design applies cross-sectional methods and examination instruments. The central objective of the investigation design is to correspond communication in documents and interviews. By developing cultural landscapes as action, communication and identity arenas, instruments of qualitative social research become prevalent for the data acquisition and analysis. The accumulated data are products of social communication[82]. Employed tools and instrumentation of qualitative social research, which aim at analysing social communication consistently (MAYRING 2015: 13) are implemented in the study. The applied empirical arrangement in the present research refers mainly to the methodical formulations by GAILING and RÖHRING[83] (2008). Case studies are conducted to provide empirical verification to the theoretical presumptions by a direct empirical application in a circumscribed space.

On the account of the examination, institutional framework and the concept of cultural landscape as a heterogeneous and multifunctional good impact:

82 Such as interviews, observations in communication processes, speeches, administrative acts, newspaper articles, websites.

83 Delineated in the article: *"Methodik und Operationalisierung. In: DIETRICH FÜRST (Hg.) 2008: Kulturlandschaft als Handlungsraum. Institutionen und Governance im Umgang mit dem regionalen Gemeinschaftsgut Kulturlandschaft, pp. 105-114".*

– The present management of cultural landscapes on-site.
– Governance approaches in to be constituted cultural landscape action, communication and identity arenas.

Correspondent to the approach of GAILING and RÖHRING (2008: 106p), the present study follows a reflexive approach accentuating the exploration function. A direct comparison of the case study results is not intended. The valleys dispose of an individual historical background and local specifications. The research criteria are not established as an examination grid. They are considered as a leading principle that assists to emphasise or ignore single aspects in the research process.

By considering phenomenological research that uses ideographic sampling, a focus on the idiosyncratic or case study is set to understand the full complexity of the individuals' experience. There is no attempt to generalise the results to a particular statistical population. Findings become relevant from the individual perspective of the applicant of the findings (BAILEY 1992: 30). Table 1 outlines an overall summary of the applied methodical set-up in the research.

	1st Empirical level	**2nd Empirical level**
Objectives on the material corpus	Description of the contemporary state, the drivers and the pressure of the cultural landscape in the case study valleys; depicting present cultural landscape management efforts based on the institutional framework (identifying formal and informal institutions)	Synthesising the results of the 1st empirical level by examining potential of constituting cultural landscapes as action, communication and identity arenas on-site; analysing potential governance modi to discuss forthcoming cultural landscape management
Methods of data acquisition	Field work, statistical evaluation, document collection, guideline-based expert interviews	Document collection, guideline-based expert interviews
Methods of data analysis	Qualitative content analysis → institutional analysis	Qualitative content analysis → discourse analysis; governance analysis

Table 1 Overview of the examination levels, objectives, methods of data acquisition and analysis in the present research.

3.2 Data Aggregation

The following section describes the data collection process. Appertaining to the study aims and objectives, the data accumulation comprises documents, statistic and experts interviews, resulting in an extensive material corpus. The

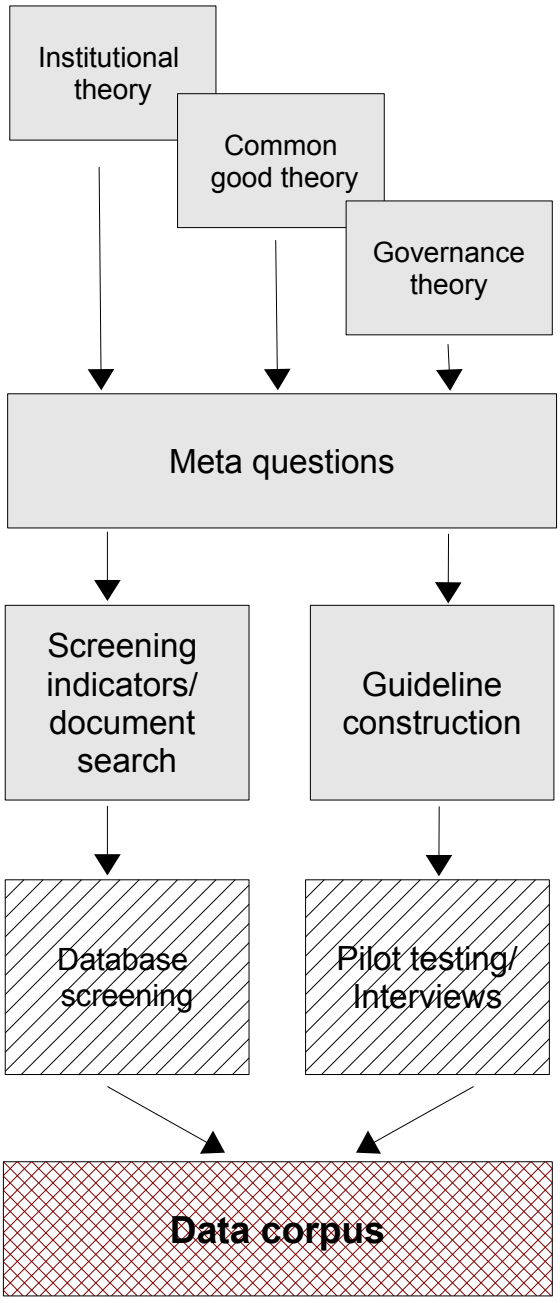


Figure 6 Preparation of the data corpus step model.

interviews and supplementary data[84] were collected in the case study valleys during a total of 40 weeks field work[85].

3.2.1 Document collection

The adjacent section outlines the detailed compilation and preparation of the data corpus. The major pillars of the document are grouped into primary and secondary sources and statistics.

- **Primary sources** are acts, regulations, reports, white papers, brochures, plans, policy documents, operational instructions, strategy papers, circulars, protocols).
- Literature, essays and articles constitute the **secondary sources**.
- Furthermore, significant **statistics**[86] were examined. Data[87] comprise demography, sectoral occupation, agriculture, tourism and traffic.

In total, more than one hundred primary source documents and a vast amount of statistics were collected, recorded and analysed correspondingly (cf. **Chart 2** App.). Secondary sources are cited in the text and listed in the bibliography. The principle of theoretical sampling directed the document collection. Context knowledge by the researcher and the study aims and objective represented the initial situation determining the compilation of the data body (GLASZE et al. 2009: 273). Miscellaneous databases and archives were investigated to generate an initial gateway. An open reviewing based on indicators[88] was performed in numerous databases. Figure 6 (p. 66) gives an overview on the preparation of the data corpus.

84 Supplementary data encloses off the record conversations and observations with various stakeholders during a walk through a valley or informal talks. Furthermore, significant features and the overall state regarding the cultural landscape change and the multi-functionality of cultural landscapes in the valleys were mapped, noted and imaged.

85 Between 2008, 2010, 2011 and 2013.

86 Statistics Norway (SSB), the Sogn og Fjordane County Council, the Sogn og Fjordane County Governor, Stryn Municipality, Stryn tourist board, the steering group of the Jostedalsbreen National Park and other national institutions and related subdivisions in Norway were searched for statistics.

87 Inaccuracy in statistical data concerning comparability occurred because of changing proceedings in data collection or varying reference periods. Therefore, several statistics do not fully cover the analysis period of the study at hand.

88 A specific keyword search was conducted in the databases *('kultur', 'landskap', 'kultur-landskap', 'minne', 'kulturminne')*.

A free screening is capturing diachronic and main synchronous lines of the data material. Main investigated databases and archives were:

- Parliamentary data service
- Norwegian government database (e.g. governmental organisations such as Agriculture Authority, Directorate for Nature Management, Directorate for Cultural Heritage)
- Lovdata (Norwegian law database)
- Skog og Landskap database
- Fylkeskommune Sogn i Fjordane and Fylkesmannen i Sogn og Fjordane document database and archive
- Stryn kommune database and archive

Acknowledging the principle of openness and due to the criterion of theoretical sampling, cross references cited in researched documents aside the keyword referenced database search, were also considered and examined. General questions were applied to the data corpus, such as:

- Origin of the document (organisation/administration).
- Document size.
- Address and aim of the document.
- (Epitomised) meaning and content of the document.
- The proximity to the study objectives.

Data collection ceased when theoretical saturation was attained. Theoretical saturation manifested by content redundancies or by the lack of new insights.

Guideline-based interviews gained access to individual subjective aspects. LAMNEK (2005: 317) states that interviews offer the possibility to communicate realities and definitions that become necessary to examining the informal institutions. Therefore, expert interviews were conducted to acquire more context related data based on peoples' sense of their experiences and their related logic of action. Particularly pertaining the examination that acceded potential discourse and conflicts about the application of cultural landscape management measures regulated by formal institutions and the ontologizations of non-institutional stakeholders action influenced by informal institutions. The second empirical level can be regarded as an additive step to generate specific

data, as well as data triangulation at an early stage of the data processing to comply with internal and external validity.

3.2.2 Guideline-based expert interviews

The conducted experts interviews are categorised as systematised expert interviews focusing on an exploitative generation of information (KRUSE 2014: 169). The methodical procedure of the guideline-based interview initiated with the problem analysis, followed by the ramified construction of the guideline and an adequate pilot-testing phase to correspond to the internal validity of the research (cf. Fig. 6, p. 66). After minor adjustments[89] to the guideline that was necessary after the pilot testing in the first field phase, the interviews were conducted and recorded successively.

Except one interview[90], they have been carried out on an individual basis. To maintain consistency and ensure quality, the interviews were lead by a single researcher. More than five hours[91] of interview material were collected in fourteen interviews[92]. Three interview protocol logs were noted because two interviews were recorded with a defect audio device. One interviewee preferred a protocol log instead of being audio recorded. Interviews' length ranges from 08:35 minutes to 64:36 minutes. Interviews were carried out during the field campaigns in Norway. They took place in a familiar surrounding[93] for the respondents to comply with the methodical-technical aspects (LAMNEK 2005: 325).

- Identifying and soliciting experts

Research at hand aligns the term expert according to KRUSE (2014), GLÄSER and LAUDEL (2009), MEUSER and NAGEL (2009) and BOGNER et al. (2005). The main attribute of an expert is the high amount of knowledge regarding the

89 These adjustments concerned syntax and comprehensiveness of the questions.
90 This concerns the interview II and interview V, which were conducted with two participants. In the course of the examination, they were separated into two interviews because one interview partner left the interview earlier.
91 A total of 5,6 hours (334,98 minutes).
92 A reassessment of two interviews and one conservation log, which were conducted as part of the thesis: *"Assessment and Impact of Cultural Landscape in a U-shaped valley system"* by LOPEZ (2008) found an entrance to the present study and are considered as full-valued data.
93 In their office, on a camping ground, in one of the case study sites or on a farm.

investigated subject. Experts in the analysis are people in positions obliged with cultural landscape planning and management in the cases study sites and entire Norway. MEUSER and NAGEL (2009: 37p) ascribe an expert the institutionalised competence to construct reality. An expert can enforce relevance and action regarding cultural landscape management, within the respective organisational and institutional context. Furthermore, BOGNER et. al (2005: 46) argue that an expert has the technical know-how and process and interpretation knowledge at disposal. Such knowledge refers to the experts' professional field of action and is not only delimited as specialist knowledge (GLÄSER and LAUDEL 2009: 11pp). KRUSE (2014: 176) apprehends this kind of experts as methodical-relational, implying that the research objective decides about the question who is an expert. In contrast, KRUSE (2014: 176) acquires the typecast expert out of a sociology of knowledge. Based on the sociology approach, the expert is conceived due to the structure of knowledge that is described by MEUSER and NAGEL (2009: 75p) as special knowledge. Special knowledge is distinguishable from context knowledge or operational knowledge (KRUSE 2014: 176). Persons are considered as experts because they own specific knowledge, special information and experience due to their comprehensive insight in the research field or the research aims and objective (MEUSER and NAGEL 2009: 37). Furthermore, it can be differentiated between experts with process knowledge due to their operational and praxeological knowledge. To conceive the term expert, persons with abstract-reflexive knowledge of context can be distinguished from people with knowledge about the general overview on the subject (KRUSE 2014: 177). There are experts in the current investigation linked to organisations or administration units and experts, who are non-organisational and non-institutional. Peculiarly in the study at hand, such differentiation is important because experts with a general overview on the topic provide valuable information about formal institutions, for instance. Therefore, experts are considered:

– As an observer with access to privileged information due to their function, and/or,

- to stand out due to their individual effort according to voluntary work with cultural landscape management, and/or,
- Have particular interests in intended cultural landscape development and management.

All selected interview participants acquainted with the topics on the current state of the discussions regarding the research subject due to their expert position. Moreover, they are aware or part of the social interpretative frame, political discourses, collective orientation and the diverse patterns of action regarding cultural landscape management. Interviewed experts in the present research can report on the cultural landscape change because they are:

- Functionally related to the matter.
- Individually affected (by the effects of the cultural landscape change).
- From economic valorisation of cultural landscapes.
- The present research is interested in the entire expert with his/hers individual orientation and preferences in the context of the person or in the collective context of life. This requirement is made, because the interviewees can:
- Combine more than one expert in one person. Farmers, for example, work part time on the farm and are employed by Stryn Municipality, probably dealing with cultural landscape matters on an administrative level. Furthermore, they generate income in tourism that is vastly founded on the spatial qualities of cultural landscapes with a cabin or camping ground.
- They have an individual perception regarding the functions cultural landscapes have to cope and the related management efforts that have to be made to secure or expand variant qualities of cultural landscapes.

To these matter of facts, the study at hands is engaged in the holistic view of each expert to gain explicitly the individual orientation and preferences on which the expert knowledge is based. The central aim is to the effect to obtain information about informal institutions influencing the experts action.

Access to experts was established in multiple ways. Multipliers, especially in institutions and organisations, were proposed and contacted. Gatekeepers

(KRUSE 2014: 255) named and stated possible interview partners because of the hierarchic organisational structures in the administration, for instance. Further, experts were researched, contacted and requested for an interview via the internet. Pursuing LAMNEK'S (2010: 325) principle of theoretical sampling, interview partners were also sampled by casual recommendations or mediation during the interview (KRUSE 2014: 255). Other contacts to interview partners were already existent from the beginning of the research process because of previous research conducted by the author. Furthermore, the study at hand is associated with the SedyMONT project by the Norwegian Geological Survey (NGU) in Trondheim. Contacts with key informants were instituted during the field campaign with the assistance of the personnel of the project as mentioned above in the case study sites. Interview requests were sent to representatives of the varying levels of administrations[94], farmers, committed entrepreneurs[95], representatives of the farmer associations, national park administration, national park rangers and interested local inhabitants with accurate information about the subject. A heterogeneous group of experts was gained during the process. With the collected interview samples, an expanded insight concerning the interaction of formal and informal institutions regarding the management of the common and heterogeneous good cultural landscape is given.

- Guideline development

In the context of the present study, the guideline is considered as a frame to keep orientation throughout the interview process (KRUSE 2014: 169). The possibility to ask ad-hock-questions was given anytime because a textual compliance to the guideline is not required in the performed approach. Variations are part of the open research process to gain as much knowledge as possible (GLÄSER and LAUDEL 2009: 115). Despite, the openness of the interview course gives the expert the opportunity to talk freely about adjoining subjects. By provisioning the data analysis and concerning the theoretical presumptions, topics and meta-questions were developed within the interview guideline construction. This procedure emerged helpful to keep continuity

94 State, county and municipality.
95 Businesses and people working in tourism (such as hoteliers, camping site and restaurant owners).

through the instrumentation and analysis process with a focus on the study aims and the study objective. Information about the applied topics, meta-questions, the category development and the applied interview guideline are enclosed in the Appendix (cf. **CHART 3, 4a, 4b, 5** App.). The decision to use a guideline was advantageous. Besides the methodical compliances, the guideline served as a planning tool throughout the communication process (GLÄSER and LAUDEL 2009: 114p). The interview language is English and it is neither the mother tongue of the interview partners nor the interviewer. To that, the guideline transpired as an instrument to achieve and support a comfortable conversation atmosphere as the interview partners were worried about answering the question in proper English. The guideline gave the interviewees the possibility to install to the English language. Most interview participants asked for the guideline in advance to prepare adequately for the interview. Their primary concern was the fear of having a lack of vocabulary during the interview process. Furthermore, the guideline functions as a supporting tool in the process, instead of being a methodical prerequisite.

Henceforth, data evaluation and analysis of the present research is sustained by qualitative content analytical methods. According to the central aims and the study objective (cf. Chap. 2.9, p. 61p), various data analysis methods were applied and explained in the ensuing paragraphs.

- Interview processing

The interviews were recorded with an audio recorder and transcribed verbatim. Following transcription rules are applied:

  – Standard spelling and no literary circumscription.
  – Non-verbal statements are not transcribed, only in case, they ascribe the comment a differing meaning.

Incomprehensible passages are marked. Each question and answer is filed with timestamps. Transcription rules as employed in the present study follow practical aspects. Interviews were conducted in English with non-native speakers. In all cases, the interviews took place with individuals who have a sufficient knowledge of English language. In the event of lack of vocabulary, the interviewees were encouraged to use the Norwegian expression instead. This

procedure helped to keep interruptions clear during the interview process. Missing English terminology was translated in the transcript and marked as translated in the transcription process. Non-verbal expressions, such as breaks are accounted for the non-native interview language, language issues and consideration for proper language. The interview transcripts were smoothened[96] to paraphrase in comprehensible English. An interview protocol encloses each interview, giving information on:

- The interview arrangements (disposition of the interview partner,
- The overall condition (length, place).
- Disruptive elements.
- Comments on the interviewing course and the post-interview phase.

The evolution process of the interview guideline questions is displayed in the Appendix (cf. **CHART 4a, 4b** App.) and specified in the following paragraphs. The assembled data corpus[97] was entered its entrance into the MAXQDA[98]. Employing MAXQDA promoted the process of organising, re-arranging and managing the sizeable amount of data significantly.

3.3 Data processing and analysis

A general overview of the implemented data analysing process in the present research is portrayed in Figure 7 (p. 75). The theoretical presumptions, subsumed were elaborated and condensed as main topics that were refined with meta questions (cf. **CHART 4a** App.). Aggregating meta questions served as a pool for designing the interview guideline, on the one hand. Within the research process, the meta questions and the related topics collapsed as core categories for the qualitative content analysis process in an institutional and discourse analytical setting, on the other hand. After compiling the data corpus, topics and meta questions were apprehended to create research categories. Moreover, the meta questions were proposed to improve the interview guideline thematically.

96 Language smoothing comprises word order, proper prepositions, grammar and missing determinants.
97 The collected documents, the statistics and the interviews compose the general data corpus.
98 MAXQDA version 11.1.0.

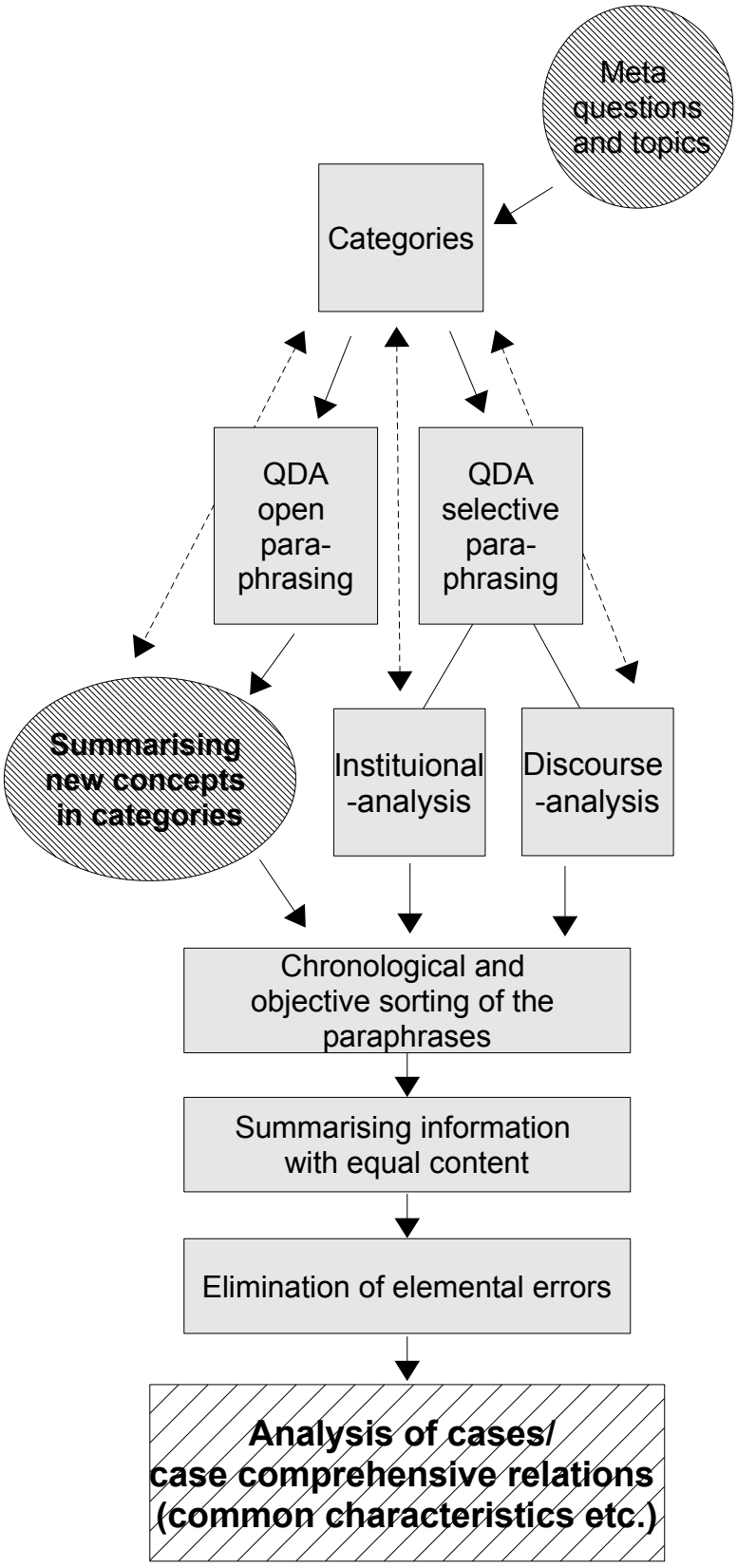


Figure 7 Step model of the qualitative content analysis process from extraction to processing and evaluating results applied in the present research (inspired by MEUSER and NAGEL 2009).

3.3.1 Data preparation

The collected documents underwent a text screening to become better operational. Screening indicators are based on the meta questions with the purpose to adhere the theoretical considerations. Raw data were extracted to gain essential information. Text screening is an instrument to select alleged and purported information from the original document (GLÄSER and LAUDEL 2009: 200). The relevant content was reduced systematically to an amount of information that assigned to the study aims and objectives.

3.3.2 Data analysis

Consecutively, the applied data analysis process in the current investigation is described. The step model displayed in Figure 7 (p. 75) depicts the different steps of the analysis approach in an overall qualitative content setting.

Two separate paraphrasing designs complete data extraction. By applying diverse paraphrasing proceedings, statements in documents and interviews are transferred to a more abstract level of interpretation. An open paraphrasing and a selective paraphrasing procedure emerged. Immediate quotations from the interviews are included in the analysis so that these ideas are clearly represented in the analysis process.

3.3.2.1 Open paraphrasing

The open paraphrasing is performed to identify additional content related information during the research process. To this effect, the open paraphrasing process combines individual phenomena, which attract attention during the material analysis and are further aggregate to concepts and concepts are aggregated to categories (ELLINGER 2004: p. 11). The open paraphrasing categories are triangulated with the main category system, from which the selective paraphrasing derived. A main focus of the study at hand is to systematise information about cultural landscape management and the lack of management adoption to cultural landscape change. Moreover, the identification of potential and evolving discourses among stakeholders is cardinal. The applied methods aim at functional and content related information

regarding the main aims and objective of the present study. Functionally considered, the methods allow to treat and analyse documents and interviews as equal data sources within the selective paraphrasing process. Theoretical analysis, as previously stated, assist in creating meta questions that in turn become to categories during the elaboration process. Categories based on the theoretic remarks, the identification of indicators and the determination of the analysis units are specified. The overall extraction process comprises the material sight, interpretation and extraction of information. Processing of the extracted data occurs analogously to chronological and objective sorting. Data with equal content are summarised, and elemental errors are eliminated (cf. Fig. 6, p. 66). The final step of the examination is the data evaluation, which is based on the analysis of cases and case comprehensive relations. The following analysis steps are undertaken to address the research question linking them to the theoretical presumptions.

3.3.2.2 Paraphrasing in an institutional analytical setup

Following section reviews the selective paraphrasing process in the institutional analytical setting (IA). The main purpose of the IA serves the identification of the institutional framework that conducts and frames the contemporary cultural landscape management situation in the case study valleys. To constitute cultural landscape action, communication and identity arenas an institutional analysis is essential and acknowledged as the first level of examination in the present study (cf. Tab. 1, p. 65). The aim is the identification of distinct institutions that influence stakeholders behaviour on-site and predefines present cultural landscape management approaches in the case study areas.

IA as applied and performed in the current study emanates from the presumptions of PRITTWITZ (2011: 3p; 2007: 205p; 1994: 57p, 239p). The analysis is designed to examine the institutional system (polity) and the respective public action (policy). Polity comprises not only governmental and administrative proceedings. As stated in the theory remarks (cf. Chap. 2.7.2, p. 42), informal institutions (such as ontologizations, world views and values) affecting cultural landscape are an important part of the overall institutional

examination. The political process (politics) that brought up the formal institutions is not the key component of the IA, although some analysed documents refer and partly reflect the evolutionary process of formal institutions in politics. IA as employed in the analysis factors out transaction costs that are generated by the institutions. Henceforward, the centre of the examination is not the economic efficiency of the examined institutions. Foregrounding interest is on the role and significance within the context of the regional institutional framework and the propagated stakeholder behaviour. The methodical approach of the IA, as operated in the study at hand, follows the alignment of PRITTWITZ (1994: 239p). The leading research design of the IA is based on the performed examination criteria according to the:

- Analysis of formal and/or informal institutions (organisations, institutions, structural criteria and divergence criteria).
- Comparison of the research results based on the examination criteria. Examination design and criteria are based on the meta-questions and further grouped into sub-categories of:
    1. Formal institutions
    2. Informal institutions
    3. Use oriented institutions
    4. Protection-oriented institutions
    5. Effects of institutions/institutional problems regarding cultural landscape and management
    6. Specific Institutional arrangements

The institutional framework investigation appears to be significant, as formal institutions mark the key input requirements by central sectoral policies regarding cultural landscape management. Informal institutions, on the other hand, constitute the motivating forces of non-organisational stakeholders' cultural landscape action.

3.3.2.3 Paraphrasing in a discourse analytical setup

Discourse analysis (DA) is, particularly portrayed by KELLER and TRUSCHKAT (2012), rather a research programme than a single method and has been

established in Germany within the last twenty years (KELLER and TRUSCHKAT 2012: 9). The focal point of DA is to exhibit the socio-cultural significance and factuality assumed and constituted by physical and social realities. It is the examination of social constitution processes, the interpretation and activity structures and the effects to the society by such, on the level of institutions, organisations, and collective stakeholders. DA is a viable method of studying discourses in cultural landscape management to help constitute cultural landscapes as action, communication and identity arenas. Further, it assists to understand how power is created in cultural landscape management concerns. Discourses indicate the connection of symbolic procedures, material facts and social institutions (GLASZE and MATTISSEK 2009: 12). Based on the aims and objective of the study at hand, the DA shall assist to analyse existing discourses about cultural landscape management in the three case study valleys, in which cultural landscape action, communication and identity arenas are constituted. That shall help to solve existing challenges of cultural landscape management based on governance arrangements. Subjects of the discourse analysis at hand are patterns of thinking, talking, self-awareness and action, as well as, the processes, in which specific perception and logics of actions are produced and constantly changed. That implies that specific discourses are predominant, and others marginalised. Exceptionally truths or social realities are produced, by a signifying impact of power in discourses. Power is defined and intrinsic in all social relations, and it has a productive as well as a repressive consequence (GLASZE and MATTISSEK 2009: 12). Discourses are depicted as structured or structuring suggestions, meanings or more or less extensive symbolic orders, generating and stabilising a binding sensual connection. Essentially it institutionalises a knowledge order in social collectives (KELLER 2012: 27). The link between characteristics of local communication and features of social communication is acknowledgeable. By reflecting the aims and objectives of the study, the DA is a helpful tool to examine discourses that are produced due to cultural landscape management by the non-conformist application of formal institutions in opposite to cultural landscape management action that is led and implemented chiefly by informal

institutions. The study at hand examines the relation between cultural landscape management and active and passive conflicts, the intended development of cultural landscape evolved by the action of stakeholders within their individual institutional frame. The frame of action, in turn, is considerably dependent on the institutional arrangement. A driving question is whether discourses originate because of the predefined institutional arrangement or due to cultural landscape change that vice-versa is accelerated by a reciprocal institutional blocking. Discourse research applied to the study at hand is important to focus on awareness between spatiality and power relations, especially based on the permanent social constitution of space and place (GLASZE and MATTISSEK 2009: 1) based on cultural landscapes action, communication and identity arenas. Discourses may exist about the general implementation of a commonly percept physical landscape regarding management and application of cultural landscape as a value for regional development in the study area. Peculiarly considering cultural landscapes as heterogeneous and multifunctional common goods that acquire spatial qualities. DA helps to investigate discourses of cultural landscape to reveal major consensus or dissents. Results contribute to refining potential governance arrangements as discourse theory offers a starting point to explain regularities and spatially related practice patterns to examine diverse forms of governance (GLAZE and MATTISSEK 2009: 18). DA is to state the situation and relation of material arrangements and symbolic practice, which label the material fact with a specific meaning (GLASZE and MATTISSEK 2009: 18). Based on KELLER (2012: 52p) respective levels of content refer funnel-shaped to single or several documents of the data corpus to examine the questions who, how, where, and for whom statements are produced. The category alignment of the discourse analysis is displayed in the Appendix (cf. **CHART 4b**). Levels of content in the discourse analysis are:

- Situation and relation of statement producers and recipients.
- Institutional settings and rules.
- Constructed or natural occasions that produce statements (natural disaster, political reforms).

- Media context (books, newspaper or journals).
- Social context (economic, social, scientific context).
- Power constellations.

3.3.2.4 Governance framework analysis

According to the institutional analysis, the dimension of the governance analysis is policy centred. Implying that the fundamental analysis items are in this case the relevant formal and informal institutions. The logic of the analysis remains reflexive. Processes and problem-solving oriented actions emerge only, in so far as they affect institutional patterns. Methodically dominated typology based comparisons, and qualitative case studies are foregrounding the approach. More specifically, the governance concept is a notion of a formal and informal institutional design (PRITTWITZ 2011: 11). Governance research in the current investigation examines the forms of governance that can evolve in cultural landscapes constituted as action, communication and identity arenas on-site. To that, it is not an analysis tool in a methodological sense. The research at hand performed a governance analysis on the existing governance-modi described by GAILING and LEIBENATH (2008). Ensuing aspects are constituent and correspond to the categories in the institutional and discourse analysis:

- Supra-regional visibility and communication efficient concentration on projects and the creation of thematic charged places.
- The invention of new and reactivation of existing traditions.
- Regional branding and regional marketing.
- Labelling as super-elevation of existing toponymy.
- Production of places.
- Communication about images, places and historical or endangered stages of landscapes.
- The collective debate about cultural landscapes in the form of conflicts and other interactions of competing perspectives.

3.4 Ethical considerations

Participation of the interview partners was voluntary in the current research. The interviewees were informed about the use of interview data, such as publication in the doctoral thesis with all personal identification removed. The present study was conducted with minimal risk to participants about experimental treatment or exposure to physical or psychological harm. Confidentiality of recorded data was maintained at all times. Privacy is guaranteed for all participants and anonymity is safeguarded for the participants who want to be processed anonymously in the research. Results are accurately delineated by what was observed or were told by the interview partners or statements in the documents.

3.5 Reliability and validity

Applying interdisciplinary methods is a viable and effective way to test the elaborated study aims and objective empirically. All completed examination steps are made transparent to allowing a replication of the survey under similar circumstances. Supplementary data regarding the interviews are enclosed in the digital appendix as interview protocols or protocol logs.

By determining the accuracy value of the findings, the hypothesis was constantly revised as more data became available. Multiple sources were tapped and discovered during the examination process. The sample amount must be seen within the already mentioned specific context. It is not a query of the sample size of the interviews to conclude the impact of formal and informal institutions on the day-to-day management of cultural landscapes. Even so, the study is limited to time aspects and financial resources.

The analysis at hand is not claiming to comprise an entirety of documents that cover cultural landscape management in Norway. The language appeared likewise as a limitation, as most of the documents are written in Norwegian. The researcher's language skills regarding the document search and analysis of Norwegian material are somewhat limited. The interviews were conducted in English, which was neither the native language of the interviewees nor the interviewer. That may have affected their openness towards the research objective. Moreover, the study relied on access to interview partners and

respective institutions. Particularly the political administration was unresponsive towards interview requests. Due to the field work phases in the study valleys, the municipal administration and the local population could be encountered personally.

Redundancies in content that evolved during the analysis process arrogated the theoretical saturation. Triangulation or combination of analysis methods is indispensable and was performed to scale the strengths and weaknesses of specific methods. Triangulation of the results assists to validate empirical results in the present study and to possibly enhance the validity of the findings (GLÄSER and LAUDEL 2009: 105).

4. Study Area

Subsequent chapter displays the physical framework and the respective cultural landscape history in the case study valleys. Study area description is the first step to creating an area specific itemisation of characteristic cultural landscape elements and components displaying the regional and local idiosyncrasy of the outlined Fjordscape. The applied itemisation of cultural landscape elements and components in the case study valleys is principally aligned according to the inventory formulation by THOMAS GUNZELMANN (2001: 27)[99].

Table 2 displays a detailed overview of the modus operandi and the general structure of the attenuated itemisation. The design of the designated approach intends to assess the elements and components constituting the area typical cultural landscapes and to give a holistic synopsis about such (SCHENK 2006: 105).

• **Fundamentals of cultural landscapes** Physical framework of the area - Cultural landscape history - Historical settlement pattern - Historical meadow structure - Historical land use - Historical transportation network
• **Elements of cultural landscapes** Settlements - Agriculture - Trade - Traffic - Recreation - Tourism - Associative cultural landscapes
• **Synopsis of cultural landscapes** Interconnection of single elements - Cause-and-effect between the natural and cultural influencing factors

Table 2 Structure of a cultural landscape inventory (GUNZELMANN 2001: 27).

Ensuing chapter commences with the description of the general location of Stryn and the individual case study valleys Bødalen, Briksdalen and Erdalen. Henceforward, the physical framework of the area and the cultural history is elaborated. Describing the initial land use that created the idiosyncratic cultural landscape is necessary for the later analysis of the present state of the compiled local cultural landscape (cf. Chap. 5.1, p. 131). A brief introduction and description of the Jostedalsbreen National Park, on which 467 km^2 of Stryn

99 Following methods were deployed for the creation of a cultural landscape itemisation: (a) archive evaluation, evaluation of the land register, maps in national and local archives; (b) evaluation of local and regional literature, evaluation of specialised historical, geographical and natural historical literature; (c) administration inquiries, evaluation of monument lists, inquiries at the water management authorities; (d) consultation of locals, farmers, tourist operators; (e) fieldwork, mapping, photographing (GUNZELMANN 2001: 29).

Municipality area and parts of the respective case study areas are located ends the chapter describing the study area.

To introduce cultural landscape governance in the case study sites, they need to be scaled for the purpose of a spatial fitting regarding the territorial-administrative arenas, the cultural, the natural space and the space of identity. For this purpose, it must be stated that there could not be identified a general nationwide classification of distinct cultural landscape areas or regions in Norway. Similarly, no specific delimitations of cultural landscapes within or due to regional specifications are available on a local or intermediate regional scale. Regarding the strong interconnectedness between local requirements defined by nature and the cultural development, regionalisation[100] of cultural landscapes chiefly recurs to natural parameters[101] in the country.

According to the theoretical proceeding, it is remarkable that the cultural, natural and identity borders of cultural landscapes as a space of action often do not coincide with the political-administrative borders (GAILING and RÖHRING 2008: 136). The three case study valleys are affiliated to Stryn Municipality and embedded in the Nordfjord, which was an independent political-administrative unit until the local government reorganisation in 1919. An individual regional distinction of the Nordfjord from the neighbouring Sognfjord and Sunnfjord, which together constitute the Sogn og Fjordane County, is assumable. The Nordfjord as a toponym and identity area became crucial ever since then. Regionalisation efforts regarding the neologism Fjordscape form a common starting point. Respecting the fact that the case study valleys are located at the innermost part of the fjord, beneath the Jostedalsbreen, a strong identity relation to a homogeneous space of cultural landscape appears and is further expressed as the Inner Nordfjordscape. It can be stated that regionalisation

100 An earmarking of a region that merges homogeneous areas of cultural landscapes, which are defined by a combination of formative cultural landscape features is necessary. SCHENK (2008: 10) titled this proceeding as regionalisation.

101 Inner fjord recurs to the Norwegian expression *indre fjord*. These areas are assigned to the national landscape reference system *(Nasjonalt Referansesystem for Landskap (RSL))* that divides Norway into 45 landscape regions and 444 sub-regions. Case study valleys are categorised in the landscape region 23 as inner villages of the Vestlandet *(Indre Bygder på Vestlandet)*, which is again divided into 21 sub-regions. According to the RSL, the case study valleys are listed in subregion 23.14 Jostedalen (PUSCHMANN 2005: 99pp). Particularly the outfield areas are also part of the landscape region 17 *(Breene/Glaciers)* categorised in subregion 17.3 Jostedalsbreen (PUSCHMANN 2005: 75pp).

shifts, in the case of the three valleys, from a regional to a local focus. The case study valleys show significant similarities regarding land use traditions and location. Nonetheless, significant variations on the individual development of each valley due to the specific natural and cultural factors exist. Further, it is essential to state that the elaborations at hand advert only to the case study valleys, the wider Stryn Municipality area and the distinct surrounding of the Jostedalsglacier.

4.1 General location of Stryn Municipality

The three case study valleys are located in the eastern part of the Nordfjord, in a side fjord, called Innvikfjord (cf. **CHART 6** App.). Moreover, they are part of the county of Sogn og Fjordane[102] and belong to the local authority district of Stryn[103] Municipality (cf. Fig. 8). Stryn is situated in the north-east of the Sogn og Fjordane County (cf **CHART 7** App.).

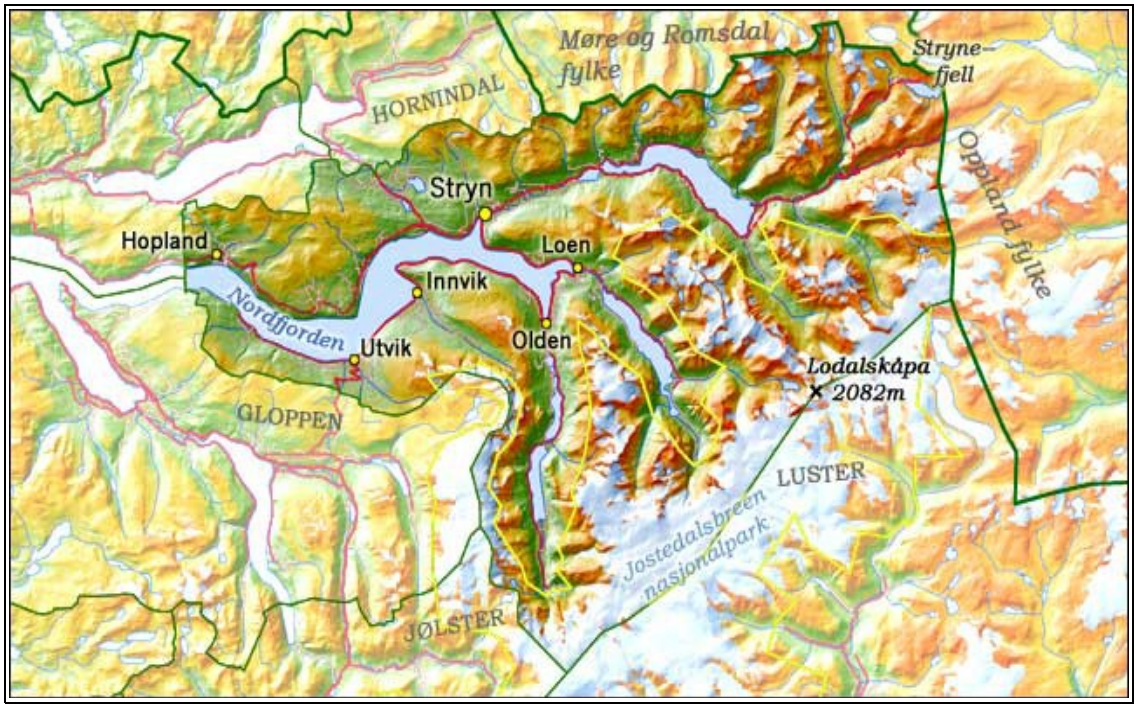


Figure 8 Map of Stryn Municipality (STATENS KARTEVERK 2014).

102 The name *Sogn og Fjordane* refers to the *Sognefjord*, which is the largest fjord in the area. *Fjordane* is the plural form for fjord in Norwegian. It relates to the other two large fjords in the county area, the *Sunnfjord* and the *Nordfjord*. Until 1919, Nordfjord was an independent county. *Fylke* (county) constitutes the Norwegian administrative unit below the government, and *fylkesmannen* (county governor) is the direct representative of the central government and king. *Fylke* are comparable to the *counties* in England and the *Regierungsbezirke* in Germany, for instance. There are 19 *fylke* in Norway.

103 *Stryn kommune* is further called Stryn Municipality.

The study areas mark the inmost segment of the Nordfjord. Lake Stryn *(Strynsvatnet)*, Lake Loen *(Lovatnet)* and Lake Olden *(Oldevatnet)* are attached in the southwest and south of Stryn, and the Jostedalsbreen in the east and southeast. Stryn borders to Eid and Hornindal Municipality in the north, Gloppen and Jølster Municipality in the southwest and Luster Municipality in the southeast. The northbound neighbouring Stranda Municipality belongs to Møre og Rumsdal county and Sjåkk Municipality, eastbound of Stryn, is part of the Oppland county. Stryn represents the centre of the entire municipal area, small villages appear as sub-centres (Loen, Olden and Oppstryn).

Briksdalen is located in the Olden Valley *(Oldedalen)*, Bødalen is part of the Loen Valley *(Loedalen)* and Erdalen is nominated to Oppstryn, which also constitutes one of the historical church parishes in Stryn[104] (HELLE and CLEMETSEN 1993: 30). Case study site choice is based on several references regarding the study aims and objective to assess and compare the current cultural landscape situation and management. Those considerations occur necessary before transferring theoretical governance research approaches to the case study area. All three case study valleys are:

- Equipped with a correspondent institutional framework, formally due to the affiliation to the same administrative level (Stryn Municipality). Further, they conform to an equal solid cultural landscape pattern.
- Partly placed on the national park ground.
- Located on the western or north-western side of the Jostedalsbreen complex.
- Show similar natural-geographic patterns.
- Are differing significantly from each other regarding recent land use and cultural landscape evolution.

Briksdalen, and in particular the Briksdalsglacier (*Briksdalsbreen*) transformed to a hot-spot tourist attraction since the beginning of the 19th century. Reduced

104 Subunits in Stryn Municipality have no administrative function. They emerged in a historical background. The sub-centres are assistive to illustrate population dynamics within an extensive administrative area to make population development easier assignable to the major valleys that belong to Stryn Municipality. Sub-units are more or less congruent with the eight church parishes in the municipality that are Oppstryn, Kyrkeeide, Nordsida, Hopland, Loen, Olden, Innvik and Utvik (HELLE and CLEMETSEN 1993: 30).

and discontinuous land cultivation is recognisable and the process of natural succession of forest on the slopes and the flat valley bottom is proceeding. Bødalen progressively increased its tourism and recreational potential. With respect to the natural disasters of 1905 and 1934 (cf. Chap. 4.3.4, p. 106p), only residual areas are in agricultural use by pasturing livestock, especially in the upper valley parts. The former summer farm buildings are either used for tourism[105] or recreation purposes. Erdalen is still in active agricultural use. Livestock pasture is performed in the upper valley on the alluvial fan. Past summer farm buildings are designated as second homes by the Erdalen farmers for recreational purposes. Tourists visit Erdalen valley rather occasionally in comparison to the other two case study valleys. The subsequent section addresses the physical framework bestowing the cultural landscape fundamentals concerning the creation of a cultural landscape itemisation in the case study valleys (GUNZELMANN 2001: 27).

4.2 Physical framework

The ensuing six paragraphs depict the physical framework in the case study valleys. By starting with the topography, geology, climatic conditions, hydrology and glaciers, vegetation and soil conditions, an overall picture of the natural environment of the area frames the typical cultural landscapes evolution.

4.2.1 Topography and general location of the case study sites

Stryn Municipality covers an area of 1382 km^2 (STATENS KARTVERK 2014; FYLKESMANNEN LANDBRUKSAVDELINGA 2014; GAARDER and FJELLSTAD 2002: 18)[106]. Hypsographic zoning of the region illustrates that the middle, lower alpine and sub-alpine belt compose approximately one-third of the area, which is exemplary for the topography in glacial areas (cf. **CHART 8** App.). Extreme vertical altitude gradients are predominating. Areas defined by a flat relief are sparsely available (MIEHE et al. 2004: 118p). Subalpine and lower alpine zones describe the altitude, on which most of the summer farms and the respective cultural landscape pattern is located. To empirically investigate the

105 DNT has installed a self-sufficiency shelter for mountaineers and hikers on Bødalen summer farm ground. Private owners rent out their cabins to tourists occasionally.

106 HELLE and CLEMETSEN (1993: 12) state a total area of 1384 km^2.

theoretical principles of the current study, the three valleys of Briksdalen, Bødalen and Erdalen are applied as case study valleys. The substantial cultural landscape area the investigation at hand focuses on is mainly detectable on valley infills, slopes and glacial depositions. The general location of the three study valleys are:

Briksdalen (61°67'N, 06°81'E) is situated at the rear end of Oldedalen and Oldevatnet (cf. **CHART 6, 10** App.). Oldedalen bends off south from Innvikfjord and extends from Olden towards the Jostedalsbreen. Glaciers surround the valley (WEICHERT 2008: 71).

Briksdalen is about 7 km long[107] and extends on a north-south gradient (cf. **CHART 9, 11** App.). Elevation ranges from roughly 49 m to 350 m. High-exposed peaks and slopes are located to the east (up to 1600 m) and west (up to 1600 m). Briksdalsbreen in the south delimits the valley. Cultural landscape area in Briksdalen covers 8,8 km^2. Bødalen (61°48'N, 07°08'E) side valley branch off from Lodalen and extends towards east from the Lovatnet (cf. **CHART 6, 13** App.). Lodalen diverge south from the fjord directs towards the Jostedalsbreen (WEICHERT 2008: 78). Bødalen shows disproportionally high exposed hill slopes to the north (up to 1600 m) and south (up to 1820). The valley is 7,3 km long with an elevation ranging from roughly 60 m to 780 m (cf. **CHART 12, 14** App.). On about 580 m, the valley bends south. Bødalsbreen marks the valleys end. 5,6 km^2 compose cultural landscape area in Bødalen.

Erdalen (61°50'N, 07°15'E) is placed at the northwestern end of the Jostedalsbreen complex (cf. **CHART 6, 16** App.). The valley stretches over 13 km from the southeastern riverside of Lake Stryn towards the south. Hypsography in the valley varies from 20 m at the valley entrance up to 900 m at the glacier front (cf. **CHART 15, 17** App.). Hill slopes are disproportionally high exposed to the northeast (up to 1600 m) and southwest (up to 1850 m). On 470 m, Vesledalen side valley splits up towards the east. Erdalen[108] continues southbound. Erdalsbreen and Vesledalsbreen mark the end of the valleys. Total sphere regarding cultural landscape in Erdalen comprise 14,4 km^2 (6,1 km^2 infield area and 8,3 km^2 outfield area).

107 Distance is scaled from the shores of the lakes (Loen, Olden, Stryn) to the glacier.
108 Upper Erdalen is also called *Storedalen* (the Great Valley).

4.2.2 Geology

Figure 9 displays the geological composition of the Nordfjord area. Erdalen and Bødalen belong to the Jostedalen Complex, which is part of the Western Gneiss Region that covers the area from Sogn to Nor-Trøndelag (RAMBERG 2008 122).

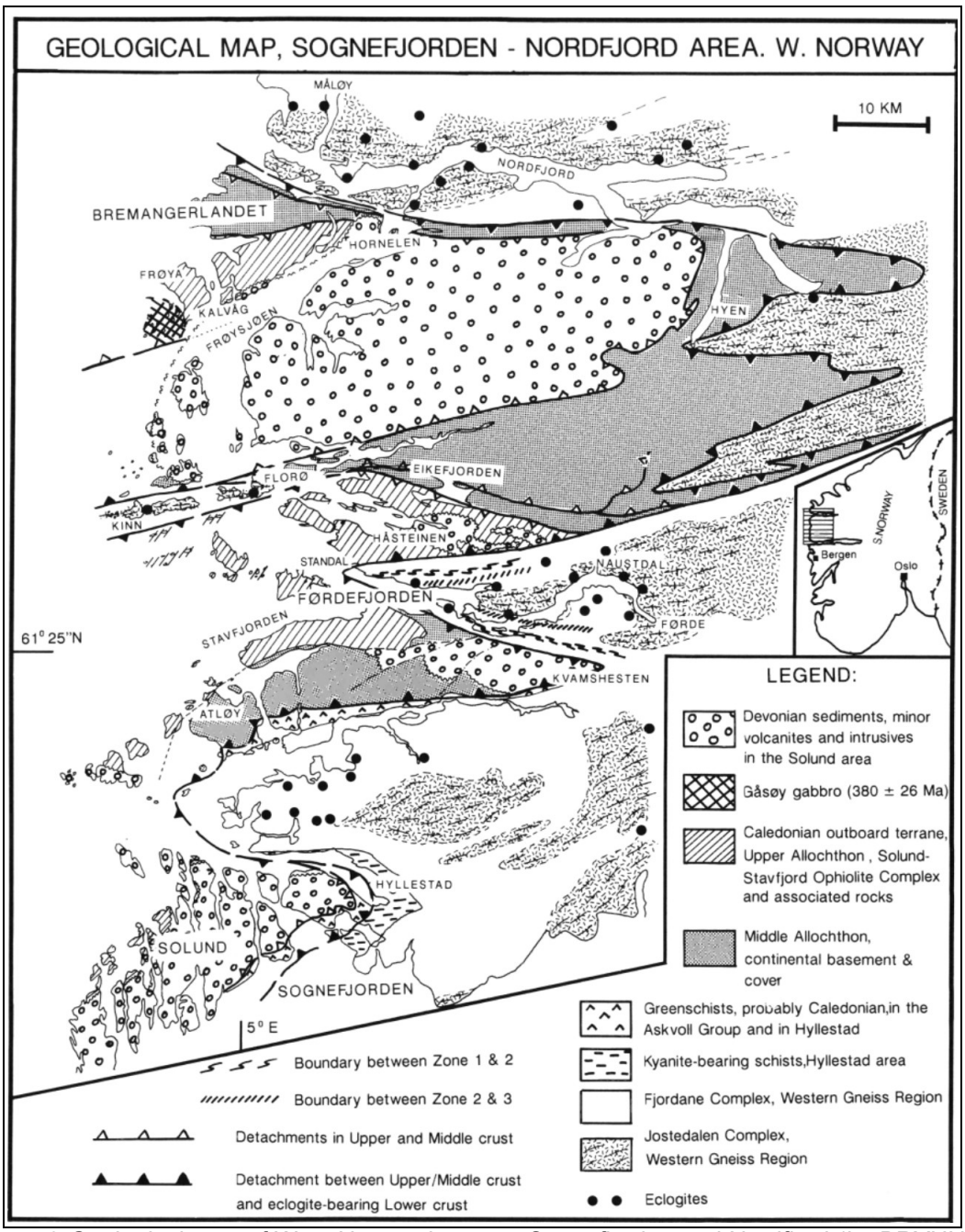


Figure 9 Geological map of West Norway between Sognefjorden and Nordfjord (by BRYHNI et al. 1981 in: ANDERSEN and JAMTVEIT 1990: 1099).

Briksdalen is located in the Fjordane Complex, the more western located sub-share of the Western Gneiss Region (ibid.). Both complexes include variable bedrock. Predominant lithology is the Precambrian granitic orthogneisses (RAMBERG 2008: 112; LUTRO and TVETEN 1996). Grey and red gneiss with inclusions of amphibolites and gabbros dominate the Nordfjord area (RAMBERG 2008: 113; ANDERSEN and JAMTVEIT 1990: 1104; NESJE 1984). The location was shaped during the Caledonian orogenic belt between 1700 and 1500 Million years ago. Caledonian mountain chain was formed as a result of the collision of the Laurentia and Baltica shield (RAMBERG 2008: 113). Briksdalen, Bødalen, and Erdalen are steep tributary U- or V-shaped valleys influenced by phases of advancing and retreating branch glaciers of the Jostedalsbreen.

4.2.3 Climate

Respectable variations differentiate the climate in Norway. Position and altitude, as well as the input of latent heat by the North Atlantic current, are major determining factors (GLÄSSER et al. 2003: 66). On the macro level, a north-south variation [109] and a west-east variation[110] is remarkable. Changes in temperature and precipitation abound with increasing elevation. Prevailing wind direction from the south-west transports humid and mild air ashore (DIERßEN 2004: 117).

The meso- and the microclimatic conditions depend on the individual location. Valley systems isolated by the Scandinavian Mountains develop a steep gradient in temperature and precipitation (DIERßEN 2004: 117). Climate gradient in the Nordfjord area varies from the coast to the innermost parts of the fjord. Variations in temperature and precipitation occur due to vertical gradients on-site. The case study valleys are located in the innermost region of the Nordfjord. Constant weather data comprising the case study valleys are recorded by the automatic weather station in Stryn-Kroken, which is operating since November 1993 (NORWEGIAN METEOROLOGICAL INSTITUTE 2015). A series of measurements cover weather data for the three case study sites and

109 According to the amount of radiation.
110 Regarding oceanic or continental conditions.

Stryn Municipality, as displayed in Figure 10. 6,23 °C was the computed annual air temperature in 2015. February, first 2015 was the coldest recorded day with -11,5 °C. 29,3 °C was the warmest recording in 2015, measured on July, second (NORWEGIAN METEOROLOGICAL INSTITUTE 2016). Table 3 shows the monthly mean temperature and the series of monthly precipitation in 2015. 2067 mm precipitation was recorded at the same time.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
°C	-0,2	1,2	2,8	3,7	7,1	9,6	11,7	14,7	11,1	7,4	3,7	2,0	**6,23**
mm	299,3	178,5	233,5	114,3	114,5	68,7	92,9	58	52,6	84	329,5	441,8	**2067**

Table 3 Mean monthly temperature and monthly precipitation measured at the weather station Stryn-Kroken 2015 (NORWEGIAN METEOROLOGICAL INSTITUTE 2016).

Referring to the land elevation, the annual precipitation obtains up to 1000-1500 mm in the lower valley parts. Upon the Jostedalsbreen, annual precipitation reaches up to 2000-3000 mm. On the western side of the glacier, where all three case study sites are located, 1500-2000 mm average precipitation is measured. Consequently, the climate is defined as oceanic (GAARDER and FJELLSTAD 2005: 19). Precipitation maximum around the Jostedalsbreen appear in winter and spring (LAUTE and BEYLICH 2012: 2).

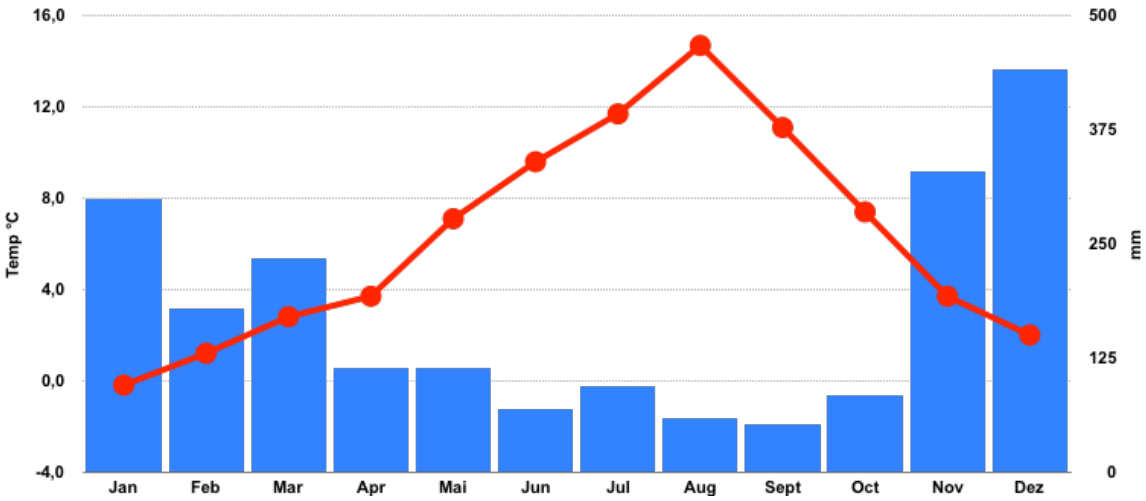


Figure 10 Annual temperature and precipitation in Stryn Municipality 2015 (NORWEGIAN METEOROLOGICAL INSTITUTE 2016).

Local variations in temperature and precipitation regarding the vertical gradient appear in particular in the higher located valley parts in Briksdalen, Bødalen and Erdalen. Long-term measurements of temperature and precipitation are not

acquirable in the case study valleys. An overview on the various temperature profiles[111] during the research project period from 2008 to 2014 is displayed in the Appendix (cf. **CHART 18** App.).

The average snow depth in 2015 was 70 cm in January, 76 cm in February, 37 cm in March. 2 cm in April and 5 cm in December. January 15th recorded the highest snow depths with 98 cm (NORWEGIAN METEOROLOGICAL INSTITUTE 2016).

4.2.4 Hydrology and glaciers

Respecting the previously elaborated topography in West Norway, the river courses run relatively short (SANDVIK 1999: 21). In general, the branch glaciers of the Jostedalsbreen in the case study valleys drain into a river, respectively each river[112] drains into a water body. Lake Stryn is attached to Erdalenriver *(Erdalselva)*, Lake Loen to Bødalsriver *(Bødalselva)* and Lake Olden to Dalelvariver[113] *(Dalelva)*. The single water bodies drain either straight or via a connected river system into the Nordfjord. Recorded discharge peaks are during autumn and wintertime. During that period, precipitation is not compensated by regional evaporation. In glacial catchments, discharge peaks are identified during early spring and late summer because of a delayed glacial melting, as it occurs in the upper parts of Bødalen and Erdalen on the sandur plains. These areas are further described as Braided-Sandur-Systems (BEYLICH 2008). Besides, discharge patterns in the case study valleys are always related to the respective storage forms (GLÄßER 2004: 70). During the Pleistocene, the Nordfjord has repeatedly been occupied by glaciers and the most recent deglaciation of the outer coast of the Nordfjord took place around 12,3 cal BP (LARSEN and MANGERUD 1981: 153p).

Three major glacier fluctuations happened in the area during the Holocene:

111 Temperatures were measured at the weather station in Stryn-Kroken (NORWEGIAN METEOROLOGICAL INSTITUTE 2014).

112 Erdalselva, Bødalselva and Brikdalselva are the streams in the case study valleys.

113 Briksdalselva drains in the Dalelva when streaming towards Oldedalen after it has left Briksdalen.

- The Preboral deglaciation (10.3-9 cal BP) was interrupted by a glacier advance (Erdalen-event), forming a distinctive terminal moraine ridge in Erdalen (NESJE 1984; MATTHEWS et al. 2008).
- During the thermal climatic optimum, the Jostedalsbreen ice cap ablated almost entirely and was reformed over the period from 6 to 2 cal BP (NESJE 2009: 2124; NESJE et al. 2008: 13).
- The Jostedalsbreen outlet glaciers experienced their maximum Neoglacial position during the Little Ice Age period around 1750 (LAUTE and BEYLICH 2012: 2; BICKERTON and MATTHEWS 1993: 60).

The glacial advances are accountable for dramatic events regarding farmland devastation by landslides and moving ice shields in the valleys. Notably, the Little Ice Age affected for avalanches and glacier winds with significant impact on the valleys (RAMBERG 2008: 553; AALAND 1973). As already mentioned, the glaciers in the case study valleys are outlet glaciers. Those glacier types drain an ice cap, which is often a valley glacier type. The name of the outlets mostly refers to the adjoining valleys' names because the accumulation areas are difficult to locate (ANDREASSEN and WINSVOLD 2012: 20).

The case study valleys are named after the outlet glaciers Briksdalsbreen, Bødalsbreen and Erdalsbreen. Glaciers, particularly on the western side of the Jostedalsbreen tended to expand largely during the time between 1955 and 1997 (RAMBERG 2008: 552). Briksdalsbreen exemplifies glacial expansion during this period significantly. The ice front extended 600 m in that time. During 1992 and 1997 the glacier advancement reached 320 m. An annual record of 80 m growth in a single year was measured between the years 1992 and 1993 (RAMBERG 2008: 552) (cf. **CHART 19** App.). Since 2000, the branch glaciers in case study valleys joined the global trend of glacial melting particularly because of warm summer (WEICHERT 2008: 30). A rapid melting is determinable in the case study sites. The process is supported by a negative annual balance for the collecting basin and the ablation areas. Glacial processes are exemplary well examined in Briksdalen (cf. **CHART 19, 20** App.). Glacier dynamics is a factor

influencing the land use of the outfield areas in the three case study valleys significantly since land use developed.

4.2.5 Vegetation

The vegetation in the Nordfjord and the case study valleys corresponds largely with the Southern Boreal and Boreonemoral zone, as the map of the general vegetation classification of the National Atlas of Norway in Figure 11 depicts.

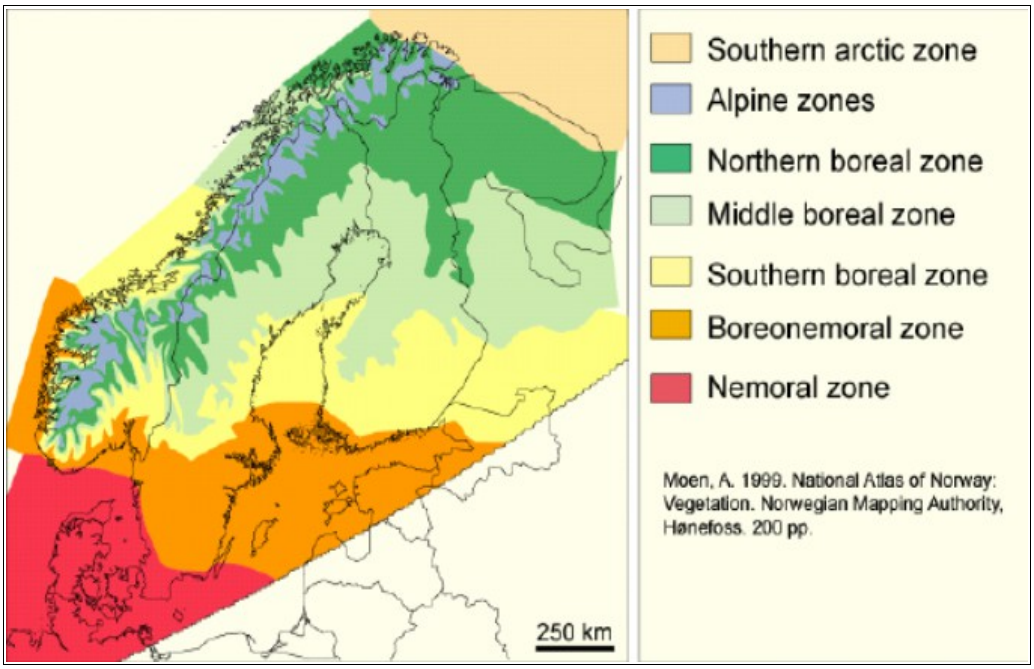


Figure 11 General vegetation classification in Norway (source NATIONAL ATLAS OF NORWAY, LILLETHUN and MOEN 1999: 200).

Increasing altitude changes the vegetation composition correspondingly (LILLETHUN and MOEN 1999: 200). Table 4 (p. 96) assigns different general vegetation zones to elevation. The tree line is, depending on the glacial expansion, at about 200-300 m. On the ice-less slopes, the tree line climbs to about 600-800 m (GAARDER and FJELLSTAD 2005:16). Alongside the fjord, the lakes and in the side valleys, the vegetation classification is dependent on parameters such as altitude, amount of radiation, hill slopes, terrain depression, soil and exposition, for example. The degree of vegetation cover changes due to local alterations. Forrest covers estimated 50-70% of the area; the open areas account for 5-10% of the area in examined case study valleys (cf. **CHART 11, 14, 17** App.).

Boreonemoral zone	Southern part on the fjord side and along Strynevatnet, in Oldedalen/Loedalen up to 200-300 m
Southern boreal zone	Lowlands and hill slopes up to 200-500 m
Middle boreal zone	Forest located in higher altitude
Northern boreal zone	Mainly Birch forest (Betula pubescens)
Alpine zone	Treeless areas over 600-800 m

Table 4 Location of the respective vegetation areas in the case study valleys.

It can be distinct between the lower valley areas, the upper valley parts on the flat valley bottoms and the higher located parts around the glacier front, which is very much defined by pioneer vegetation. On-site, the flora is predominantly affected by location parameters such as water saturation, bedrock and mineral rich soils. It is unarguable that cultural landscape dynamics affect biodiversity. Successive shrub and bush vegetation replace species that are strongly connected to the open and semi-natural pastures. A list of the predominant species in the study area is enclosed in the Appendix (cf. **CHART 21** App.).

4.2.6 Soil

Podzols, Histosols, Gleysols and Albeluvisols, characterise the main soil types in the Boreonemoral zone in Norway (ZECH 2002: 16p). A variety of textures affects soil formation considerably. On a small entity in the upper valleys of Erdalen, Bødalen and Briksdalen, soil development is dependent on a range of factors. For instance, the parent rock material or climate that determines pedogenesis during the year. With increasing altitudes, for instance on the alpine level, the physical weathering processes define the parent material for soil development (ZECH 2002: 27). To identify the predominant soil types in the study area spatial differentiations have to be considered, which also reflects the main distribution of parent rock layer or dominant ground material. Rock outcrops dominate the upper Erdalen, as well as the higher part of Bødalen and Briksdalen. Assigning individual soil types is not possible in these areas. The main organic soil profile and the topmost mineral horizon are defined as colluvium. These are deposition of loose unconsolidated sediments at the base of hill slopes accumulated by rain, sheet wash or other denudation processes in U- or V-shaped valleys. Soil layers are less than 15 cm thick, after removing the

organic layer. The soil in the lower valley parts in the case study areas are mainly characterised by an enormous variation of Podzols. Podzol is the main soil type in temperate mountain regions as they are to be found in the lower parts of Erdalen, Bødalen and Briksdalen at an elevation of approximately 0 to 200 m (GLÄSSER 1993: 21) (cf. **CHART 22** App.). According to the outlined physical framework, it can be summarised that varying natural factors characterise the preconditions of cultural development in the case study valleys remarkably. After presenting the natural framework, subsequent paragraphs display the cultural landscape history.

4.3 Cultural landscape history in the case study area

Respecting the cultural landscape itemisation, the presented physical framework of the inner Nordfjord influenced and affected the development of specific land use in the examination area decisively. Cultural processes produced, vice versa, based on the perception and interpretation of the surrounding landscape significant and characterising spatial patterns (FRY 2003: 240). Notably, these patterns can be interpreted as historical grown cultural landscapes. Respecting the terminology historical cultural landscapes SCHENK (2011: 97) addressed a definition made by KLEEFELD (2004): "*Historical cultural landscapes are an extract of the actual cultural landscapes, which are characterised by historical, archaeological or historic-cultural elements and structures*." By giving an illustration about the development of the investigated localities and the accomplishments of cultural processes in the case study valleys, cultural history is concisely reflected for later analysis of the current status of cultural landscapes. By conferring to an itemisation, succeeding paragraphs present the historical development of the specific cultural landscapes in West Norway. Referring to GUNZELMANN'S inventory approach, findings from the prehistoric era are excluded in the current observations, because they are already listed in a separate index[114] (SCHENK 2011: 101; 2006: 104) (cf. **CHART 23** App.). Palaeoecological records confirm that parts of the Nordfjord are in use for subsistence agroecosystems based on

114 All places of archaeological findings in Stryn Municipality are listed and mapped by the Norwegian Directorate for Cultural Heritage, available on: http://www.kulturminnesok.no/Lokaliteter/Sogn-og-Fjordane/Stryn (accessed 13.10.2015).

livestock for more than 4000 years (SETTEN and AUSTRHEIM 2012: 287p; ØYE 2009: 45; AUSTAD and HAUGE 2008: 375; HJELLE et al. 2006: 147; RØNNINGEN et al. 1999: 155). Semi-natural-grassland with livestock husbandry and dairying developed in a cyclical use during the year, spatially separated in infield and outfield areas (MURPHY et al. 2009: 204; AUSTAD and HAUGE 2008: 372; MURPHY et al. 1973: 227). Summer farming evolved and constantly intensified since the Middle Neolithic (HJELLE et al. 2006: 155).

So far, the oldest evidence of human activities in the case study valleys dates back to the Iron Age. Scattered findings in the ares proof the existence of prehistoric settlements. In close vicinity to Greidung farm in Erdalen, for instance, remnants of an old farmstead from the late Iron Age were found (RANDERS and KVAMME 1982: 36p; BOLSTAD and KVAMME 1980: 7). Plenty of point, linear or laminar archaeological records from the period between 1500 BC and 1050 AD were discovered in parts of the researched valleys[115]. Items and structures were mainly spotted within the context of grave sites from the mentioned time frame. Various findings on-site support the conclusion that powerful and prosperous families inhabited the area (NRK FYLKESLEKSIKON SOGN OG FJORDANE 2015).

- Plague Epidemic

With particular attention to the historical grown cultural landscape patterns, the year 1349 marked a caesura. The great Plague Epidemic carried off an enormous part of the population[116] in Norway. Such an incisive event had wide-ranging effects on the development of particular land use systems in the case study valleys. Farm abandonment in vast parts of the countryside resulted, as it was the matter in Briksdalen. An important economic income source for the king, the nobility and the church disappeared and restrained their position in Norway (SOGNER 1976: 182). Thus far, the majority of the farmsteads in the

115 Archaeological findings were, for example, an oval-shaped broach from the Iron Age (500 BC-550 AD) that was found in Erdalen. A spearhead from the Migration Period (400-500 AD) and an axe from Merovingian period (550-800 AD) were detected in Bødalen (AALAND 1973: 42).

116 Estimations vary by one-half or two-third of the total Norwegian population during that time (SJÅVIK 2008: 37).

study area were belongings to the Munkeliv monastery[117], the resident bishop in Bergen or the king. It took 200 years for parts of rural Norway to regenerate from this demographic depression (SJÅVIK 2008: 37).

- Changing land tenure system

A significant result of the great Plague Epidemic was the reallocation of farmland, which lasted up to 300 years. Formerly, landowners[118] draw profits from their belongings (SOGNER 1976: 182). Until the 17th century, the king owned half of the farm estates in Norway (ibid.). From 1660 on, the crown, the nobility and the church traded the agricultural properties, realising that other income sources became more promising, such as taxes and customs duties. With the reform, land tenure assigned more farms to a former single farm holding because estates were split into many tax liable farm units. To assess the productivity of each farm and to determine taxes adequately, a general land register[119] was introduced in 1665 (SOGNER 1976: 191). In between the time of 1660 and 1850, the land tenure system underwent a constant transformation from owning shares of rent to landowners. A homogeneous peasant structure shifted towards a social system that focussed on the respective social position of each. Different types of landowners emerged, such as free-holding farmers[120] and cotters[121] (SOGNER 1976: 181p). Free farmers instantly managed former crown-, nobility or church-owned estates. They were able to disintegrate the farm holdings into individual farm units, which were rented out to cotters (LUNDBERG 2000: 91; SOGNER 1976: 183). Land register also comprised the outfield areas subjecting them likewise to taxation (DAUGSTAD 1990, 1999 cited in DAUGSTAD 2005: 4; SOGNER 1976: 186). Taxes were accounted for the general farm holding. The managing free-farmer was in charge of collecting it from the cotters (SOGNER 1976: 186). Changing land tenure had a profound

117 Farmsteads Erdal, Rygg, Berge and Greidung in Erdalen, for example, were wholly or partially in possession of the monastery that was among the greatest landowners in Nordfjord (NRK FYLKESLEKSIKON SOGN OG FJORDANE 2015; AALAND 1973: 321pp). In 1526 all possessions fell to the Crown in the course of the Reformation.

118 Main landowners were the crown, the church and the nobility.

119 In Norwegian it is called *jordbok*.

120 The farmer *(bonde, gårdman, oppsitter)* lived on the farm holding and provided his family by working the farm (SOGNER 1976: 185).

121 A cotter *(husmann)* was the tenant and paid the rent to the farmer in money or in labour, which also reflected the social status of the cotter (SOGNER 1976: 185p).

impact on the historical settlement structure in the Nordfjord. Farmsteads were split into smaller farm units constituting small settlement nuclei. Successful farmsteads with the corresponding subunits grew. A typical settlement structure accrued. The land register assigned individual farm numbers[122] to the proper owner, partly remaining valid until today.

Within the frame of the cultural landscape history depiction, it has to be restated that cultural landscape comprehension in the current investigation does not attribute to a particular era in history. In fact, the examination comprises the land use development in the case study valleys from the 17th to the beginning of the 20th century. Chief objects of investigation are the continuous and concrete forms of adapted land use in the area, the development and effects of the cultural and semi-natural landscapes on-site and the emerging cultural landscape elements and components. The particular natural premises in conjunction with distinct cultural achievements by the local population created a unique cultural landscape pattern. Due to the specific landscape characteristics, the term Fjordscape emerges to emphasize the distinctness of the cultural landscape in the case study valleys. Fjordscape refers to the regions located in the innermost parts of the fjords in West Norway that blend with the branch valleys of the Jostedalsglacier.

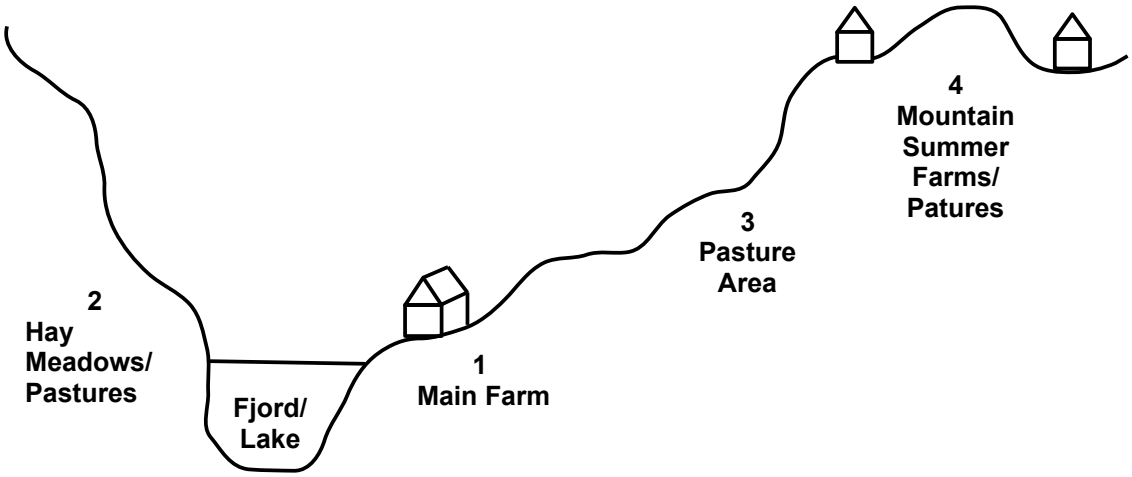
4.3.1 The Inner Nordfjordscape - a quintessential spatial pattern

The Fjordscape accentuates the here investigated cultural landscape with its individual frame of pre-settings based on the natural characteristics of the fjord, for one aspect, and the adaptability of the therein living societies, for another aspect. Heterogeneous integrated farming and forestry systems with regional specialisation in adoption to climate, physiography and local characteristics resulted (VOS AND MEEKES 1999: 3).

OLSSON et al. (2000: 155) stated: *"The mountains in Norway have had a central role in the subsistence agroecosystems by providing vast biological resources for humans and their livestock".* A robust and concrete human-environment-interaction formed (AUSTAD and HAUGE 2008: 375). Topography

122 *Matrikkelnummer* is an individual number in the public land register to assign property.

with its steep mountainsides limited tillable land. Livestock husbandry is substituting the lacking cultivable fields (ibid.). Dynamic production systems throughout the spring and summer season advanced. Farmland distributed vertically according to the distinct spatial and geographical configuration. Each agricultural space was used in cyclical patterns (AUSTAD and HAUGE 2008: 376). Forests and mountain slopes in the higher located valleys were exploited supplementary to the area in close vicinity to the farm entity (AUSTAD and HAUGE 2008: 375). A functional land use connection between the farm entities in the lower valleys and the valleys in the upper areas solidified.



	Unit	System	Altitude (m)
1	Main farm (infield)	Tilled fields, hay meadows, horticulture, grazing	0-200 m
2	Hay meadows/Pastures	Scything, coppicing, cutting timber, grazing	0-600 m
3	Pasture area (outfield)	Grazing, scything	200-800 m
4	Mountain summer farm	Grazing, cutting timber, coppicing	500-900 m

Figure 12 Schematic depiction of the vertical distribution of farmland and the respective land use in the Nordfjord area (based on AUSTAD and HAUGE 2008: 377).

The natural geographic transition areas close to the glaciers, further called semi-natural vegetation sites, altered into unique spheres defined by a lush plant and animal life. Concerning the frame of preconditions, Briksdalen, Bødalen, and Erdalen valleys exhibit a similar cultural landscape pattern based on resembling land use that is also exemplary for the most inner fjord areas in the Nordfjord. The case study valleys are:

- Defined by a short distance from the fjord to the Jostedalsbreen, with identical natural-geographic settings.
- Defined by a functional, vertical connection between the farmsteads (infield[123]) located in the lower valleys and the upper valleys (outfield[124]), which corresponds to the respective land use tradition.
- Denoted by a long history of land use in the area.

Figure 12 (p. 101) shows a schematic description of the Fjordscape with various forms of land use on varying altitude. According to the sketch, the functional connection between the infield and the outfield area becomes prevalent. The previously delineated socially constructed cultural landscape assigns landscape a cognitive function based on land use traditions and customs that developed. Today this associative cultural landscape is part of the peoples' self-awareness and identity. Land use traditions and cultural landscape history in the present research are examined with particular attention to:

- The residual functional connection and vertical distribution of farmland and the related land use.
- The remaining semi-natural vegetation sites, such as natural pastures, hay meadows and the summer farm areas, for example.

For a better understanding of the present state of the investigated cultural landscapes in the valleys, a general depiction of the infield settlement patterns in west Norway is followed by a brief description of cultural landscape history in the case study valleys.

4.3.2 Infield farming settlement patterns

In Stryn and the inner fjord areas in Western Norway, farms traditionally formed along the fjords, the lakeside and the narrow and flat valley bottoms. These small farm agglomerations mark the traditional infield area in the case study valleys, comprising the space in proximity to the farm including:

- Tilled fields
- Horticulture
- Meadows

123 Infield is the translation of the Norwegian expression *inmark*.
124 Outfield is the translation of the Norwegian expression *utmark*.

- Animal husbandry (in the barn and around the farm)
- Forest and timber extraction on the slopes close to the farm house (LUNDBERG 2000: 91; TAKSDAL 1973: 16p).

In the case study valleys, agricultural activities combined tillage, animal husbandry and silviculture in between the 16th and 20th century (TAKSDAL 1973: 16). Until agricultural intensification took place during the late 18th century[125], the slopes around the farmstead were used for grazing, firewood and winter fodder production (LUNDBERG 2000: 90). Meadow structures were dependent on specific natural prerequisites in the valley (such as river courses, slope gradients and composition of the ground). Regarding property rights, the infield areas are assignable to individual landowners based on the land register[126]. A functional and structural linkage between the infield and outfield areas became substantial throughout centuries and a valid until today. Land tenure system was an important factor in allocating the amount of farms per valleys. Available resources for all farmers and cotters were decisive respecting the number of farm units on a farmstead. Re-allocation of farmland is an ongoing process in Norway, which is regulated by traditional statutory rules such as the Land Act, the Concession Act and the Allodial Act. Land tenure system and the involved property rights contributed to the vertical distribution of farmland significantly. Usable resources on a vertical gradient from the valley to the mountains are entitled to each farm unit, including: Fishing rights, tillable land, pasture ground, firewood and forest land. Various buildings composed a farmstead. The local situation determined the arrangement of the buildings. Each house had a particular function, for instance, the kitchen and living house, the forge, the storage shed and the barn for the livestock (VÅGE 1993: 97). Main buildings in the infield areas were commonly constructed of logs, whereas the other buildings in West Norway were of stave construction with rafters supporting the roof and horizontal exterior cladding (VÅGE 1999: 93). In the late 18th century, the farm houses in Norway were built with stone and wood. Depending on the number of agricultural units that accumulated a nucleated

125 Intensification was necessary pertaining to the general population growth and economic progress (SOGNER 1976: 181).

126 *Matirkkelnummer* (http://www.seeiendom.no; accessed 08.06.2015).

settlement, mostly found at the entrance to the side valleys, emerged (GEELMUYDEN 2004: 16; VÅGE 1993: 93).

Conclusively it can be stated that the contribution to the structural patterns of the area typical cultural landscape by the various farmsteads and their development is essential (VÅGE 1993: 93; HELLE and CLEMETSEN 1993: 38). The farm holdings represented the conceiver of land distribution. Moreover, farmsteads represented the intangible cultural heritage of the shifting land tenure system. Ensuing sections introduce the settlement and production structure of the farm holdings in the case study valleys Briksdalen, Bødalen and Erdalen by giving a brief overview of the cultural history of the infield farming areas.

4.3.3 Briksdal farmstead - from farming to tourism

Briksdal[127] farm was located in the innermost area in upper Oldedalen, at the end of Oldevatn in two km vicinity to the Briksdalbreen (cf. **CHART 24** App.). The altitude of the farmstead ranged from 180 m to 340 m. In 1340. The farm appeared for the first time in historical recordings and was registered in the possession of the Presbytery of Alda. During the plague epidemic, Briksdal farm was abandoned. The acreage reappeared in the records 300 years later and was mentioned again in 1602. An abstract of the land register of 1723 described Briksdal farm as: *" (…) located between two grim glaciers nothing to cultivate on and cumbersomely high[128]"* (AALAND 1973: 88). Agricultural cultivation was marginal around Briksdal due to topography and the almost impassable terrain (WEICHERT 2008: 74). Natural influencing factors, particularly the maximum glacier expansion during the Little Ice Age[129] around 1780 (BIKERTON and MATTHEWS 1993: 45) made farm operation in Briksdalen more difficult. Summer farming on Briksdalssetra was constrained during that time as over two-third of the valleys' area was covered with ice (HELLE and CLEMETSEN

127 The old Norwegian form of Briksdal was *Byrgisdalr*. *Byrgi* signifies the closed or locked residence. During the time, the spelling of the name changed from *Brigsdal* to *Briksdal*.

128 Original text in Norwegian: *"(...) ligger mellem tvende grumme snebræer; avler intet, tungv. til hø."*

129 Little Ice Age describes a Holocene glacier variation. In Norway it signifies the period between 1500/1650 to 1920. The Jostedalsglacier witnessed its maximum expansion in the mid-18th century (NESJE 2009: 2124 cited in LAUTE and BEYLICH 2012: 1).

1993: 53). As already outlined, the advancing and retreating ice cap caused severe damage on agricultural land in Briksdalen. Only profitable farm units[130] kept producing agricultural goods mainly in the flat valleys close to Oldevatnet. Gradual abandonment of farming activity in the valley was recorded because of the unpredictable natural-geographic situation. In prosperity and adversity, the dwellers made a virtue out of necessity. Glaciers diminished agricultural land use to a great extent. Apart from that, the direct access to the glacier established an opportunity for tourism. In 1891, the Briksdalsbre Mountain Lodge[131] was constructed to supply a steadily growing number of tourist (SANDVIK 1999: 28; HELLE and CLEMETSEN 1992: 52). At about the same time, the first English tourist boats headed into Oldedalen (HELLE and CLEMETSEN 1992: 24). Tourism became a valuable income source for the local population during the late 18th century in the valley (TAKSDAL 1973: 16).

- Traffic structures

Until the end of the 19th century, Briksdalen was solely accessible by boats on Lake Olden in the summer time and by sleighs on the frozen lake during the winter (WEICHERT 2008: 74). In 1895, a regular boat connection on the lake between Olden and Rustøen[132] was installed due to an increasing number of visiting tourists. During the same year, the farmers around the area bought the steamboat *D/B Victoria*. Concisely after, *D/B Briksdal* was commissioned on the similar route (BRIKSDALEN OLDEDAEN 2008: 5). In 1915, the first combustion engine vessel was introduced (HELLE and CLEMETSEN 1993: 24). Tourists were transported on horse carriages from Rustøen to Briksdalen and further into the valley towards the glacier. The entire Olden Valley was not connected to the road system until 1955 (NRK FYLKESLEKSIKON 2009).

130 Melkevoll farm is placed in the close locality to Briksdalen. It is the most southern located farmstead in Oldedalen. The agricultural area is designated to a camping ground and parking facilities for tourists, who are visiting Briksdalsbreen. In the past, farm life was challenging and laborious. Within the course of time, income out of tourism substituted agricultural production (MELKEVOLL FARM 2015). Until the beginning of the 21st century, Melkevoll was illustrative for a farm entity with open pasture that depicts the corresponding effects on the landscape (SANDVIK 1999: 27). Today, the farm advertises with the expression *Bretun*, the glacier farmyard (MELKEVOLL FARM 2015).

131 *Briksdalsbre Fjellstove.*

132 That is the area name, where the shipping pier was located.

4.3.4 Bødalen farmstead - prosperity and tragedy

Bødal[133] farm is located on the eastern shore of Lovatnet (cf. **CHART 24 No. 9** App.) at the entrance to the side valley of Bødalen. The area is called *Bøaøyna*[134]*;* it used to be a large farmstead extending from the shore of Lovatnet (infield area) up to the glacier in the upper Bødalen (outfield area) (cf. **CHART 24 No. 12** App.). Between the 16th century and the 19th century, the number of farm units on the farmstead grew steadily from two up to six farm units (NEDSAL 1983: 8). At the beginning of the 20th century, nine farm units were placed on Bødal farmstead (NESDAL 1983: 65; AALAND 1973: 614; NATURE TRAIL BOOKLET BØDALEN: 5). Space had to be rearranged permanently because the Bødalselva carved its way through the arable soil. Over the years, Bødal farm developed into a dynamic agricultural farm cluster with profit-yielding corn production[135] on attractive flat farmland next to Lake Loen (NESDAL 1983: 15). The farm holding was one of the oldest entities in the parish and one of the most productive ones in West Norway (TAKSDAL 1973: 13).

- Mount Ramnefjell rockfall disasters in 1905 and 1936

Bødal farmstead is strongly associated in the collective mind of the dwellers in Western Norway with two natural disasters that happened in Loedalen on January 15th, 1905 and on September 13th, 1936. The two events had wide-ranging effects on future land use and the development of the cultural landscape. In 1905, a massive rockfall event took place on Mt. Ramnefjell. The following debris flow slid into Lake Loen. Close to 50.000 m^2 rock material[136] fell into the lake. An up to 40 m high flood wave drowned the shores (cf. **CHART 25** App.). The perimeters of Bødal and the neighbouring Nesdal farm were destroyed. 61 people died in this event, which was half of the total population inhabiting the farm[137] (NRK FYLKESLEKSIKON 2009). In the aftermath of the catastrophe, the farm buildings were relocated and built in higher parts of the

133 The name derives from the old west Norwegian expression *Bœr* or *Myklabœr*, which it was called until the 17th century (NESDAL 1983: 8). It can be translated as 'the large farmstead'.
134 *Bøaøyna* describes that the area is alluvial land. It accumulated around the outlet of the *Bødalselva* into the *Lovatnet* and can be translated as 'the island around the large farm'.
135 Recordings proof that the surpluses in grain production were sold to farmers from the nearby valleys (WEICHERT 2008: 79).
136 Circa 125.000 tons.
137 27 people died at Bødal farm and 34 people died at Nesdal farm (NESDAL 1983: 59).

shore area. 30 years later, a second rockfall event occurred on the same site of Mt. Ramnefjell in the early morning of September 13th, 1936. Approximately one million m^2 debris slid into Lake Loen and caused a 74 m high flood wave (cf. **CHART 25** App.). Again, all buildings of the settlement have been destroyed. 74 people died[138] (NRK FYLKESLEKSIKON 2009; WEICHERT 2008: 80p). A consequence of these drastic geo-events was the abandonment of the infield farming at Bødal farm, sustainably effecting the summer farm area beneath the Bødalsbreen.

- Traffic structures

The main traffic routes to and from Bødal lead across Lake Loen. Until the 1890s, rowing boats were the main form of transportation for cargo and passengers. The boat size often gave information about the prosperity of the boat owning farmsteads. All the areas on the shore side of the lake were accessible by boat. In the late 19th century, steamboats[139] were introduced on regular routes (NRK FYLKESLEKSIKON 2015; TAKSDAL 1973: 9p). Some littoral paths and bridle paths between the settlements and the valleys in the mountains connected the nucleus farm settlements with the villages Loen and Stryn by land (ibid.).

4.3.5 Farmsteads in Erdalen - a traditional Inner Nordfjordscape

Erdalen[140] designates the valley's name and a farm unit that is located at the entrance of the valley (Erdal farm). The lower part of the valley extends from the western shore of Lake Stryn close to three km until Greidung farm (HELLE and CLEMETSEN 1993: 64). Since the 16th century, five main farmsteads (Erdal, Rygg, Berge, Tjellog and Greidung) established in the valley. Accordant to the already mentioned change of land tenure system (cf. Chap. 4.3, p. 97p), each of

138 44 people died at Bødal farm, 3 people in Nesdal and 23 people in Indre Nesdal (NRK FYLKESLEKSIKON 2009).

139 *D/B Lodølen* was put into commission in 1905 and *D/B Bødalen* in 1908 (NESDAL 1983: 60).

140 In Mediaeval times, the valley was called *Irfdarl* or *Irvdalr*. *Irf* or *Irv* derives from the old Norwegian form of the river *(Irp or Irpa)*. The word origins from the expression *hjarpar*, which indicates the colour "brown" and refers to the brown river. Another interpretation of the name's source deduces from the verb *yrp* or *yrpe*, which means to throw or to bash. The descriptions refer to the Erdalriver *(Erdalselva)* that turns into a waterfall descending the upper valley. Figuratively described, the water is 'thrown down' or is 'bashing downwards' (AALAND 1973: 321).

the five farmsteads was detached in smaller farm units in the course of time. A moderate local climate on-site is beneficial for agricultural production (HELLE and CLEMETSEN 1993: 64). The executed land use was exemplary for the entire Nordfjord. Until the early 19th century, embankments and constructions of the Erdalselva took place. Before then, the cultivated fields were located on the slopes above the farm buildings mostly eastbound. River environment was vegetated with scrub and grey alder fauna, and temporary flooding made riverine cultivation almost impossible (NATURE TRAIL BOOKLET ERDALEN: 5). By embanking the river system during the 1870s[141], the tillable land was gained closer to the river side in the valley. The watercourse was also utilised for mills (MILJØSTATUS.NO 2015; STRYN KOMMUNE 2010). Outfield areas and the summer farms of Erdalen are situated further southwards towards the Jostedalsbreen on the Braided-Sandur-System (cf. **CHART 17** App.). The Erdalsbreen and the Vesledalsbreen marked the northern end of the valley (WEICHERT 2008: 86)

- Traffic structures

Route ways connect Erdalen to Oppstryn and Stryn area. One reason for the favourable traffic links is the convenient location of the valley, from where the periodically occurring cattle drifts started-off. Greidung farm in the southern end of the lower Erdalen was the gathering point for the cattle drift over the glacier. The local farmers built a gravel path that leads from the *Bygningsledet*[142] to the sandur plains in the upper Erdalen throughout the entire year. The track was extended in the 1930s (NATURE TRAIL BOOKLET ERDALEN: 6) (cf. **CHART 26 No. 5** App.). Today, the gate at *Bygningsledet* marks the beginning of the toll road that leads cars to the parking in the upper Erdalen. From there on the traditional and walkable track[143] directs to the summer farm areas.

141 River regulations during the 1930s happened within a common job-creation scheme during times with growing unemployment (NVE 2007).

142 *Led* is the Norwegian expression for 'gateway'. *Bygning* is the name of the ground between the Greidung farm and the summer grazing pastures in the upper Erdalen (NATURE TRAIL BOOKLET ERDALEN: 6).

143 Along this track diverse intangible cultural heritage, in the form of sagas and stories, connected to the landform specifics, evolved.

4.3.6 Outfield farming and summer farm settlement patterns

Stryn and the surrounding landscapes offer large outfield areas in the side valleys of the Jostedalsbreen. With growing population numbers and the attendant agricultural intensification, mountains became increasingly relevant for agricultural production. Arable land in the infield areas was a scarce resource and mainly used for grain production and horticulture. Farmsteads enlarged their effective cultivation area to the outfields when in fact arable farmland in the infield was limited. By encountering an increasing demand for agricultural products, outfield areas were used as mountain pastures for livestock herding, the slopes were scythed, and hay was harvested. Winter fodder production accompanied the dairy production on the summer farms during the pasturing season.

Altitude level of the outfields around the Jostedalsbreen complex ranges from 200-900 m, depending on the individual physiognomy of each valley. A vertical distribution of farmland evolved in a unique dynamic human-land-scape system that was used in cyclical patterns. Focus of the outfield activities were the summer farms. Various circumstances influenced the initial location and planning of a summer farm. Fertile grazing areas, the danger of rockfalls and avalanches, wind and snow conditions, water supply and easy access needed to be considered (AUSTAD and HAUGE 2008: 379; DAUGSTAD 2005: 5; HELLE and CLEMETSEN 1993: 37). Until today remnants of old pathways to hayfields, coppiced woodlands, and the summer farms can be found in the case study sites (HELLE and CLEMETSEN 1993: 37). The top priority of agricultural production and the most challenging task was to the winter fodder provision for the livestock (LUNDBERG 2000: 91). Besides grazing, coppicing[144] was likewise an important form of land use. Dairy processing demanded constant firewood on the summer farms. By cause of the geomorphology in glacier areas and the constant weathering process, the stone material was abundant and became the most valuable building material (AUGSTAD and HAUGE 2008: 379). Stone fences, for example, were constructed to mark the boundaries between the

144 Coppiced woodlands refers to the German expression of *Niederwald*. In Norwegian language *snelskog* is the expression for coppiced woodlands.

infield and outfield areas, or they act as landmarks allocating individual grazing rights among farm owners[145] on the summer farms. Summer farm buildings were assembled by wood or stone and had a conventional gable grass roof, as it is the case in the three study valleys (DYBWAD 2001: 13; HELLE and CLEMETSEN 1993: 67). A second floor was exceptional, and the windows mostly aligned southwards. Ensuing paragraphs present various types of traditional forms of land use on the summer farms throughout Western Norway. Before the cultural history of the outfield areas in each case study valley is presented, the main types of land use referring to the typical vertical distribution of farmland is subsequently presented:

1. Collecting leaves: Respecting the cyclical pattern of land use, the winter season was critical due to livestock provisioning. Resources, such as twigs and leafs, had to be tapped. Leafs were collected either by hand or with specially developed tools. Lopping[146] was carried out with an interval of four to seven years. Depending on the altitude, the trees were pollarded and then lopped during July and August. A strong growth of branches in between the lopping period had to be prevented because it would mean a waste of leaf production in favour of the increase of trunk and branches. Leaves were picked up by plucking between the lopping period and while clearing pastures and hay fields (AUSTAD and HAUGE 2006: 2). Foliage in the autumn was used as bedding for the barn during winter time. Bundles of leafy twigs were tied, dried and stored to feed the animals during winter. Deciduous trees, as well as several conifers[147], were used as winter fodder (AUSTAD and HAUGE 2008: 385; 2006: 32). Sheep and goats were fed with leaves from Betula and Alnus species[148]. The amount of harvested leaves of an average West Norwegian farm comprised about 2000-3000 leaf bundles.

145 Cadastral plans and the land register do not assign the outfield as concrete acreage to individual land owners as it is the case in the study valleys. There they are commonly organised for grazing.

146 Lopping, in Norwegian *lauving*, is the method of cutting leafy twigs into one meter long branches, which were bunched and tied up.

147 Ulmus glabra (Wych Elm) and Fraxinus excelsior (Ash).

148 Birch and Alder trees.

2. Coppicing: Coppiced woodlands[149] were very common in West Norway. Coppicing[150] describes the cutting off roots or base shoots. Coppicing was performed to receive winter fodder and material for barrel hoops and fuelwood production (AUSTAD and HAUGE 2008: 388; 2006: 7). Mainly tree species that develop prompt root shoots and trunk shoots were used for coppicing, such as *Alnus incana*[151] that was commonly found on the alluvial fans in the upper valleys. The structure of the coppiced woodlands was regularly man-made, young trees were tightly grouped (ibid.).

3. Dairying: Traditionally, summer farms were occupied by young women. Young men[152] had to take care of the herding to protect the livestock from predators in the upper valleys (AUSTAD and HAUGE 2008: 377; NATURE TRAIL BOOKLET ERDALEN: 12; NATURE TRAIL BOOKLET BØDALEN: 13). According to the valley's location, the milk was used for dairy production on the summer farms directly, or the milk maids had to carry down the milk to the main farms twice a day. Dairy products were essential goods for the farmers to trade (HELLE and CLEMETSEN 1993: 36p). Norwegian brown cheese[153] is one of the most famous and most traditional dairy products in Norway. It is considered, as described in The Guardian newspaper article[154]: *"(…) quintessential Norwegian and imbued with all the romantic notions of national identity"*.

4. Mowing: Traditionally, steep meadows were mowed once a year during July and August. The harvested grass was accumulated and dried on racks or the ground. In addition to mowing, the meadows were pastured during spring and in early autumn. After the grazing period in spring, the meadows were raked (PAN CULTLAND 2006).

5. Pasturing: Mountain pastures around the summer farmsteads were used as common grazing grounds for the infield farms, which were located in the

149 The term *snelskog* originates from the Norwegian expression *snidil* 'lopping knife' (AUSTAD and HAUGE 2006: 7).
150 *Snelhogst*.
151 Gray alder.
152 Commonly the youngest male of a farmstead was sent to the valleys as a herdsman.
153 *Brun ost.*
154 http://www.theguardian.com/lifeandstyle/wordofmouth/2013/jan/24/brunost-norwegian-cheese-hot-topic (accessed 02.05.2015).

lower valleys[155]. To attain high-quality dairy products, a healthy and nutritious pasture was an obligation (HELLE and CLEMETSEN 1993: 36). Formal regulations according to the practice of moving livestock to the mountain pastures were based on the Magnus Lagabøte Code[156] from the year 1274 and the following Christian IIII and Christian V Norwegian Law from 1604 and 1687 (NORSK SAU OG GEIT 2014; AUSTAD and HAUGE 2008: 376). Albeit, each farm unit had legal access to the pastures and installed summer farm buildings with milk and dairy production. Once the snow melt began, the livestock was moved upwards to the mountain pastures following the growing grass in the higher areas. Usually, sheep and goats were taken to the grazing ground in mid-April. One month later, dairy cows and young cattle followed. In the second half of June[157], the farm animals were moved to higher located mountains pastures (HELLE and CLEMETSEN 1993: 36). Average amount of livestock on a summer farm in the case study areas were:

> "*(…) Three to ten cows, five to 20 sheep, 20 to 30 goats, one to two pigs, some chicken, and depending on the size of the farm one to two fjord horses*" (INT LOG I 2007: 1).

Mountain pasturing caused a synergetic effect. The grazing livestock fertilised the mountain pastures to safeguard enough fertile pasture area for the following season (HELLE and CLEMETSEN 1993: 37, LOSVIK 2005).

6 . Pollarding: Pollarding[158] describes the process of trimming trees by cutting off branches at 2-3 m height above the reach of grazing animals. The leaf-bearing twigs were cut off from larger tree trunks. It was important to cut the trees in this manner in order to gain large main trunks with a highly branched crown[159]. Pollarding was performed during the months of July and August. Trees

155 Individual property rights in terms of land allotment and boundaries in the outfield area was indeterminable. The pasture area was divided among the farmers and the cotters.

156 King Magnus Lagabøter introduced the Land Act (*Landlov*) in 1274 that arranged the grazing on common land, such as the one who cherished the area must have fenced husbandry. The numbers of grazing animals had to be in relation to the cultivated land area. Infields were designated for grain production and the outfields were a commonly used. The Lagabøte code contained provisions for the right of way including maintenance responsibilities for road conditions. The building of roads led to conflicts with landowners but the right of way (*Veirett*) was considered as a common good. The Land Act *(Bylov)* included the paths, riding and pack roads from the landing piers in the fjords and the inland connections between the villages and the bay with water road. It was the duty of the farmer under supervision of the nobility to maintain these roads.

157 This happened mostly around midsummer time.

158 *Styving* is the Norwegian expression for pollarding.

159 The trees had the typical candelabra shape.

were cut off every four to six years. A tree was pollarded after it reached the age of 10-15 years or a trunk diameter of 10-15 cm (AUSTAD and HAUGE 2006: 3). Supplementary, the bark of the twigs was peeled off and was was fed to the animals or processed to food[160] in times of famine (HELLE and CLEMETSEN 1993: 37). Timber extraction as building materials was essential. Also, products gained by pollarding were used to make bast and fibre to tan leather and suede and for the barrel hoops production (ibid.).

Most especially, coppicing, leaf collection, mowing and pollarding was a form of vegetation farming[161] that became essential to encounter the allotted and rare farming resources in the outfields.

4.3.7 Summer farm area in Briksdalen

Briksdalssetra is located at 475 m, in the south of Briksdalen valley below Mt. Kattanakken (cf. **CHART 10** App.). Glacial expansions and retreats tolerated only an infrequent use of the summer farm area[162]. The advancing glacier pulled down fields and buildings that were laying in the way (NATURE TRAIL BOOKLET BRIKSDALEN: 5).

There is no extensive information about the summer farm activities in Briksdalen. During the Plague Epidemic, many farmsteads in the southern end of Olden Valley deserted. Correspondingly summer farming of Briksdal farm was suspended after the main farm fallowed. Later on, mainly the flat valley bottom alongside the Briksdalselva was predestined for grazing. With the forthcoming tourism, fjord horses, which were pulling the tourist carriages substituted the pasturing goats in the valley. More frequently vegetation farming was conducted in the area. Various birch trees[163] were used for pollarding every four to six years (HELLE and CLEMETSEN 1993: 52).

160 *Barkebrød* ("bark bread") was made out of the bark of elm trees (AUSTAD and HAUGE 2008: 386).

161 HELLE and CLEMETSEN (1993: 37) refer to this form of land use *bruk av vegetasjonen* (vegetation farming).

162 Except the name *Briksdalssetra* in the maps, there were no particular information about the Briksdal summer farm.

163 On the landmark of *Kleivane* (300 m valley upwardly on the road to Briksdalsbreen), a group of birch trees conjecture pollarding.

- Transportation routes into Briksdalen

Kleivavegen is the name of a bridle path connecting Rustøyen with Briksdalen (cf. **CHART 10** App.). It was built in the 1890s by local farmers with support from the DNT (SANDVIK 1999: 28). The reason for the expansion of the path was an increasing number of tourists arriving in Rustøyen. The farmers were in charge of the tourist transportation from the pier to the glacier. In the beginning, they drove with hay carts. Later on, regular horse carriages brought the tourist to the glacier. In 1927, the road was enlarged in a joint effort by *Oldedalen Skysslag*[164], Olden steamboat association[165] and Hotel Yriss (WEICHERT 2008: 74; SANDVIK 1999: 28; MYKLEBUST et al. 1986 in HELLE and CLEMETSEN 1993: 24). Furthermore, a mountain route existed that connected Briksdalen and Stardalen, on the eastern side of the glacier.

- Tourism in Briksdalen

In 1892, Anders Briksdalen a local farmer from the valley constructed a mountain lodge[166] to sell food and drinks to the visiting tourists and the Mountaineers, who crossed the glacier. Lodging was possible on a small scale. Since the middle of the 18th century, tourism substituted agriculture as the main income source. The Briksdalsbreen can be considered as a boon and bane to the local dwellers. Agriculture was massively delimited by the advancing and retreating glaciers. Tourism prospered because of an easy access and the proximity to the glacier tongue. Briksdalen as a tourist destination was propagated since then.

4.3.8 Summer farms in Bødalen

Bødalssetra is located at the flat alluvial area on about 580 m in the valley (cf. **CHART 13** App.). The settlement pattern of the summer farm buildings on Bødalssetra is unique in the Nordfjord area. In 1893, an avalanche destroyed the scattered farm huts. Since then, the entire buildings were restructured northbound, closer to the mountain side. A row of summer farm buildings faces a row of barns (cf. Fig. 15, p.142). In between the two rows a wide paved path

164 In 1923, farmers in the valley to form Oldedalen Skysslag, which is an amalgamation of the shuttle obliged farmers in the valley. The members developed rules for shuttle operations jointly. This transport activities were an important tourist industry Oldedalen and can be considered as intangible cultural heritage (OLDEDALEN SKYSSLAG 2015).

165 *Olden Dampbåtlag.*

166 *Briksdalsbre Fjellstove.*

was built[167]. It is anticipated that the line of barns was designed to function as an avalanche run-out zone, protecting the buildings behind it (DYBWAD 2001: 12p; HELLE and CLEMETSEN 1993: 27; NATURE TRAIL BOOKLET BØDALEN: 12) . Bødalssetra was very busy during spring and summer time as dairy production was relatively effortless to manage. Usually, maids prepared dairy products on the summer farms. Occasionally, the milkmaids had to carry the milk down to the farmstead. People from the farms in the lower valley fetched the dairy products once or twice a week by horses[168] (ibid.). The devastating rockfall event in the lower valley in 1936 terminated the centuries lasting summer farm operation in the lower valley with effects on the summer dairy farms. The already addressed functional connection between the farm entities in the lower and the upper valley dissolved ever since then. Former Bødal farm families migrated to other parts of Loedalen or Oldedalen and commenced farming on new farmsteads.

- Transportation routes from Bødalen to the Jostedalsbreen

The trail from the Bødal farm up to the valley has developed from a simple cow path to a pack horse track to a passable road for cars and campers in 1991. Bødalen was a principle gateway to the glacier (HELLE and CLEMETSEN 1993: 26). An old route way over the Jostedalsbreen to Sogn crosses through Bødalen to Fårbergsdalen. Farmers from Sogndal visited Olden and Loen on a regular basis to buy corn. Cattle drifts passed the old route way to Sogndal likewise. After Midsummer, it was impossible to drive the cattle over the glacier due to the crevasses. In 1881, the tourist road from Loen alongside Lake Loen was opened. The attached Kjenndal valley was connected by that road route way when the constructions finished in 1938. Until then, transportation was by boat (NRK FLYKESLEKSIKON 2015).

167 The paved path was important as the ground turned muddy after rainfall or during snow melt. Livestock had to walk on the wet ground back to the barn. The milkmaids had to cross a slippery way to the cow barn.

168 People from the immediate vicinity and valleys around took day trips to Bødalessetra because the clobbered whole milk strewn with breadcrumbs and sugar was known to be particular good there. Visitors were a convenient distraction from daily milking and dairying routine (NATURE TRAIL BOOKLET BØDALEN: 12).

- Tourism in Bødalen

With the end of regular cattle drifts in the late 1920s, mountain sport took over on the traditional cattle routes over the glacier (HELLE and CLEMETSEN 1993: 26)[169]. In 1920, the Norwegian Mountain Touring Association (DNT[170]) built a cabin on Bødalssetra to provide shelter for mountaineers and hikers, who were crossing the glacier. Since then commercial glacier guiding commenced (NATURE TRAIL BOOKLET ERDALEN: 17).

4.3.9 Summer farms in Erdalen

Compared to Briksdalen and Bødalen, summer farming was implemented extensively in Erdalen. Appertaining to the high number of farm units located in the lower valley, two main summer farm areas developed. To allocate the pasture resources equally among the farm units, the area was separated among the farmers. Since the 19th century, the outfields in Erdalen had to provide agricultural space for nine farms. As tilled land was limited resource in the lower valley, livestock herding took place in the upper valley part on the Braided-Sandur-System[171]. The summer farm area of *Storesetra*[172] is located at 480 m next to the fluvioglacial plain (cf. **CHART 16** App.). The huts were placed northbound in two roughly rows. The dairymaids herded the animals up in the afternoon and milked the cows in the evening. After spending the night on the summer farm, they milked the cows in the morning and carried the milk in 25-litre churns down to the main holdings (NATURE TRAIL BOOKLET ERDALEN: 11). In the evening of the same day, they started again to herd up the animals. Further southeast, the summer farm area of *Vetledalsetra* is located at 525 m (cf. **CHART 16** App.). There, the buildings were randomly positioned. Lively summer farming took place on a much fewer amount of summer farming huts. In 1924, the farmer and glacier guide Rasmus Greidung installed, in cooperation with the DNT, a mountain cabin on Vetledalsseter for the glacier crossing mountaineers

169 Within the scope of the examination, the name of the Englishmen William Cecil Slingsby appeared. He started in 1870 from Bødalssetra to cross the Jostedalsbreen and made the area popular among British travellers (HELLE and CLEMETSEN 1993: 26).

170 *Den Norske Touristforening.*

171 The river system on the sandur shows run-off variations. Whenever the stream gradient is reduced, the stream deposits the sediment loads and is affecting the braided channel bars.

172 The area is also named *Erdalsseter, Årdalssetra* or *Heimeseter.*

(NATURE TRAIL BOOKLET ERDALEN: 17). *Bygningsledet gate* designates a boundary that separates the private property of Greidung farm infield from the commonly used outfield area in Erdalen, characterised by a brushwood fence. From the entrance, the path up to the summer farms began. A mountain ridge called *Reset* marked the boundary between the grazing grounds of Store- and Vetledalsetra (NATURE TRAIL BOOKLET ERDALEN: 12). A stone wall and brushwood fence with a wooden gate divided the boundaries. Stonewalls were also built to keep livestock away from avalanches.

- Transportation routes to Erdalen - a corridor to Norway

Erdalen was the starting point of the main route for cattle drifts from the Nordfjord to Fåbergstølen in Jostedalen. Farmers from Sogndal bought cattle in the Nordfjord during springtime. On midsummer, the livestock was collected at Greidung farm, and the cattle drift over the Jostedalsglacier took its course for ten to twelve hours[173]. The peak of cattle traffic between Jostedalen and Nordfjord was between 1860 and 1910. The last large cattle drift started in 1925 from Erdalen, due to the glacial melting the final cattle drift had to turn around and take the old road over Mt. Strynefjell down to Jostedalen. Glacier crossing happened not only happened for economic reasons. Until 1660, the Jostedalen parish located on the eastern side of the Jostedalsglacier had no church. Bridal processions went over the ice cap via Erdalen down to the church in Oppstryn. Social connections evolved between the two valleys. In 1937, the last bridal procession went to Oppstryn (NATURE TRAIL BOOKLET ERDALEN: 17). The passage to the eastern located parts of Norway was ensured by the route over Mt. Strynefjell. The old Strynefjell[174] road was built due to the growing tourism numbers in the 19th century. As Gudbrandsdalen in the east was connected to Otta by the Norwegian railway system. Tourists with destination to the Nordfjord region and the Geiranger Fjord were attached via railway. In 1867, Stryn Municipality council decided to construct the road to Sjåk. The Norwegian parliament determined in 1880 to establish a road from Hjelle to Grotli, which

173 The biggest cattle drift involved 168 cows and 18 horses (NATURE TRAIL BOOKLET ERDALEN: 17).

174 *Gamle Strynefjellvegen.*

opened in 1894 (NRK FYLKESLEKSIKON 2015), connecting the Nordfjord and the eastern parts of Norway.

- Tourism in Erdalen

In 1895, the DNT introduced a special system for authorised glacial guiding in Norway. Guides had the authority to lead tourists on default routes over the glacier. Greidung and Berge family were the first, who sent glacier guides over the ice cap (NATURE TRAIL BOOKLET ERDALEN: 17). Mountaineers used the already mentioned DNT hut on Vetledalsetra as shelter. The route to Jostedalen showed a growing interest among adventurers and mountain climbers. A popular route crossed the Vesledalsbreen towards Sjåk. Although it is ascertainable that in comparison to the other two case study valleys, relatively few tourists discovered Erdalen.

In summary, the fact substantiated that the infield farmsteads were the initiator and central clock and impulse regarding the annual cycle of vertically aligned land use in the Inner Nordfjordscape. Depending on distinguishing geographic parameters and demographic development, each farm cultivated the possible maximum. Natural landscape processes and the related risks for the dwellers by avalanches, landslides and rockfalls, had a crucial impact in Briksdalen and Bødalen, implicating a progressive abandonment of agriculture in the outfield area. Forthcoming tourism became an income source for the inhabitants during the time, summer farming peaked. Erdalen exhibits a cultural landscape very much shaped by pursuant and traditional agricultural land use. There, the increasing population forced the farmers to increase land for agricultural production by river straightening in the lower valley. Due to the compared high population density, the allocation of the resources in the outfields became necessary. Nonetheless, substantial natural and social dynamics in Briksdalen, Bødalen and Erdalen affected the cultural landscape patterns of the infield and the outfield area with its semi-natural vegetation sites severely. Applying the selected theoretical approach to constitute cultural landscapes as action, communication and identity arenas, the historical scope of the surface depart from the physical-material objective level in space to a constructed identity level. Although the material structures in space almost

vanished, the associative cultural landscape developed a strong identity among the population until today, based on tangible and intangible elements and components of the associative cultural landscapes in the case study valleys. This is due to the fact, that cultural landscapes comprise more than their physical-material character. They were income source, traffic route and a social boundary distinguishing the today grown cultural landscape to more than the natural beauty represented by the Jostedalsbreen. Today, the concomitant concept of the Jostedalsbreen National Park appreciates these heterogeneous values.

4.4 Jostedalsbreen National Park

As parts of the so far presented cultural landscapes of the case study valleys are located in the protection entity of the Jostedalsbreen National Park (JBNP), the following section briefly introduces the large nature reserve. The installation a large protection area has significant effects on the neighbouring cultural landscapes and, in particular, for the constitution of cultural landscapes action, communication and identity arenas. Such effects appear as there is a radical differentiation of cultural landscape apprehension and management inside and outside the protected area.

On these grounds, the existence of the JBNP can be seen as an asset for regional development potential based on cultural landscape governance approaches. The JBNP comes up with relevant formal institutions regulating cultural landscape management in the valleys. The Jostedalsbreen National Park concept incorporates natural and cultural heritage values equivalently. Moreover, the JBNP conveys a concrete image of the Inner Nordfjordscape, equally important for economic valorisation and as an identity reference point. Cultural landscape safeguarding as an integral component of the protection concept serves as a measure to develop a certain path progression of cultural landscapes within the national park. Some activities aim at protecting the residual cultural landscape elements and components in the NP. Significant importance to the research goals and objective arise thereby that formal institutional arrangements of the JBNP have an impact on the constitution of

cultural landscape action, communication and identity arenas and potential forms of governance. Figure 13 displays a map of the JBNP.

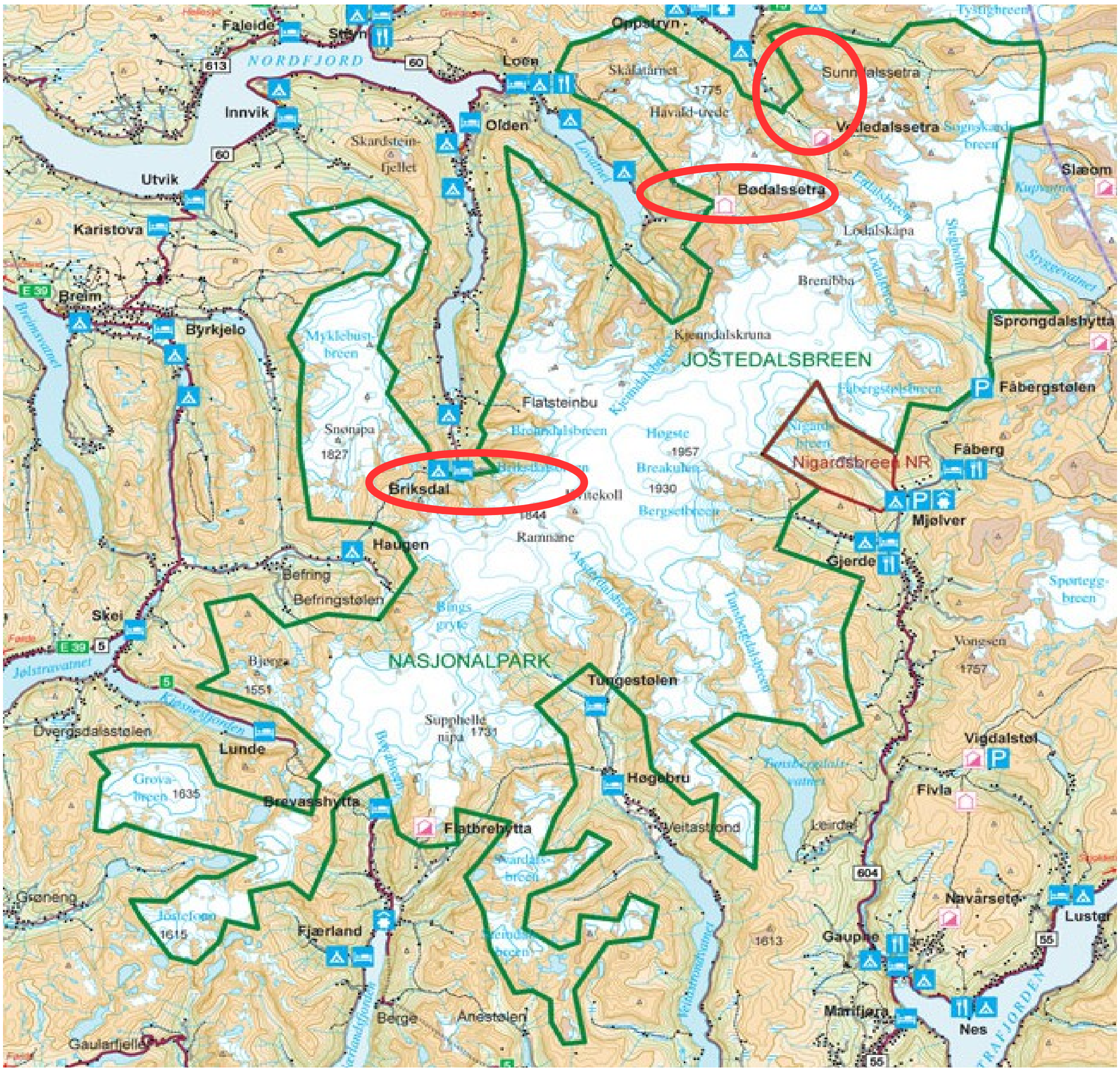


Figure 13 Map of the Jostedalsbreen National Park (source MILJIØDIREKTORATET 2009).

The JBNP comprises a total area of 1315 km² protected landscape (MILJIØDIREKTORATET 2008). It is located in the innermost part of the Nordfjord, including parts of Luster, Sogndal, Balestrand, Førde, Jølster, Gloppen and Stryn Municipality (FORSKRIFT OM JOSTEDALSBREEN NASJONALPARK 1998). The Park was established in 1991 and enlarged by the two case study valleys of Erdalen, Bødalen and by the valley of Sunndalen in 1998 (MILJIØDIREKTORATET 2008).

Therein, the national park enlargement excluded Stryn and Loen river systems from future hydropower development by applying the valleys for nature conversation purposes (088/3 STRYNEVASSDRAGET 1993). Jostedalsbreen

is the largest mainland plateau glacier in continental Europe (AUSTAD and HAUGE 2008: 372; WEICHERT 2008: 9). The glacier complex stretches approximately 60 km from the Strynefjell mountain ridge in the north to Fjærland in the south (WEICHERT 2008: 9). Highest elevations are Mt. Breakulen (1952 m) and Mt. Lodålskapa (2083 m). Hypsography of the park ranges between 300 to 2000 m. The glacier complex includes some smaller outlet glaciers. 370 km^2 are private property[175], and 945 km^2 is state owned ground (WEICHERT 2008: 35; FORSKRIFT OM JOSTEDALSBREEN NASJONALPARK 1998).

4.4.1 Political and legal framework

First official proposition for the introduction of the Jostedalsbreen National Park appeared in 1986. Correspondent to extensive nature conservation efforts in Norway, the "*New national plan for national parks*[176]" was advanced. The purpose of the programme was to introduce the JBNP and other 25 national parks in Norway (NY LANDSPALN FOR NASJONALPARKER 1986: 13).

After a five-year period of parliamentary propositions, hearings and recommendations, the JBNP was designated on 25th October 1991. The management plan was approved in June 1994. In 1998, the park was expanded by three additional valleys. A maintenance plan for the newly added areas of Bødalen, Erdalen and Sunndalen was authorised in 2001 (AAL et al. 2009: 10p; FORSKRIFT OM JOSTEDALSBREEN NASJONALPARK 1998).

The new national park plan comprehended the installation of conservation areas beyond sole environmental protection attempts. Some of the national parks were initiated to combine environmental measures with a careful recreational and tourism related use (WEEN 2009: 2), which is the case in the JBNP. Further, the policy designed new conservation units to protect wilderness on a larger scale, such as the Jostedalsglacier compound. Preservation is legitimised by:

– The resulting tragedy of commons.

175 About the property rights within the JBNP borders (outfield area), it is notifiable that the farmers commonly own the land. Grazing and using rights, for example, yield from centuries lasting regulations and local arrangements. Hence, they emerge as intangible cultural landscape heritage.

176 *Ny landsplan for nasjonalparker (NOU 1986:13 1986-04-00).*

- Ecophilosophy.
- Loss of biodiversity.
- Protection of landscape as part of cultural heritage protection (WEEN 2009: 4).

The determinative statutory rule for the JBNP is: "*The regulation on the protection of the Jostedalsbreen National Park in the municipalities of Luster, Sogndal, Balestrand, Førde, Jølster, Gloppen and Stryn*[177]." Environmental protection purpose of the JBNP is defined:

> *"To conserve a large, varied and valuable glacier area with the accompanying area from lowland to high mountains, with flora and fauna and geological formations in the natural or essentially natural state. To give the public the opportunity to experience nature and exercise traditional outdoor recreation activities that are not dependent on technical assistance. To preserve cultural monuments and cultural landscape" (Art. III)*[178].

Other national, regional and local regulations and statutory provisions have an impact on the protection values and the relevant guidelines for the park management[179]. Additional regulations[180] set up operational modes regarding land use, particularly in the privately owned ground in the JBNP and the border areas.

4.4.2 Administration and park management

National park conceptualisation and operative administration are divided regarding the governmental units in Norway. National bodies set policy aims defined by the parliament and the government and implements the goals on a national level. The regional branch of the national park administration is represented by the county governor. The primary tool for the regional execution is the national park administration plan that each county governor has to issue. The environmental department at the county governor's office[181] published the

177 *FOR 1991-10-25 nr 691: Forskrift om vern av Jostedalsbreen nasjonalpark, Luster, Sogndal, Balestrand, Førde, Jølster, Gloppen og Stryn kommuner, Sogn og Fjordane* (updated FOR-1998-06-18-494).

178 The regulation is examined by the institutional analysis results in Chapter 5.4.1 (p. 216p).

179 Such as the Planning and Building Act, Land Consolidation Act, Nature Diversity Act, Forestry Act, Cultural Heritage Act, Wildlife Act, and the Outdoor Recreation Act.

180 Such as the Act Relating to Motor Traffic on Uncultivated Land and Watercourses (cf. Chap. 5.4.1, p 215).

181 *Sogn og Fjordane Fylkesmannens Miljøvernavdeling.*

JBNP administration plan (1994) and the follow-up maintenance plan for Erdalen, Bødalen and Sunndalen[182] (2001).

- National administrative bodies

Ministry of Climate and the Environment[183] is responsible for protected areas concordant to the NDA. Ministry's responsibility includes the implementation of conservation measures based on the national targets according to the governmental or parliamentary guidelines. Since 1st of July, 2014, the Norwegian Directorate for Nature Management and the Climate and Pollution Agency have merged to the Norwegian Environment Agency[184]. National park administration is carried out by the Ministry of Climate Nature Department and its sub-divisions. The Norwegian Nature Inspectorate[185] (SNO), officially established as a separate department within the Norwegian Environment Agency, is entrusted with the conservation of national environmental values and the prevention of environmental crime. SNO is not a decision-making body according to the protective regulations, but it supervises the areas according to the Nature Inspectorate Act. Further, SNO handles information, training, care, adoption, registration, documentation and inspection (SNO 2015).

- Regional and local administrative bodies

The Environmental Department at the Sogn og Fjordane County Governor's Office (FM-MA) manages and supervises the JBNP. Central tasks include conceptualising management plans, dispensations and cooperation with other authorities. FM-MA is responsible for the budget. On a local scale, FM-MA collaborates closely with the regional department of SNO concerning prioritising tasks. The general responsibilities of the Norwegian Nature Directorate comprise control, supervision, monitoring, marking of borders, care, information and technical advice to FM-MA, the regional SNO department conduct the duties via national park rangers[186] (AALL et al. 2009: 12; FYLKESMANNEN I SOGN OG FJORDANE 2006) . Municipalities are obliged to implement the JBNP guidelines in their locall plans. Until now, municipalities only participate as

182 *Skjøtselsplan for Bødalen, Erdalen og Sunndalen i Jostedalsbreen nasjonalpark.*
183 *Klima- og Miljøverndepartementet.*
184 *Miljødirektoratet*.
185 *Statens Naturoppsyn*.
186 There is only one national park ranger for the entire JBNP.

consultants in the administration and operational management process, such as in the consultative supervisory board during the JBNP implementation period. Since 2009, the administration for large nature reserves in Norway shall be transferred from the county level to an inter-municipal board, increasing the involvement of the local level in planning, management and development issues. Concerning the implementation of the blueprint, the JBNP Board[187] was installed. The board work on a coherent management of protected areas across administrative boundaries. A revision of the management plan is a major task of the board since December 2013 and has been not yet been published (PROSJEKTPLAN REVIDERINGA AV FORVALTNIGSPLANEN FOR JBNP 2014).

- National Park Centres and National Park Municipalities

The National Park Centres have no administrative function, they serve as valuable information and contact locations. Three National Park Centres[188] were installed during the implementation process of the JBNP at the beginning of the 1990s[189]. Each NPC developed a unique exhibition profile (cf. **CHART 27** App.).

Moreover, Stryn is a selected National Park Municipality[190]. Pre-required criteria to obtain the label is that a minimum of 30 percent or 300 km^2 of the municipality sphere is part of the JBNP. Each national park municipality is committed to participating in inter-municipal cooperation and collaboration with the National Park Centers and tourism agencies (AALL 2009: 19). The label gains value within the discussion of the constitution of cultural landscapes as action, communication and identity arenas for governance approaches.

187 *Jostedalebreen Nasjonalparkstyret.*

188 Breheim Center *(Breheimsenteret)*, Jostedalsbreen National Park Center *(Jostedalsbreen Nasjonalparksenter)*, the Norwegian Glacier Museum *(Norsk Bremuseum)*.

189 This is an extraordinary number in Norway because most national parks have one or no NPC (AALL et al. 2009: 19). The administration justified the number because the JBNP is large and the three centres initially covered various subjects with separate exhibitions besides operating as information centres (ibid).

190 *Nasjonalparkkommuner*.

4.4.3 Traditional user groups

Adjacent sections give a summary of the traditional user groups in the national park.

Agriculture: Outfield farming formed the cultural landscape scene in the national park notably. The semi-natural vegetation sites, such as the pasturing areas, hay meadows, pollarded woodlands, the summer farm areas were created by the traditional land use and influenced the cultural landscape characteristics in the transition zone between the protected glacier areas and the adjoining parts of the inhabited valleys. Summer farming had a tremendous impact on the protected natural, particularly the biodiversity, and cultural values. Increasing grazing pressure and timber extraction was necessary for the dairy production on the summer farms forming these semi-natural vegetation sites (AALL et al. 2009: 6pp; WEICHERT 2008: 58p). Undoubtedly, abandoning summer farming modified the semi-natural vegetation sites and the installed habitats for diverse species importantly (NORDERHAUG and JOHANSEN 2012: 88). Agricultural use in designated parts of the JBNP supports to maintain the natural protection values. Stryn Municipality has the second highest number of pasturing animals that receive subsidies on the JBNP ground during the research period between 2008-2014 (LUND 2014: 5).

Traffic: The glacier has been used as a traffic conjunction between the largely isolated communities around the Jostedalsbreen for centuries. In particular between the area of the western and the eastern part of the ice shield, the mountain massive marked a connection route utilised by the population for economic and social motives. Increasing population numbers lead to growing demands for dairy products and meat (WEICHERT 2008: 88). Farmers from Sogndal valley purchased cattle in Stryn. Huge cattle drifts had to be lead over the glacier from east to west and family and household ties were made (WEICHERT 2008: 58; NATURE TRAIL BOOKLET ERDALEN and BØDALEN; HELLE and CLEMETSEN 1993: 23). The *Gamle Strynefjellvegen*[191] connected the Nordfjord area with the eastern parts of Norway and developed as an important route.

191 Old Strynefjell road.

Tourism: Tourists appreciate the area around the JBNP since the 18th century. Briksdalsbreen is one of the most popular tourist destinations in Norway. Tourist transportation to the glaciers developed to a steady income source for the local farmers during spring and summer time. Only they were entitled to the right to organise the tourist transportation to the glacier. The Nordfjord region became first popular among English anglers because of the salmon-rich rivers. Particularly the Jostedalsbreen complex with the steep mountains and the large ice fields attracted the attention of the mountain tourists in northern Europe and Britain. The mountaineers and adventurers crested the peaks around the glacier. Initiated by the knowledge of the regular cattle drift ways over the glacier, a concessionary tourist-guiding system was established by the Norwegian Trekking Association[192] in the 19th century. Later on, patent-guides developed general standards for tourist guiding and glacier crossing. Nowadays, 250.000 to 280.000 tourists visit the national park in Briksdalen yearly (DESTINATION STRYN&NORDFJORD 2012; WEICHERT 2008: 74). Companies offer adventure tours, glacier guiding and paddling on the glacial lake in some side valleys of the JBNP (BRIKSDALADVENTURE 2014).

Outdoor recreation: Today, the valleys distant to the tourist hot-spots are utilised as recreational space for the local people. Buildings placed and formerly used as summer farms were remodelled to second homes on the national park ground. Those belong to the families living on the farmsteads in the lower valleys. Either they are in use during the weekends in spring and summer or as a regular starting point to check on the grazing livestock in the upper valleys. Hiking routes are designated and marked in the accessible valleys, such as it is the case in Bødalen, Briksdalen and Erdalen. Locals use them for day trips.

Education and research: Several international and national research units from various scientific fields (such as geology, glaciology, geography, botany, meteorology, archaeology) carry out varying studies in the JBNP[193]. Ongoing projects comprise geological hazards, sediment fluxes, climate change, cultural heritage, agriculture and cultural landscape development. Particularly the field

192 *Den Norske Turistforening (DNT).*

193 Research proposals of various institutions are addressed to the national park board and discussed in the meetings of the JBNP steering board.

of glaciology carried out plenty of research projects in the case study valleys. Preschools, schools and university classes attend excursions and fieldworks.

4.4.4 National park zoning

Concerning the broad aim of protecting natural and cultural values and due to a wide range of traditional user groups, the national park area is separate into different zones. The administration plan (1994) and the enclosed management plan for the valleys of Bødalen, Sunndalen and Erdalen (2001) zone the JBNP (FORVALTNINGSPLAN FOR JOSTEDALSBREEN NASJONALPARK 1994: 30pp, SKJØTSELSPLAN FOR BØDALEN, ERDALEN OG SUNNDALEN 2001: 10pp). Subsequent zones are applied:

- Special protection zones *(Spesiell vernesone)*
- Zones without facilitation and intervention *(Sone utan tilrettelegging og inngrep)*
- Use zones *(Brukssone)*
- Zones with special arrangements and intervention *(Sone med spesiell tilrettelegging og inngrep)*

The main intention of the individual zoning is to divide the protection area into different areas with the objective to relate conservation and use values for natural and cultural heritage. Hence, the established zones are neither laminar nor circular arranged. Moreover, they are applied to the distinct character of each area. Past attempts in Norway influenced the proceedings of the contemporary zoning.

> *"(...) something fundamentally wrong with Norwegian policy of developing large areas like national parks. (...) the first containment in 1962 Rondane (…) We just did a circle on the map and directed the national park" (INT I 2011: 6).*

The different zones are located next to each other. The management plans considers the adjoining areas outside the national park to the zoning concept, which is outlined in the section displaying the respective zoning in the case study valleys.

Special protection zones: Special protection is eligible to areas, in which distinct natural and/or cultural values are threatened. Traffic may be regulated. These zones are relatively small. Recent examples of special protection zones

in the in the case study valleys are Quaternary deposits, calving areas for wild reindeer, wetlands and marshlands.

Zones without facilitation and intervention: The protection concept aims at holding large parts in pristine conditions without human intervention and facilitation. Footpath marking and building cabins are forbidden in these ranges. The main glacier, the branch glaciers and the glacier fronts comprise these core areas. Nature conservation insists that the forests on the steep and inaccessible hillsides of the valleys, both within and outside the national park, as far as they are used, have to be kept in a pristine state (FORVALTNINGSPLAN FOR JOSTEDALSBREEN NASJONALPARK 1994: 30pp).

Use zones: These are areas, where human intervention is the key to managing cultural and natural values protected by the JBNP. Activities comprise the building and marking of footpaths, of hiking association cabins, restricted grazing and confining woodcutting for personal use, whenever it is accordant to traditional forms of land use. The use zones cover the laminar forms of the traditional culture landscapes of the summer farms. Those zones are useful gateways to the JBNP, as it is the case in Briksdalen, Bødalen and Erdalen. The use zones constitute the link between the protected cultural landscape areas and the adjoining trivial cultural landscapes of agriculture. Particular importance is assigned to these adjoining areas of the JBNP. The significance deduces from the overlapping of diverse cultural landscape management efforts and aims by various sectoral policies and the related formal institutions that encounter the cultural landscapes in the case study valleys.

Zones with special arrangements and intervention: Such parts incorporate significant interventions of the watercourse or special provisions for extensive travel and tourism.

- Zoning in the case study valleys

Zoning is applied in the case study valleys as follows:

Briksdalen as a tourist hot-spot in Norway is visited by more than 200.000 tourists annually. The valley is well adapted to accommodate so a number of visitors. Inside the national park boundary, the area is assigned as a use zone,

the adjoining areas of the national park belong to the zones with special arrangements and intervention.

Bødalen is still in active use for pasturing livestock around the summer farm areas. The management plans desire to maintain this characteristic form of land use to protect the cultural landscape. The large Quaternary areas are part of the conservation values in Bødalen. The valley is notable for outdoor recreation and tourism. Dwellers remodelled their summer farm huts into second homes. Most of the valley floor is therefore marked as a use zone, except the Quaternary parts, whereas the slopes and hillsides around the glacier are defined as zones without facilitation and intervention.

Erdalen is proclaimed pivotal for agricultural production and there are also great outdoor and nature conservation interests. Likewise to Briksdalen and Bødalen a passable toll road approximates the national park border. There are grazing animals on the two summer farm areas. The glacier areas and the alluvial plains tie up as a major conservation interest and are marked as zones without facilitation and intervention (SKJØTSELSPLAN FOR BØDALEN, ERDALEN OG SUNNDALEN 2001: 10pp; FORVALTNINGSPLAN FOR JOSTEDALSBREEN NASJONALPARK 1994: 30pp).

Features of the vertical land use distribution in the past created cultural and naturally valued landscape patterns in the present, which became a focus of nature conservation. Nevertheless, cultural landscape change is not restricted to the national park borders.

By supporting a management for the associative cultural landscape, a holistic effort is needed for all areas of the national park and the adjoining areas to develop and implement governance with the goal to challenge the cultural landscape dynamics. The JBNP typify the fact that cultural landscapes within the borders of the protection areas are given preference in comparison to cultural landscapes outside the JBNP, at least concerning specific management measures supported by financial subsidies. The JBNP plays a crucial role in examining the institutional framework for cultural landscape management.

5. Results

The ensuing chapter displays the results of the empirical examination. Data were analysed in the scope of the central research question: Whether cultural landscape governance can be a future path for managing cultural landscapes and the corresponding cultural landscape change in the case study valleys?

The cultural landscapes are constituted as action, communication and identity arenas concordant to the fragmented physical-material structures in space and the associative historical grown and socially constructed cultural landscape sphere. Two fundamental goals drove the inquiry:

- The formation of a knowledge groundwork about cultural landscape dynamics in the valleys, as it is perceived under contemporary formal institutional and central sectoral policies imposed cultural landscape management.
- The analysis of cultural landscape governance frameworks, based on action, communication and identity arenas to future managing cultural landscape dynamics on the small scale of the three case study valleys Briksdalen, Bødalen and Erdalen.

These objectives were accomplished. The findings are presented in the ensuing sections determining the potential for merging theory and practice of cultural landscape governance research. The first part of the result chapter mediates the state of the physical-material remnants of the grown cultural landscapes in each case study valley. Followed by an assessment of the present cultural landscape driving factors on-site. Consecutively the stakeholders and their nexuses are introduced. The cornerstones of this chapter are delineated by:

- The analysis results of the formal institutional framework affecting current cultural landscape management in the case study valleys.
- The results of the discourse analysis revealing potential discourses about an indication of informal institution lead cultural landscape management action ceasing in the results of the informal institution analysis.
- Examples of potential cultural landscape governance framework that occurs applicable in the case study valleys.

5.1 A Requiem of an Inner Nordfjordscape?

The next sections immediate the residual physical-material cultural landscape features of the Inner Nordfjordscape and determine their current state of management in the case study valleys. As the presettings of constituting cultural landscapes as action, communication, and identity arenas are based on an object scale, the status of the physical-material remnants of the historical grown cultural landscape in space is examined respectively. According to the theoretical remarks (cf. Chap. 2.7.3, p. 47p), the prevailing associative cultural landscape of the case study valleys is expanded to cultural landscape action, communication and identity arenas by place-making processes. The overall cultural landscape in the research at hand is described likewise:

> *"There is a significant range in the cultural landscape of the county: from coast to fjords and villages under the glacier, from steep hillsides turning to the fully cultivated alluvial plains (...). Regardless of the operating technique and topography, there are some characteristics:*
>
> – *We have a unique landscape of fjords, valleys, mountains and glaciers primarily, and where the lush countryside in the spring and summer season stands out in green, white and blue. This fjord landscape is greatly recognized and counted as one of the world best tourist destinations.*
>
> – *We have actively livestock where the harvest of winter feed creating and nurturing the cultural landscape of the valley floor (...).*
>
> – *Biodiversity is characterised by, for example, species rich meadows, lush roadside, old pollarding trees and coastal heath.*
>
> *We have a landscape that is exposed, so we can see it from both land and sea routes and roads, and with many great vintage points from new roads, older traffic routes and footpaths. This landscape is profiled for (...) tourism. A relatively large part of the landscape (...) is protected by national parks and protected landscapes, partly including cultural landscapes and pastures" (REGIONALT BYGEDUTVIKLINGSPROGRAM 2013-2016 (2011), p. 25).*

In combination with the cultural landscape history, a prolonged and intensified outfield farming formed the specific character of the case study valleys' cultural landscape. Reciprocity between the amount of livestock concerning manure supply and sufficient food production became determining. As antecedently presented, pasturing and fodder production took place on non-fertilised, semi-

natural sites in the outfield areas (NORDERHAUG and JOHANSEN 2012: 87). Agricultural necessities in a natural predefined glacier surrounding minted various and specialised forms of land use resulting semi-natural vegetation sites (ibid). These semi-open areas located in the case study valleys constitute of:

1. Coppiced woodlands

Coppiced woodlands[194] were common in West Norway. Mainly tree species with quickly growing root and trunk shoots, such as Alnus incana[195], were used for coppicing. Young trees were grouped. Coppicing describes the process of cutting roots or base shoots. The primary function of coppicing was winter fodder production and the use of coppiced material for barrel hoops (AUSTAD and HAUGE 2008: 388; 2006: 7).

2. Summer dairy farms and hay meadows

These areas mostly associate the image of the summer farming cultural landscape according to the existing built structures (cf. Chap. 4.3.6, p. 109pp). Hay meadows developed under anthropogenic pressure. *"Disturbance of the forests started in the Neolithic (from the 4th-millennium cal BC) with pollarding/coppicing for fodder collection and grazing. After 2000, cal years BC, the exploitation increased and cultivated fields and pastures developed in areas of settlement. Cutting of hay for fodder is strongly connected to iron production and development of the scythe. In Norway, the scythe is found from the Late Iron Age onwards (from ca. 600 AD) and the existence of hay meadows is in western Norway documented by pollen analysis from the same time period. New investigations indicate that hay meadows existed already in the Pre-Roman Iron Age, which means that other tools than the iron scythe were used for hay cutting. Areas earlier used for cultivation or grazing turned into hay meadows"* (PANCULTLAND 2006). Hay meadows were mostly located in the south, south-east or south-west of the slopes on soil that was low in minerals and nutrients. They were used for grazing early and late in the growing season. Mowing took place once a year, on soils with low minerals and nutrients were mowed every second year (ibid.).

194 The term *snelskog* originates from the name of the lopping knife *snidel* (AUSTAD and HAUGE 2006: 7).

195 Grey alder.

3. Mountain pastures

A lack of trees characterises pastures. High grazing pressure, frequent rockfalls and avalanches, as well as climatic conditions, prevented up-coming tree shoots. Pastures in Bødalen and Erdalen are located on alluvial fans and talus cones. Grass species dominate on various grounds as they regenerate fast (AUSTAD and HAUGE 2008: 388).

4. Pollarded Woodlands

Pollarded woodlands were found on the slopes along the fjords and valleys in Western Norway. Either pollarding took place on cultivated land, creating wooden hay meadows or in close vicinity of cultivated land. Moreover pollarded trees were planted as farm yard trees, or in a row to specify property boundaries (AUSTAD and HAUGE 2006: 6p). In the case study sites, remnants of pollarded trees are traceable in Briksdalen and Erdalen.

Due to the modernisation of agriculture and the employment of artificial fertilisers the centuries lasting separation between infield and outfield farming and the vertical distribution of farmland became obsolete. Food and fodder production concentrated on the arable land in the infields. Conformable to the Norwegian Red List for Ecosystems and Habitat Types 2011, these semi-natural sites, which are formed by continuous farming that is not based on ploughing and fertilisers (NORDERHAUG and JOHANSEN 2012: 87) are classified highly at risk. Apparently these semi-natural vegetation sites constituting a vast part of the examined cultural landscapes, are dependent on traditional land use practices. They also mediate the peoples' self-image and identity well-founded on long-lasting land use practices, customs, and traditions. By taking a closer look at the object and element scale, it can be quoted that the study at hand examined the fact, that there is no general inventory in Norway indicating the components and elements of the so highly valued associative cultural landscapes. There are various inventories providing information about archaeological, cultural and natural heritage as well as the state of nature all over Norway. The compilation of the features construing the present-day Inner Nordfjordscape in the case study valleys are reviewed in the investigation at hand reported to:

- *Askeladden* inventory, an inventory introduced by the Directorate for Cultural Heritage[196]. It is displaying 9654 protection worthy cultural heritage sites and cultural environments, which are protected by the Cultural Heritage Act, the Planning and Building Act, or heritage that is considered protection worthy by professionals (MILJØSTATUS 2015). It includes:
- Archaeological and automatically protected monuments before the year 1537. Cultural heritage upon declarations from the period of 1537-1649, which are automatically protected.
- Cultural environments in Norway[197] (cf. Chap. 5.4.1, p. 201).
- The *SEkretariatet For Registrering Av faste Kulturminne i Noreg*[198] (SEFRAK) that is listing buildings constructed before the year 1900. Askeladden system is cross-referencing to SERFAK.
- *Kulturminnesøk*, a type of open source and publicly accessible system displaying protection worthy elements and components that replaced Askeladden[199].
- *Naturbase*, a database that shows cultural environments with specific natural and cultural landscape values by the Nature Directorate in Norway.

The results of the current itemisation are presented subsequently in sections acknowledging the present state of the cultural landscapes. They are displayed in fact sheets of each case study valley comprising a table of tangible cultural landscape elements and components of the Inner Nordfjordscape (linear, laminar and point features) regarding to the findings. Moreover, the labelled and designated protection areas combining natural and cultural values are enumerated.

196 *Askeladden* was initiated in 2009 as a public platform. Today, the system is only accessible for public administration units (RIKSANTIKVAREN 2015; https://askeladden.ra.no/Askeladden/Pages/LoginPage.aspx?ReturnUrl=%2faskeladden; accessed 07.07.2015).
197 The term is defined by §1 CHA.
198 Secretariat of Registration of Fixed Cultural Heritage in Norway.
199 *Askeladden* became only accessible for the public administration based on new statutory regulations for working with sensitive data (ASKELADDEN 2015).

5.1.1 Cultural landscape in Briksdalen - between glaciers and tourists

Briksdalen exemplifies the combination of natural and cultural landscape values based on tangible and intangible cultural and natural features paradigmatically. Subsequent and identifiable regrowth of the former open and semi-natural cultural landscape takes place in the valley since the consecutive abandonment of farming. Today, only residues of traditional land use practices are trackable on the flat area of the valley bottom in Briksdalen. Fragments of cultivated forests, meadows and pasture land with scattered pollarded trees are vaguely perceptible (HELLE and CLEMENTSEN 1993: 51pp). Two reciprocally dependent elements shaped the present state of the cultural landscape in Briksdalen decisively:

1 . Climate is the momentous induction for cultural landscape dynamics. Glaciers influenced the expansion of agricultural cultivation. Outfield areas in Briksdalen were used intermittently according to the state of the glacier. Henceforth, the economic importance of farming reduced since the 18th century, not singly because of natural changes but also because of social changes. Regrowing vegetation in agriculturally fallowing parts become an issue of cultural landscape management, amplified by the process of climate change.

2. Tourism affected the cultural landscape development sustainably. As earlier outlined, advancing and retreating glaciers testified by moraine walls and varying succession phases of vegetation cover made the area interesting for tourism, education, and science. Within several efforts, the former bridle path[200] to the glacier was expanded that horse carriages can reach the glacier front (WEICHERT 2008: 74) to transport a growing number of tourists. Tourism increase continues and is challenging the cultural landscapes.

According to the decrease in agricultural production and the increase in tourism, past land use traditions disappeared. A paradox accrues: Tourists are visiting the area to a large degree because of landscape aesthetics. Locals tap tourism as a significant income source and disregard other traditional land use that created the spectacular landscape. To a certain extent, the increasing tourism attempts react in a negative feedback loop to the historical grown cultural

200 *Kleivavegen.*

landscape. The feasibility to easily access and experience the glacier tongue and the dramatic surrounding emerged as a tourist highlight. Tourist numbers increased steadily, particularly since 1992, after the deep water quay constructions were completed (WEICHERT 2008: 74). Coherently, the tourist transportation to the Briksdalsbreen transformed. By then, the visiting tourists were transported by horse carriages to the valley's main attraction.

In 1966, the last goats pastured in the valley. Agricultural use was largely suspended in Briksdalen (WEICHERT 2008: 74). Fjord horses, which were pulling the carriages, were grazing on the flat valley bottom keeping some parts of the area open in close vicinity to the tourist road. In 2005, Troll-cars replaced the horse carriages (BRIKSDALSBRE 2015) (cf. **CHART 30 No. 1, 2** App.). Since the abandonment of active farming and the increase in temperature the green-tunnels dispersed in Briksdalen remarkably. Table 5 shows the perceived point, linear and laminar elements and components of the Inner Nordfjordscape in Briksdalen.

	Laminar	**Linear**	**Point**
Basic settlement structures (infield)	Farm area/ Briksdalsbre Fjellstove (cf. **CHART 30 No. 3** App.)	/	/
Basic settlement structures (outfield)	/	/	Utløe storage shed SEFRAK (cf. **CHART 23** App.)
Cultural environments (Fact Sheet 1/2)	Briksdalsglacier front (cf. Fig. 15)	Residual pasture structure (cf. Fig. 14)	Remnants of pollarded birch trees
Natural environments	/	Moraine walls	/
Traffic structure	/	Kleivavegen (cf. **Chart 30 No. 4** App.) Natursti, hiking path to the glacier (cf. **Chart 30 No. 6** App.)	Bridge (cf. **CHART 30 No. 5** App.)

Table 5 Examined cultural landscape features in Briksdalen.

Today, overgrowing slopes frame the scenery of the glacier, and the last open semi-natural cultural landscape sites disappear gradually. In 2007, the open landscape project[201] was engaged in the valley. Measures against overgrowing

201 Within the project *Opne landskap* in the county Sogn og Fjordane financed by the county governor of Sogn og Fjordane, a goat grazing project was applied to manage overgrowing in Briksdalen. Focus was to keep the view along the Troll-car road open (NORDHEIM KUSSLID 2008).

needed to be considered due to an increase of tourists in Briksdalen and a concomitant overgrowing. Tourist infrastructure around the glacier improved, and Briksdalen became one of the most visited tourist destinations in Norway. Since 1973, the area is excluded from further use for hydropower production (SANDVIK 1999: 6). Aside the listed features the Nature Directorate marked and protected cultural environments with distinct values for biodiversity and cultural heritage in Briksdalen[202]. Some of the known cultural landscape features and the cultural environments are summarised and subsequently displayed as Fact sheet 1 and 2. Parts of Briksdalen became protected under the JBNP in 1991.

202 These areas are labelled as cultural environments and further presented in Fact Sheets. Either these protected areas have developed due to traditional land use, or they are connected to other specific cultural and natural landscape features that develop distinct natural and cultural values. Cultural environments include, for example, a cluster of traditional farm buildings with the link to the environment. Vulnerability constitutes due to form, economics and time priority of the farmers and land owners that result in a total system loss or loss of parts of the system's qualities by abandonment and clearing.

Fact Sheet 1 **Briksdalen pasture**

Figure 14 Birksdalen pasture (source LOPEZ 2011).

Location: The protected cultural environment is established on the riverbank of the Briksdalselva, below the road to the Briksdalsbreen. With a size of 7,5 acres, the area represents the residual pasture grounds and hay meadows in the valley. **Protected natural and historic cultural values:** Only open sectors that are not affected by overgrowing belong to the protection entity. Due to an overall scarcity of such pastures, the site is classified as highly valuable. The area is characterised as species-poor, inhabited by little demanding widely distributed species. Common bent and silver stack are the dominant grass species. Red list plant species are not registered. The locality is also mentioned by HELLE & CLEMETSEN (1993: 51p) as a specific cultural landscape area. **Conservation status:** Until 2005 horses were grazing periodically. In 2007, the open landscape project reintroduced goats in Briksdalen for one summer season. Regrowth is detectable. Abandonment of active agricultural operation is the major threat to the area. Maintaining the natural values of the immediate locality requires several measures. Trees and bushes must be removed, a total clearance of the overgrown area and the reintroduction of permanent grazing is advisable (NATURBASE 2015).

The area of the former Briksdal farm is converted to the Briksdalsbre Fjellstove, a modern visitor centre with a cafe and a souvenir shop (cf. **CHART 30 No. 4 red circle, CHART 11 No. 1** App.,). In front of the perimeter car parks for coaches that transport the visitors into the valley quotidian are located. Alongside the building is a climbing area and an open air barbecue spot for tourists (BRIKSDALSBRE 2015). A passable Troll-car road was installed. Alongside the built traffic route; a

hiking path leads into the higher located valley part beneath the Briksdalsbreen on approximately 300 m.

Fact Sheet 2 **Briksdaglacier front**

Figure 15 Briksdalsglacierfront (source LOPEZ 2013).

Location: Concrete demarcation of the protected site is complex because the glacier front is in constant motion. Mainly the area below the glacier front (300-350 m) on the north side of the valley is comprised. The protected area includes approximately 31 acres. **Protected natural and historic cultural values:** Area's vegetation is part of the Northern Boreal oceanic influenced zone. Fresh glacier material contains colloid material supplying the soil with valuable nutrients. Pioneer vegetation is characteristic. Demanding species, such as Saxifraga aizoides, Arabidopsis lyrata, Saxifraga oppositifolia, Ranunculus, Astragalus alpinus, Anthyllis vulneraria and Saussurea alpina[203] reside the habitat (NATURBASE 2015). The entity is considered species rich. Mostly Alnus incana[204] trees and imperil light-demanding pioneer plants spread and overgrow the area. **Conservation status:** Main pressure on this habitat type is excerpted by glacial melting and an unfavourable increasing tourist traffic. Self-preservation and controlled tourist transportation are the necessary measures to safeguard and manage the Briksdalglacier front.

There are supposed remnants of old pollarded birch trees above the area of the bridge (HELLE and CLEMENTSEN 1993: 53) (cf. **CHART 30 No. 5** App.). Ever since the bridge was constructed, it became the scenery for a frequently taken photograph among tourists that is also often used in brochures. In the upper

203 Yellow mountain saxifrage, Lyre-leaved rock-cress, Purple mountain saxifrage, Buttercup, Alpine milk-vetch, Kidney vetch, Common saw-wort.
204 Grey alder.

part of Briksdalen hikers and Troll-car passengers can share the road towards the glacier. The residues of the pasture area are recognisable along the Briksdalselva and specified in fact sheet 1. Main intangible cultural heritage related to the cultural landscape of Briksdalen are the transportation rights of tourists, owned by the farmers in the valley and the adjacent 150 years of tradition in tourism. Moraine walls on the valley bottoms witness the glacial activities. Related to the initiative of determining valuable cultural landscape elements and components in the county Sogn og Fjordane that was conducted by HELLE and CLEMENTSEN, hay barns, drainage-canals, stone heaps[205], stone terraces and paths were still percept but vanished or have been overgrown since the field work took place in 1992.

5.1.2 Cultural landscape in Bødalen - a valley in upheaval

After the two natural disasters in 1905 and 1936 (cf. Chap. 4.3.4, p. 106) the land cultivation in the lower Bødalen area has been gradually abandoned. Coincidently, the summer farms on Bødalssetra have not been further used for dairy production. Today, the flat area at the lakeside, where the old Bødal farmstead was located, is partially used for grass production (cf. **Chart 31 No. 1** App.). Some residential houses and farm buildings are placed on the planar shore perimeter. Lower Bødalen area developed to an associative cultural landscape comprising an immaterial memorial site for the two incisive natural disasters of 1905 and 1936. Along the road to Kjendalsbreen, which is located further south of Bødal farmstead, a commemorative plaque is installed, and a memorial hiking path is leading to the disaster zone. At present, summer farm huts in the upper valley are re-designated as second homes for the owners. DNT runs a self-sufficiency cabin for mountaineers and hikers in the summer farm area (DYBWAD 2001: 12). Farmers from the valleys around still have pasturing livestock on Bødalssetra. They are checking on the animals occasionally[206]. The spatial structure of the summer farm huts persists since 1893. Some huts are protected under SEFRAK and the owners need special

205 Heaps were created by clearing fields from stones.

206 According to grazing rules, any farmer has to take responsibility for the grazing livestock in order to keep it away from areas, where they aren't allowed to graze. Each owner has the duty to assure that sick or injured animals get care (AUSTRHEIM 2008: 62p).

permission for reconstructions or repair works (RIKSANTIKVAREN 2015). Until 2011, guided glacier tours on the Briksdalsbreen tongue were organised by Briksdals Adventure AS. Retreating ice front at Bødalsbreen prevented guided tours on the glacier from 2012 onwards because of gaping crevasses. The view along the toll-road into the upper valley, allows a general imagination of the state of the successive vegetation. Within the last 50 years, silviculture introduced spruce trees to generate quick-growing timber. Cultivated areas with spruce trees are very vulnerable to heavy wind and squalls (cf. **CHART 14 No. 2** App.). The JBNP was enlarged by upper Bødaen in 1998. Table 6 displays the relevant characteristic laminar, linear and point cultural landscape elements and components of the Inner Nordfjordscape identified in Bødalen.

	Laminar	**Linear**	**Point**
Basic settlement structures (infield)	Bøaøyna (cf. **CHART 31 No. 1** App.)	/	Nystove Bødal farm house (SEFRAK) (no figure available)
Basic settlement structures (outfield)	Bødalssetra (cf. Fig. 16) (cf. **CHART 31 No. 4 red circle** App.)	/	Several summer farm buildings (SEFRAK)(cf. **CHART 23 No. 3** App.) DNT hut
Cultural environments (Fact Sheet 3,4,5)	Natural pasture Huldrefossen waterfall area Bødalsglacier front (cf. Fig. 17,18)	/	/
Traffic structure	/	Gravel road to Bødalssetra (cf. **CHART 31 No. 2** App.) Hiking path to the glacier	Bridge on the setra (cf. **CHART 31 No. 5** App.)

Table 6 Examined cultural landscape features in Bødalen.

Some of the mentioned elements and components are pooled in alleged cultural environments, which are presented in the following fact sheet 3, 4 and 5. Intangible cultural landscape features identifying the exceptional importance of the whole area are somewhat connected to the protected sites. It refers to the knowledge about the various forms of traditional land use, as presented in the section on the different types of operated land use in the outfields (cf. Chap. 4.3.6, p. 109p).

Fact Sheet 3 **Natural pasture (Bødalssetra)**

Figure 16 Bødalssetra (source LOPEZ 2011).

Location: The natural pasture area is situated on Bødalssetra (580-600 m), on the north side of the Bødalselva. It was labelled by the county administration as a natural and cultural protection-worthy entity in 2009. The cultural environment comprises an area of 102 acres.

Protected natural and historic cultural values: Bødalssetra is exemplary for the functional connection of land use in the Fjordscape. The summer farm buildings represent the past land use tradition of active dairy farming that was very common in Bødalen. Successive overgrowing and a reduced grazing pressure is the main challenge of the contemporary cultural landscape situation on site. Despite the low grazing pressure, Alnus incana[207] spreads progressively on the flat part of the valley in the proximity to the Bødalen summer farm buildings. Furthermore, the progression of successive forest diminishes the pasture area. Today about 150-170[208] young cattle, dried cows and sheep are grazing around Bødalssetra. Dairy farming is not performed. Species' inventory in the marked area indicates a bygone and long-lasting era of summer farm cultivation (GARDER et al. 2012; MILJØDIREKTORATET 2014). Self-evidently the area was a pasture in the past and much larger than the presently protected entity. **Conservation status:** An increasing grazing pressure would be preferable to maintain and safeguard the cultural and natural values related to the cultural landscape. Other measures need to be introduced as Alnus incana trees are spreading and according to the species-typical Nitrogen fixation, other plants hardly survive in an alder habitat. Immediate

207 Grey alder.

208 An exact number cannot be determined, as the amount of livestock changes during the grazing season. Although the state pays financial support for the total number of animals grazing on national park ground, it is not guaranteed that all animals, for which is paid for are indeed grazing around Bødalssetra. Such information were particularly collected in the aftermath of the expert interviews.

management measures should comprise a combined effort of cutting back the alder trees regularly and an early start of the summer grazing season (GAARDER and FJELLSTAD 2012; MILJØDIREKTORATET 2014). Currently, an increased grazing activity would not extend the protected pasture area because of the already stated grey alder succession. Combined efforts, such as lumbering and increasing grazing activities are needed to regain more natural pasture area (MILJØDIREKTORATET 2014).

The intangible values comprise the knowledge about summer farming, dairying, coppicing, pollarding and pasturing, as well as the knowledge about cattle drift and glacier guiding. fact sheet 4 and 5 represent habitat types with outstanding value to nature protection. Nevertheless, they are also a definite part of the cultural landscapes as manifold intangible values are attached to those.

Fact Sheet 4 **Huldrefossen (waterfall spray zone)**

Figure 17 Huldrefossen waterfall in Bødalen (source LOPEZ 2013).

Location: The environment is determined on the south-east bank of the Bødalselva close to the Huldrefossen waterfall at the entrance of the Bødalssetra and comprises an area of 21 acres. **Protected values:** The area around Huldrefossen is particularly protected because of its natural value. The zone is constantly affected by the spray water of the waterfall. Characteristic moss and low-growing vegetation grow on-site. Steep rock faces and overhanging rocks mark the riparian zone (MEYER 1984). A final assessment of the importance regarding natural values has not been conducted so far. The area is tradition-steeped in legend because of the superstitious links to the summer dairy farms. The name *hulder* described a female figure with a cow tail, living in the mountains, bewitching and luring men to follow her (NATURBASE 2014; NATURE TRAIL BOOKLET BØDALEN).

Cultural landscape in Bødalen is vulnerable to effective overgrowing. In comparison to other valleys in West Norway, the visiting tourists and the low but existing grazing pressure secure the viability of the present identified and partially protected and labelled cultural landscapes and cultural environments to a minimum extent. Residual elements and components of the traditional cultural landscape in Bødalen based on past land use practices connect to a variety of intangible cultural heritage, as previously mentioned.

Fact Sheet 5 **Bødalsglacierfront (Setravatnet)**

Figure 18 Glacier front in Bødalen (source LOPEZ 2013).

Location: Similare to the Briksdalsglacier front, Bødalsglacier front is protected as an important natural area and listed as a cultural and natural environment. **Protected natural and historic cultural values:** Glacial meltwater from the Bødalsbreen form a fluvioglacial delta (Setravatnet). Sparse vegetation, which demands nutrient-rich soil be accumulating around the sandur delta. The area around Bødalen glacier lake accommodates rare species[209], such as Pseudorchis albida, Cerastium arcticum, Sagina nivalis, Carex noregia, Saxifraga cernua, Juncus biglumis, Dryas octopetala, Salix reticulata, Rhytidiadelphus triquetrus. The area is important in a botanic-historical perspective (MEYER 1984: 221). Cultural impact occurs by cows and sheep grazing around the delta. **Conservation status:** Controlled tourist traffic and to be left to take care to itself are the necessary measures to manage the Bødalsglacier front (NATURBASE 2015).

209 Newfoundland orchid, Artic mouse ear, Snow pearlwort, Norway sedge, Nodding saxifrage, Twoflower rush, Mountain avens, Snow willow and Shaggy moss.

5.1.3 Cultural landscape in Erdalen - persistent spatial patterns

In contrast to Briksdalen and Bødalen, cultural landscape scenery in Erdalen is vastly characterised by the everyday or trivial cultural landscape of agriculture. Particularly the lower part of Erdalen is in incumbent agricultural use. Nine active farm units are located in an altitude range of 30 to 160 m. Predominant land use is grass production. The lower valley is considered as a heartland[210] for farming production and trivial cultural landscape. According to the described social and economic changes in Erdalen, today, almost all cultivatable land is located close to the Erdalselva. Various river regulations in the past between the 1860s and 1930s took place to gain cultivatable farmland and to prevent reclamation of won land from periodical flooding (ERDALEN NATURE TRAIL BOOKLET: 5). Modern houses and barns replaced the old farm buildings, but the perimeters are based on the historical boundaries according to the land register. Fodder production, tilled fields, timber extraction in the close farm vicinity and livestock herding dominate the agricultural character of the lower valley. As previously stated, cultural landscape elements and components are similarly threatened by successive overgrowing in Erdalen. Concerning the contemporary modern agrarian land use, the infield areas in Erdalen have retained their cultural landscape quality to a certain extent and are comprehended essential to food and fibre production. A gravel road, starting on 160 m, leads up to the parking lot in upper Erdalen on approximately 380 m. The private toll road is fully appreciated as cultural heritage. From there on, an old trail leads into the upper Erdalen valley[211] summer farm areas. Traditional Fjordscape in the upper valley is gradually changing. Grass and milk production performed in the lower valley trigger the dynamics of the cultural landscape character in the upper valley due to the enduring functional connection between the infield areas and the outfield areas in upper Erdalen. The outfield was traditionally indicated by summer farming and other long-established forms of cultivation practices. Withal the valley is annually used for pasturing the milk

210 *Kjerneområde Landbruk* is a project initiated by the county governor to fulfil the national targets according to the national agricultural targets. Stryn Municipality marked 21 areas as agricultural heartland.

211 *Buføringsvegen.*

cows[212]. Historical grown cultural landscape areas are exposed to and degraded b y *gjengroing*. Longstanding mowing, leaf-fodder and dairy production are abandoned, as well as goat pasturing.

	Laminar	Linear	Point
Basic settlement structures (infield)	The farmsteads Erdalen, Rygg, Tjellog, Berge, Greidung (with the respecting farm units and individual farm buildings) in Erdalen (cf. **CHART 26 No. 1** App.) The mill buildings at Erdalselva	Former stone wall at Greidung farm; River regulations in Erdalen from 1909 and 1933	/
Basic settlement structures (outfield)	Summer farm area at Storesetra (cf. **CHART 26 No. 2 red circle** App.) Summer farm area at Vetledalsetra (cf. **CHART 26 No. 3 red circle** App.)	Brushwood fence on Reset in the upper Erdalen (cf. **CHART 26 No. 4** App.)	Summer farm huts Storesetra; Summer farm huts Vetledalsetra
Cultural environments (cf. Fact Sheet 6/7)	Storesetra (cf. Fig. 19) Vetledalsetra (cf. Fig. 20)	/	/
Natural environments	/	Moraine walls	/
Traffic structure	/	Toll road from Greidung farm to the parking lot; Path to Vetledalsetra; via Storesetra; Drift ways to and over the Erdalsbreen (cf. **CHART 26 No. 5** App.)	Concrete bridge on the Sandur plain (Storesetra) Wooden bridge over the Erdalselva (Vetledalsetra)

Table 7 Examined cultural landscape features in Erdalen.

Immediate livestock pasturing on the summer farm area is a combination of upkeeping traditional land use and generating additional income by subsidies, provisions for nature and animal protection[213]. Equivalent to Bødalen, the JBNP was enlarged by parts of the upper Erdalen in 1998. Upper Erdalen is a valley displays many Quaternary deposition, moraines and eskers. Referring to the description of the cultural history in Chapter 4.3 (p.100pp), Table 7 (p. 146) shows the characteristic laminar, linear and point elements and components of

212 Erdalen farmers brought the sheep to Grasdalen, a valley on the new road over the Strynefjell.

213 At this juncture, it must be stated that animal welfare is not part of the resulting institutional analysis.

the Fjordscape in Erdalen. On approximately 460 m the area is described as a Braided-Sandur-System. A 1600 m long and 700 m wide plain sandur area, on which several main channels of the Erdalselva braiding and converting to a major stream signifying the upper valley's river outlet (cf. **CHART 17 No. 2** App.). Aside the importance to geomorphology, the Braided-Sandur-System is rich in plant and bird life. More than 1000 visitors enter Erdalen annually[214]. The cultural landscape is distinctly represented on the large fluvial plain area. It is divided into two summer farm areas, Storesetra and Vetledalsetra. Some of the here mentioned elements and components are pooled as regional and local important cultural landscape[215] sites in the county Sogn og Fjordane (HELLE and CLEMETSEN 1993). The relevant protected cultural environments for the investigation at hand are presented in fact sheet 6 and 7, display the coherent areas of the past land use system. These protected cultural environments represent the residual physical-material elements and components of the Inner Nordfjordscape in the valley.

214 Expert stated that the annual revenue of the toll collection is approximately 30.000 NOK. Out of this amount the visitors number is estimated. Each toll is 50 NOK back and forth.

215 *Nasjonalt registrering av verdifulle kulturlandskap.*

Fact Sheet 6 **Storesetra**

Figure 19 Storesetra in Erdalen (source LOPEZ 2013).

Location: The alpine pasture of Storsetra[216] is located on 460 m at the entrance of the flat Sandur and comprises 92 acres. **Protected natural and cultural values:** Storesetra is considered of high historical value. The area accentuates the centuries lasting tradition of summer farming in the inner Fjordscape. Storesetra is a large summer farm perimeter with 14 summer farm huts that are built in a rectangular range. Except two summer farm buildings that are of stone construction, the main building material is wood. Apparently the summer farm buildings are in an excellent state of preservation due to an active use as second homes. Some buildings appear, which are either abandoned by the owners or burnt down and not rebuild. Summer farm owners have mutually agreed that each property owner should not have more than one summer farm building in the upper valley. Property rights in the upper Erdalen are not singly assignable. The grazing area around the Sandur is commonly owned pasture[217]. **Conservation status:** Most of the buildings are maintained and reconstructed. Dried milk cows and calves pasture around the summer farm area and the braided-river system. The grazing pressure is adequate. The northernly located slopes around Storesetra are steadily overgrowing. Slopes situated on the southern side of the valley have a low vegetation cover because of frequent descending avalanches. Combined efforts (lumbering and pasturing) are necessary to keep the areas open. The introduction of sheep and goats in Erdalen should be reconsidered. Due to the natural and cultural heritage values, the cultural environment of Storesetra is listed as a regional and local valuable cultural landscape that represents the past land use tradition to a great extent (HELLE and CLEMETSEN 1993: 68).

216 Non locals call the area *Erdalsetra*, local population also names the site *Årdalssetra* or *Heimesetra* (NATURE TRAIL BOOKLET ERDALEN: 12). *Storesetra* is the name that is mainly used by the locals and further applied in the study.

217 By the *Erdalen Beitelåg*.

Intangible values represented by the cultural landscape of Erdalen are the knowledge about the various traditional forms of land use (cf. Chap. 4.3.6, p. 109pp) that created this unique landscape patterns, the cattle drift, and the traditional glacier guiding.

Fact Sheet 7 **Vetledalsetra**

Figure 20 Vetledalsetra in Erdalen (source LOPEZ 2013).

Location: The perimeter at Vetledalsetra is located on 520 m. Five summer farm huts spread along the area. Main construction material is stone and wood. DNT has established a self-sufficiency hut for mountaineers and hikers, who cross Erdalsbreen. It is accessible all-season. Approximately 120 nights stay are registered in the guest book (DYBWAD 2001: 13). **Protected natural and cultural historic values:** Homologous to Storesetra, Vetledalsetra comprises the same natural and cultural values. The whole braided-sandur-system in combination with the arrangement of the summer farms express the distribution of individual and common property rights on the resource extraction and the pasture ground over centuries. **Conservation status:** The buildings are in good conditions. In comparison to the Storesetra, a lot less summer farming huts are located on the Vetledalsetra. The DNT self-sufficiency cabin for hikers and mountaineers has bee reconstructed in 2011. Grazing livestock on Vetledalsetra climb further up towards the Erdalsglacier. Continuing overgrowing is likewise a problem, although the moraine walls are kept relatively open by the remaining grazing cows. Future management is heavily persistent on increasing grazing pressure, at least with milk cows.

On both summer farm areas, dairying was executed until the 1950s. At present approximately two hundred cows[218] pasture on the entire summer farm area in the upper Erdalen annually[219]. Since 2008 goat farming has been abandoned. Sheep are not allowed to graze in Erdalen by special statutory regulations and the agreement of the Erdalen Beitelåg members (DYBWAD 2001: 14). Sheep of the Erdalen farmers are sent to a pasture in Storedalen, which is located along the Strynefjell road. Today, the grazing pressure in the upper Erdalen is comparatively low. Regarding to labelling Erdalen summer farm areas as national valuable cultural landscape, HELLE and CLEMETSEN wrote in their report (1992: 68) that the Setra is amongst the biggest in the region and is still intact. Quaternary geological values are found in the valley likewise prominent. Erdalen is a gateway to the Jostedalsbreen and the JBNP. In the total view, the traditional summer farm huts are an important cultural and historical quality[220] (ibid.). Erdalen is a popular recreational site for the local population. It is also used by tourists but in a less frequented way than Briksdalen, for instance.

- **Synopsis of the cultural landscape status in the case study valleys**

Referring to the level of cultural landscape objects on-site, and by respecting the remarks made on cultural landscape history in comparison to the status of the cultural landscapes of the three case study valleys, tangible elements and components[221] constituting the Inner Nordfjordscape are still available and perceptible. Although the elements and components are statically existent, it is undisputed that they are vulnerable to the mutual percept problem of a successive overgrowing. Particularly laminar elements and components that express their natural and cultural values in a spatial and functional relation with widely executed traditional land use practices show specific vulnerability.

218 Young cattle and dry cows are sent to the summer farm pasture. Dry cows are animals in the period between halting of milk removal and the ensuing calving.

219 A total number cannot be ascertained due to discrepancies between reported and actual numbers.

220 Original text is: *"Stølen er ein av dei få store stølsgrendene i Stryn som enno ikkje har vegtilkomst, og den gamle stølsstien er framleis intakt. Dalføret har mange kvartærgeologiske verdiar. Dei tradisjonelle stølane i dalen (Store- og Vetlesetra) utgjer viktige kulturhistoriske kvalitetar."*

221 Comprising point, linear and laminar elements and components of cultural landscapes.

The present state of the examined sites lacks concrete management measures. It can be concluded that most elements and components are either safeguarded by a constant or intensified use that leads possibly to a transformation of the cultural landscape pattern, from specific cultural landscapes with natural and cultural values to trivial cultural landscapes, of food and fibre production, as it is mostly the case in the outfields of Erdalen and Bødalen. Again other elements and components are vaguely perceptible and merely subdued to legal protection measures that exert no specific management action. Other items can be categorised as intangible elements and components that are imminently connected to the specific land uses and notably endangered. Such intangible cultural landscape values are the knowledge of land use traditions such as pollarding or coppicing, for instance. According to the economic challenges, these types of land use traditions are not operated any longer. By reference to the development of recent and fossil cultural landscape element and components, Erdalen exhibits the highest amount of items characterising the typical summer farming cultural landscape of the Inner Nordfjordscape, notably through a persistent agricultural use among adopted economic prerequisites with the effect of consecutive transformation on an intermediate and long-term. Briksdalen demonstrates the lowest number of Inner Nordfjordscape cultural landscape features in contrast. However, it is striking to acknowledge that the types of use have adjusted to modern agricultural production systems. Regarding this, pasturing the livestock in the outfield happens due to statutory provisions of animal protection and welfare, on the one hand, and financial support by the state, on the other hand. Production subsidies and the aspect of time consumption, lead to the fact that mainly cows are grazing on the on the summer pastures in the national park. The modern cow breeds are insufficient to coping with the overgrowing. A gradual change regarding an transformation of the traditional cultural landscape sets in and is amplified by the persistent use of the summer farming areas as contemporary grazing grounds. Cultural landscapes of the past differ from the present state of those significantly. Social and economic factors influenced land use and resulted in the cultural landscapes we appreciate today. Aside the necessity to enlarge resource

extraction to the outfields no further intentions (such as tourism, recreation, biodiversity) stimulated cultural landscape development by local communities. The expanding cultural landscape was owed to provide a growing population number with the essential livelihood.

Today, social, economic and increasingly natural factors drive cultural landscapes to change imprinted by the successive overgrowing This process is percept as relentlessly. To that effect, communities aware an identity loss related to the changing surrounding. According to the change in economy and society and the effects to that, several other major functions provided by cultural landscapes (biodiversity, recreation, tourism) are jeopardised. Communities derive spatial qualities from the area they live in, and cultural landscapes are transformed into an economic factor for tourism and recreation.

Paradoxically, these spatial qualities are sources of past agricultural land use practices and the resultant historical grown cultural landscapes. Henceforth, they gained importance at the time; the grown cultural landscapes are just to be on the point to change, partly in an irreversible condition. The above listed and named conservation areas are protected under the formal institutional framework of contemporary cultural landscape management. All these effects and occasional over-exaltations of the rural area in Norway converged in an associative and constructed cultural landscape with the depicted physical-material remnants of past land use practices connected to a considerable identity-establishing function. New scientific, planning and administrative accesses regarding the management of such constructs are needed. The associative cultural landscape of today requires management measures that operate basically on the motivation to execute past of land use practices. To scale the so far described changes in the present state of cultural landscapes, the effects on the dynamics that reproduce such processes will be conferred closer in the next paragraphs.

5.2 Cultural landscape change and driving factors

The present research examines the natural, economical and social changes interfering with cultural landscape development within the case study valleys, by aiming at a qualitative determination of cultural landscape change on-site.

Driving factors initiated the changes endangering the residuary elements and components of cultural landscapes. The nature of the drivers is complex, and they hardly can be regarded isolated. By depicting driving factors of cultural landscape change on-site, it is intrinsically important to highlight the nexuses among them.

Examined and displayed cultural landscape change takes place on various spatial and temporal scales. A bundle of factors affect the corresponding change and dynamics. Recurring to the establishment of cultural landscapes as action and communication arenas, interdependencies between the specified drivers and the consequences visualised in cultural landscapes is a crucial aspect.

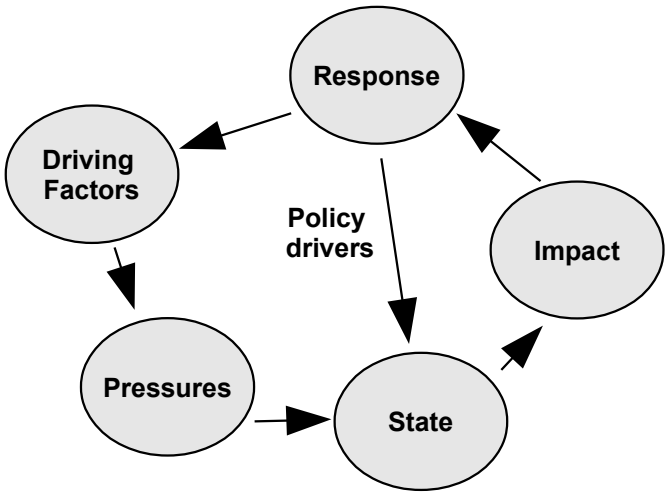


Figure 21 DPSIR-model (source EEA 1995).

Research at hand attempts a simplified modification of the DPRIS-model[222] (cf. Fig. 21) that helps to depict driving factors in such a complex, interrelated stimulus and response conjunction. The adjusted simplification of the DPSIR model links driving factors of cultural landscape dynamics to pressures, state, impact and response indicators (GABRIELSEN and BOSCH 2003: 8). Priority is to depict major upheavals in cultural landscapes on-site that refer to specific drivers or pressures. Conforming to the DPSIR model illustrated in Figure 21:

Drivers (or driving factors) are indicators that describe natural, social, demographic and economic developments in societies and the corresponding

222 The framework accounts the interactions between society and environment (EUROPEAN ENVIRONMENT AGENCY 2015).

changes in lifestyle, the overall levels of consumption and production patterns (GABRIELSEN and BOSCH 2003: 8). Contemporary drivers of change rarely appoint impromptu valuable new cultural landscapes. On the contrary, they transform landscapes in an undesired, incoherent and functionally impoverished state that becomes difficult to reverse (SELMAN 2012: 13).

Driving factors	Pressures	State	Impact	Response	Policy drivers
Climate change Demographics Agriculture (Food and fibre production) Tourism and recreation Invasive species Globalisation Values and changing social expectations about cultural landscapes	Land development Land use and intensification Fertilizers and feed pellets	'Green-tunnels' 'Standard cultural landscapes' Wilderness, semi-natural landscapes and cultural landscapes (JBNP) Vernacular landscapes	Changing cultural landscape character and distinctiveness Fear of losing identity Changing production and consumption roles Conflicts among stakeholders Disrupted ecological source to sink processes at multiple spatial scales	International (e.g. European Landscape Convention) and national, policies Infrastructure and spatial plans Subsidies Cultural landscape protection and regeneration measures Social and institutional learning	Implementation of transnational, national, regional and local policies Central government and central government agencies Community action Values and aesthetics Science Measures to promote cultural landscape multi-functionality

Table 8 Key change drivers of contemporary cultural landscapes in the case study valleys (based on SELMAN 2012 in PLIENINGER et al. 2012: 31).

Pressures are activities that influence cultural landscapes expended by human activities either on purpose or accidentally. Change of land use is such a central pressure. In reverse, pressures are dependent on level of technology.

State indicates the quantity and the present qualities of cultural landscapes in the case study sites. A consequence of pressures is the changing state of cultural landscapes. Vice-versa; this has an impact on the qualities provided by those, such as human and ecosystem health, available resources, biodiversity, cultural goods including aesthetic or recreational qualities, for instance.

Impact illustrates these changes. Simultaneously, theory of goods aspects come into effect, as cultural landscapes are multifunctional and heterogeneous common goods reducing the provided goods and services by the respective impact. Further, impact points out the parameters that directly reflect changes in

cultural landscapes on site. As humans are a pivotal part of cultural landscapes, impacts affect the cognitive dimension (such as identity and self-awareness).

Response depicts the effects on cultural landscapes from individuals and communities. Any governmental and administrative attempts to prevent, correct, improve or adjust changes in the state of the cultural landscape are comprised (GABRIELSEN and BOSCH 2003: 8p). Therefore, response comprises the current applied cultural landscape management measures.

Table 8 (p. 154) displays an overview of the key variables accordant to the DPSIRP model in the case study valleys. Next sections examines the specific driver and pressures of cultural landscape change in the case study sites. Referring to the cultural history

5.2.1 Climate change

Climate is probably the most significant driving factor concerning cultural landscape dynamics and alteration in the case study valleys. Figure 22 gives an overview of the state of the climate change.

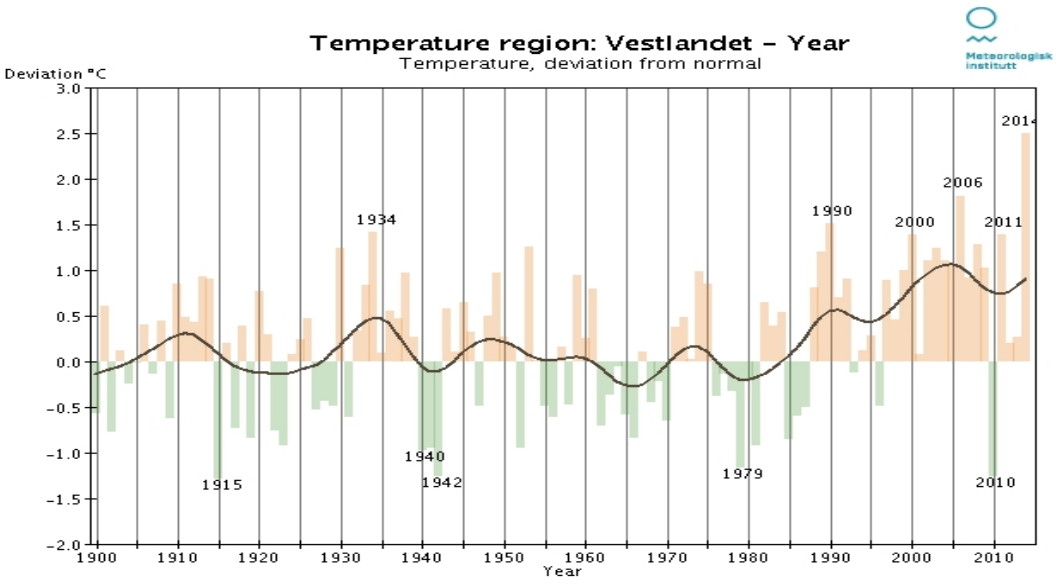


Figure 22 Temperature derivation from normal in West Norway (source eKLIMA 2014).

It is terminable that the mean annual temperature derived by approximately plus 1° Celsius since the beginning of the millennium. This process is levered by:

- Income from oil and a rise in living standard and emissions.
- High consumption of energy.

– Increasing road and air transport (NORWEGIAN ENVIRONMENT AGENCY 2012).

The case study valleys are characterised by this particular glacier environment, where the most remarkable impact of an increasing atmospheric warming is anticipated as glacial melting. Historical fluctuations between warming and cooling periods were witnessed in the cases study valleys for thousands of years, testified by various moraine walls in the valleys' landscapes. Notably, the Little Ice Age affected the development of cultural landscapes in the outfields, the inhabitants, and their livelihood on-site based on centuries lasting land use practices tremendously. The interrogation of the present section follows the central aspect of the interdependence between climate change and cultural landscape dynamics on-site.

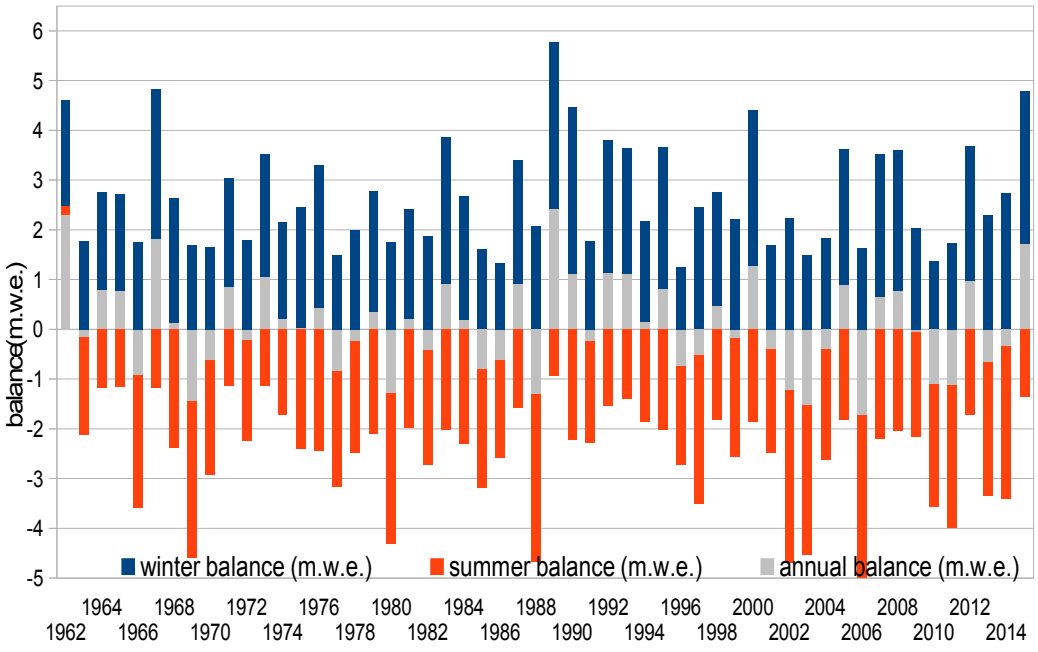


Figure 23 Mass balance of the Nigardsbreen from 1962 to 2015 (source NVE 2016).

The central question originates: Will the branch glaciers of the Jostedalsbreen disappear during the next century if a man-made rise in temperature continues to increase at the present rates? It must be clarified that glacial growth refers to high rates of melting or ablation during the summer or increased accumulation during the winter. Crucial is the time log between the changes in winter snowfall or summer temperature and the response in terms of a moving the ice front (RAMBERG 2008: 552). Figure 23 displays the current glacier mass balance of

the Nigardsbreen[223] in the Jostedalsbreen compound. A glacial retreat is classified in all side valleys of the Jostedalsbreen during the last ten years, aligning to the overall global trend (NVE 2015).

Glacier decrease in the case study valleys becomes more visible by displaying the length of the Briksdalsbreen, for example. A significant retreat of 1200 meters regarding its cumulative length during the last 114 years is acknowledged and demonstrated in Figure 24.

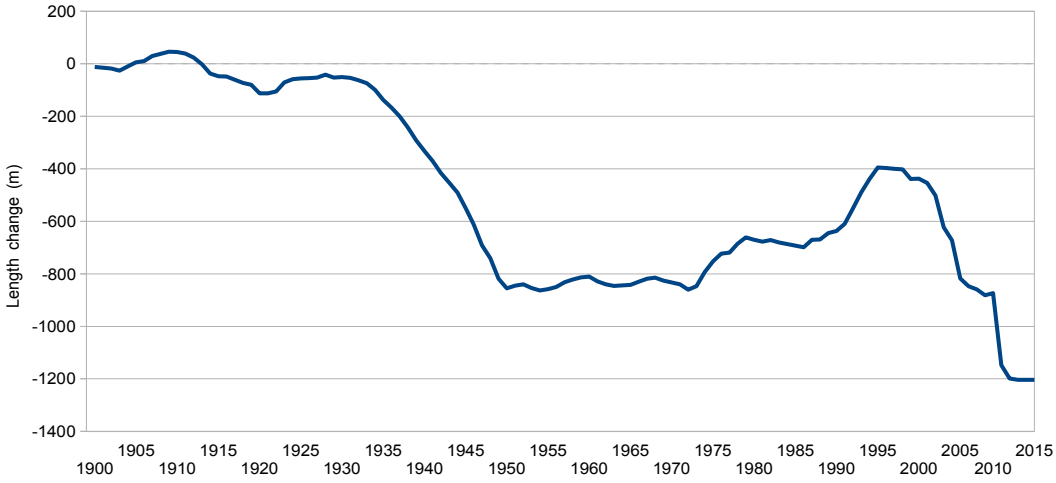


Figure 24 Changes in the accumulative length of the Briksdalsbreen between 1900 and 2015 (source NVE 2016).

Some researchers account for a reversed trend. Atmospheric-ocean coupled systems, such as the North Atlantic, current may reduce their effect and decrease the amount of warm water masses streaming into the Norwegian Sea, which is majorly contributing to Norway's mild climate. In that case, Norway would experience an intense temperature reduction lasting several centuries, feed-backing a growth of glaciers in the Jostedalsbreen compound (RAMBERG 2008: 583). As earlier mentioned, the effects of deglaciation are already visible and perceptible, exemplified by the retreating branch glaciers in Briksdalen, Bødalen and Erdalen. Further, effects of the driving factor climate are conceived in:

– Concurrently to the deglaciation, permafrost can partly dissolve and confront the inhabitants with increasing geo risks, such as rockfalls, landslides and flooding (NVE 2009).

223 Data for Briksdalsbreen, Bødalsbreen or Erdalsbreen were not available. Nigardsbreen is a neighbouring glacier located on the south-eastern side of the Jostedalsbreen complex.

- A changing species composition. Some invasive taxon will disintegrate native fauna and flora that scarcely adjust to rising temperatures (NORWEGIAN ENVIRONMENT AGENCY 2013).
- An expectable expansion of the total forest area. The tree line is downward-sloping and former semi-open landscapes will be covered successively with vegetation.

These processes are perceptible in the valleys by overgrowing the traditional and identity-establishing features of the so far described Inner Nordfjordscape. However, the interconnection, the direct and indirect effects of climate change and the cultural landscape change in the study valleys has not been researched entirely. Besides negative impacts, firstly referring to the cultural landscape aesthetics, positive consequences for the agricultural production, for instance, emerge (NORWEGIAN ENVIRONMENT AGENCY 2013).

Concerning the assessment of the present state of the cultural landscape in the case study valleys, vanishing glacier tongues, continuous overgrowing and the loss of the over centuries installed biodiversity are the main challenges for future cultural landscape management evoked by climate change. Ice mass retreat, exerted by ongoing human pressure turns the cultural environments, which have developed beneath the Jostedalsbreen, into either an ideal space of a typical Inner Nordfjordscape providing larger outfield resources or into overgrowing cultural landscapes.

5.2.2 Demographics

A vivid driver that corresponds closely to landscape change because of land use intensification issues is the demographic development (ANTROP 2005: 25). About cultural landscapes, population numbers had a continual impact on scale and intensity of land use concerning the resource extraction in the outfields of the study valleys during phases of population growth (DAUGSTAD 2005: 5). Stryn Municipality witnessed a population growth since the beginning of the central recordings in 1769 as Figure 25 (p. 159) displays. The numbers in the county and in the municipality grew simultaneously during the same period.

Consequently, land use intensification adjusted. Therefore, summer farming peaked in the mid 19th century (STETTEN et al. 2012: 288).

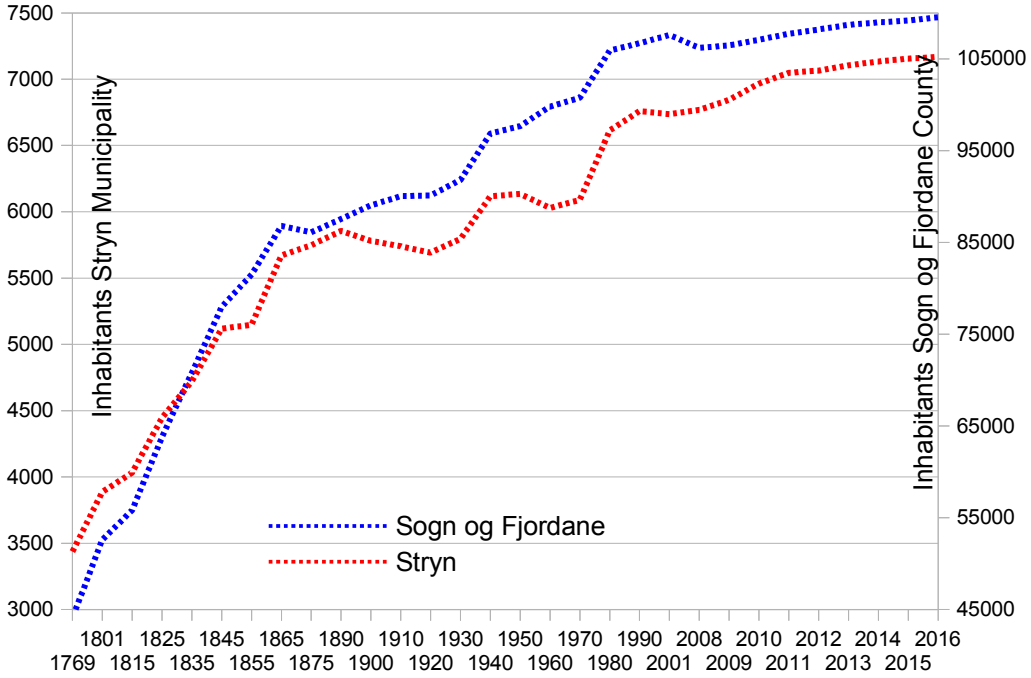


Figure 25 Population development in Sogn og Fjordane County and Stryn Municipality between 1769-2016 (source SSB 2016; SOGN OG FJORDANE FYLKESKOMMUNE 2016).

As a response to the population growth, the substantive provision of agricultural products and land use resources in the outfields was registered and impinging the development of the percept cultural landscapes sustainably in the past. Demographic growing and the enlargement of resource extraction are mutually dependent factors regarding the improvement of cultural landscapes.

- Current demographics

In the beginning of 2016, 7168 persons settle in Stryn Municipality[224] (cf. Fig. 25). On the range of the case study valleys, the population numbers[225] accounted 82 inhabitants in Erdalen, 143 inhabitants in Lovatnet and 122 inhabitants in Oldedalen. Figure 26 (p. 160) represents the development of the population numbers in each case study valley. By comparing the numbers of the valleys, Lovatnet area displays the highest growth rate and the most inhabitants during the research period. A significant geographic redistribution of

224 Representing 6.5% of the total population in the Sogn og Fjordane county.

225 Inhabitants of Bødalen are listed under Lovatnet and inhabitants of Briksdalen are compiled under Oldedalen area. These areal categories represent the smallest statistical units in the municipality regarding population numbers. Population assignment in the past was based on the population per farm holding. Each church parish registered these numbers.

population numbers in the area is identifiable. Municipality-wide, it is detectable that the demographic situation alters. By taking a closer look at the specific variables constituting statistical development, it becomes evident that the total population growth in the municipality is due to an increasing immigration. Currently, 16,8% of the people in Stryn Municipality are immigrants (STRYN MUNICIPALITY 2015; SSB 2015).

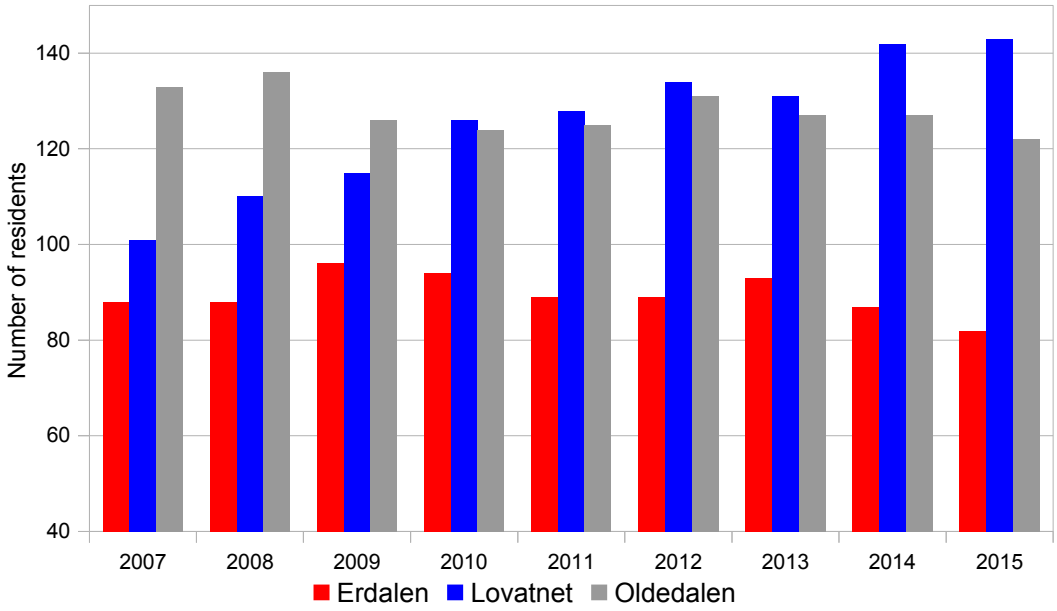


Figure 26 Population numbers in Erdalen, Lovatnet and Oldedalen 2007-2015 (source SOGN OG FJORDANE FYLKESKOMMUNE 2016; STRYN MUNICIPALITY 2016).

Without increasing immigration[226], the total population would have declined significantly during the past 20 years. A population development projection expects Stryn Municipality to grow up to 8227[227] dwellers until 2040 (STRYN MUNICIPALITY 2015). Although the population growths, an expansion of the agricultural based cultural landscape is not expectable, as it was in the past. Various reasons are accounting for this process respecting the demographics and the nexus of tremendous changes in agricultural production and sectoral occupation. Even a reversed trend that is diminishing cultural landscape areas due to present and future population development is to be expected. As already

226 19 immigrants in 1970, 206 immigrants in 2000 and 1085 immigrants in 2015 (STRYN MUNICIPALITY 2015; SSB 2015).

227 The county estimated 9084 inhabitants (SOGN OG FJORDANE FYLKESKOMMUNE 2014).

stated and displayed in Figure 27, 2014 marks a year with a decrease of the total population balance regarding the natural demographic indicator of birth surplus in comparison with migration. Henceforth, immigration can hardly compensate the losses caused by domestic migration and the low birth surplus. A negative total population growth is resulting in the long term, particularly among the ancestral population that might affect the constitution of cultural landscape action and communication arenas to a certain degree. The domestic migration numbers confer that plenty of autochthonous residents have left the Stryn area in the research period (cf. Fig. 27). Substantiated by the analysed data it is assumable that:

- Temporary absence occurs for university or higher education[228].
- Job opportunities for people with academic backgrounds are rare.
- Other individual motives.

In this respect and according to data collected in interviews, it is most probable that domestic migration happens within the group of young people:

> *"We have a new generation and they have a new life. A very different life from that we had, when we were young" (INT X 2011: 1). "(...) they are sitting more by the computer and they want to have not many, not too many hours working; they want to be free people and earn a lot of money but not do so much" (INT X 2011: 3). "But as I told you the new generation is lazier maybe" (INT X 2011: 8). "I hope that the next generation want to be goat farmers. That's maybe the biggest problem around here. When the farmers are old, none of their*

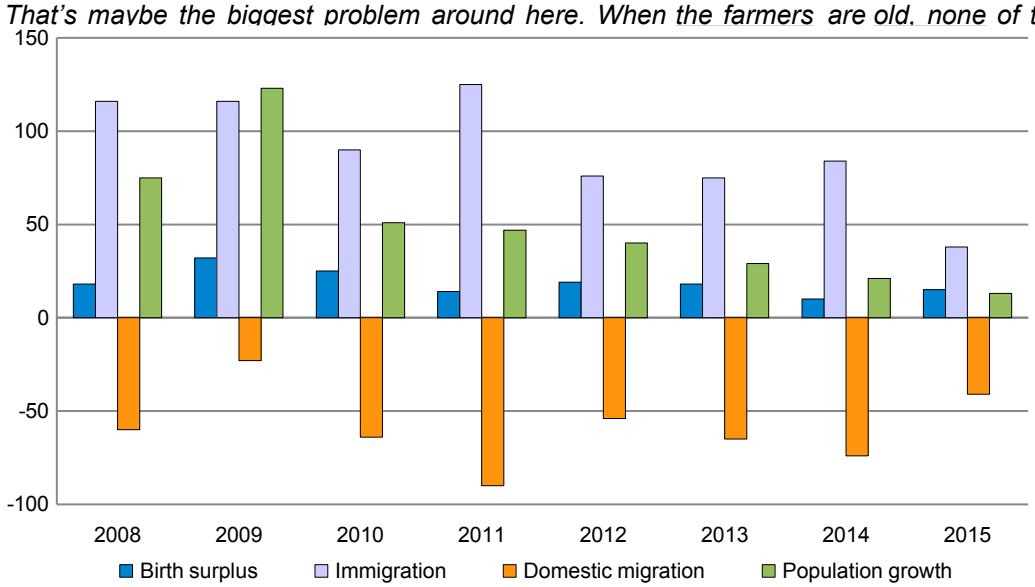


Figure 27 Demographic development in Stryn Municipality 2008-2015 (source SSB 2016 and SOGN OG FJORDANE FYLKESKOMMUNE 2016).

228 There is no university or university college in Stryn.

yeanlings wants to start farming. They see it's very much work and not very much money to get in it" (INT VIII 2011: 5).

Regarding this and according to the statements, the statistical peer group that turns out to be significant during the investigation regarding cultural landscape management approaches is the youth. However, the young people and their lifestyles play a crucial part in contributing to an intended future cultural landscape development via sectoral occupation, for instance. Apart age groups, the gender relation happens to be critical, when examining governance approaches. It is salient that in the female age group between 20-30 declines and women leave Stryn, whereas the male rather stay in Stryn area (cf. **CHART 32 No. 1** App.).

Population development in Stryn Municipality and the effects on cultural landscape development must be seen in an interaction of change in sectoral occupation and the overall economic development. The key is to attract the resident population to stay, on the one hand, and to work in agriculture and applying traditional forms of cultivation or other professions that affect cultural landscapes, on the other hand. By considering cultural landscape management as a community task and by applying governance approaches in the case study valleys, the identity-establishing function of cultural landscape elements become polar regarding place-making processes. It has been examined that women and students are excellent promoters of intended cultural landscape development and governance (FÜRST et al. 2008: 80).

In this regard, the present population development and the expected effects on cultural landscapes appear more complex. The doctrine of a homogenised rural population has changed. Today, rural communities are gradually mixed, partly because of a differing educational backgrounds and the participation in various occupational fields.

Furthermore, immigrating foreign workers, who come to Stryn because of economic reasons[229] might have no particular attitude towards an intended

229 Immigrants, primarily from the CCE countries, come to work in Stryn during the tourist season, the agricultural season or for working in the meat factory. It is usual that they work a couple of weeks in a row with little spare time and in turn they get some weeks off and return to their families in their home countries for that time. This kind of meta information was gathered in the aftermath of several interviews.

cultural landscape development in the case study areas. At the same time, such mandatory motivation can be generated by the need for foreign workers, particularly in the agricultural and the tourism industry. An interconnection between the individual educational background and the attitude towards to the apprehension of cultural landscapes mature meaningfully.

Population development is a future challenge regarding the construction sector and the need for residential buildings. The second home phenomena and income generation with tourism are also involved. A dilemma regarding cultural landscapes occurs: Protected natural and cultural landscapes have to be kept accessible to gain revenue from tourists. Consequently, more cultivated land has to be designated as developable areas on behalf of cultural landscapes.

Were the previous links between demographics and cultural landscape development based on overall numbers, the present nexuses depend on the individual willingness to apply oneself in the place-making process of cultural landscapes on-site, at least pertaining governance approaches.

5.2.3 Agriculture

In the context of discussing drivers of cultural landscape change, the primary sector occupies the central role. Cardinality evolves not only because of the nature of agriculture to shape landscape patterns. Agriculture in Norway is ascribed the capital responsibility to manage, upkeep and safeguard cultural landscapes. Self-sufficiency in food production and the protection of cultural landscapes, with a focus on the cultural heritage of farming areas, are the main arguments that actuate the subsidy-rich primary sector in Norway (BUGGE 2011: 203; GAUKSTAD 2006: 70; LYSSANDTRÆ 2006: 77p). Close to 3% of the total land[230] in Norway are cultivatable agricultural area. Only one-third of the total cultivated land is suitable for cropping and turns, forthcoming, into a scarce resource (BUGGE 2011: 203). This fact encourages a normative oriented cultural landscape awareness by agriculture regarding cultural landscape measures. Such a reality serves more and more as a thought-terminating cliché regarding agricultural production and cultural landscape

230 The numbers account only the infield areas. The outfield areas estimate for approximately 40% of the usable area (NORSK SAU OG GEIT 2015).

perception. Noncontroversial, agricultural production underwent tremendous structural changes in the case study valleys. Nearly all farming activities[231] are declining on a national, regional and local scale in Norway (SSB 2015). The county governor stated, in order to counteract, that:

> *"The county Sogn og Fjordane is to increase food production by 1% per year and to creating a diversity of workplaces in villages and to take care of the particular characteristics of cultural landscapes and to meet the basic national objectives within environment and climate" (HANDLINGSPLAN REGIONALT BYGDEUTVIKLINGSPRO-GRAM 2013-2015 (2013: 1).*

By centring on summer farming as the central cultural landscape feature of the Inner Nordfjordscape, a significant decline is acknowledged. The total numbers of active summer farms dropped. During 1939 and 2012, the amount decreased from 26400 to 1400 active summer farms in Norway (SNELLINGEN BYE et al. 2013: 54). Since 2000, the number of summer farms even halved. This picture is retrieved in the case study valleys as well, where active summer farming has been abandoned relatively early due to natural, economic and social accounts.

Mainly the outfield areas have lost the importance as an agriculturally productive area within the economic changes in agricultural production and it's dogmatic alignment during the 19th and 20th century. With the glacial expansion during the Little Ice Age, summer farming was suspended in Briksdalen. Presumably and based on various secondary sources, summer farming was not performed longer until the end of the 19th century.

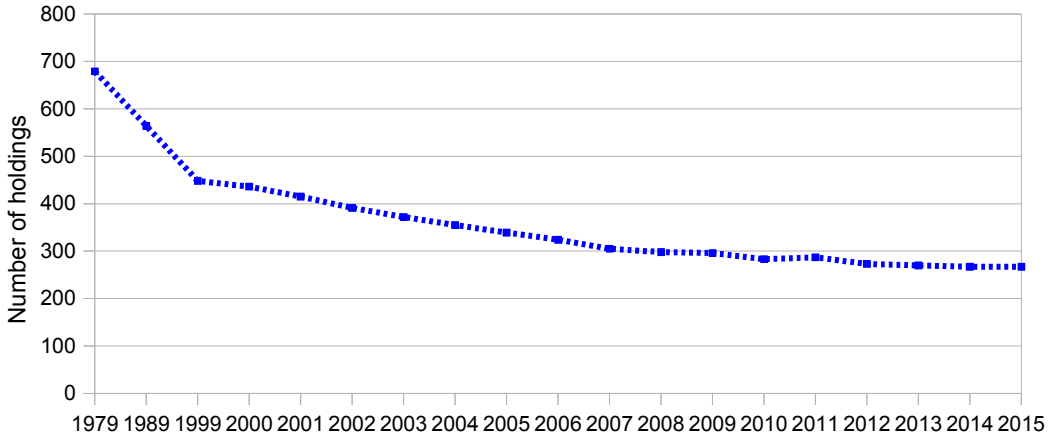


Figure 28 Number of agricultural holdings in Stryn between 1979-2015 (source SSB 2015).

231 Number of agricultural holdings, fully cultivated land, holdings keeping animals etc.

In Bødalen, summer farming was abandoned around 1935. Backing down from active summering was linked to the rock fall disaster at Lovatnet. Summer farming as a regular form of land use in Erdalen was suspended in the early 1950s.

An overall decrease in the total numbers of agricultural production units is detectable within the last decades. The number of farm holdings has cut off scarcely 50 percent since the beginning of the entire accounting period in 1979 as displayed in Figure 28 (p. 164). Agriculture as a driving factor, at least in the case study valleys, comprises two main process-features:

– The **production system**.
– The **spatial system** of farmland (DRAMSTAD and SANG 2010: 1).

The focus of identifying cultural landscape driving factors becomes recognisable in the dynamics of the spatial system of agriculture. It is acknowledgeable that the number of active farms in Stryn Municipality has halved throughout the enquiry period (cf. Fig. 28, p. 164). Today 270 operating farm entities run 34614 acres cultivated land in Stryn Municipality (SSB 2016; TILTAKSSTRATEGIE FOR SPESIELLE MILIJØTILTAK I JORDBRUKET STRYN KOMMUNE (2013-2016) 2012: 2).

- Agricultural area

Some key statistics concerning the current state of the agricultural land, the amount of farms and the average farm size compared on a national, regional and municipal level in Norway are displayed in Table 9.

	Agricultural land (acres)	Number of farms	Average size (acres)	Agricultural area (%)
Norway	9 861 480	42 876	230	83% cultivated land 17% grassland
Sogn og Fjordane County	429 850	3 034	141	59,4% cultivated land 40,6% grassland
Stryn Municipality	38 310	267	142	71% grassland 29% cultivated pastures

Table 9 Comparison of key agricultural statistics[232] on the national, regional and local level in Norway in 2014 (source SSB 2015).

232 The statistics relating to agriculture differ in terms of area, amount and absolute numbers on the respective administrative level. Leading statistics in the study at hand are the numbers provided by Statistics Norway (SSB).

The ordinary farm size increased in the economic processes of intensification and sectoral concentration. Cereal production and crop cultivation almost disappeared in the county and the municipality (SSB 2014). Potato, vegetable and fruit production exists within horticulture. Fodder cultivation is the economic component in agriculture (SLF 2014). Extensive milk cow and dairy production predominates in the mountainous regions of the west, cultivation and cereal production is more frequent in the eastern part of the country. Concomitantly to the outlined decrease of farm holdings in the municipality (cf. Fig. 28, p. 164), Figure 29 displays that the agricultural area in use has declined similarly between the period of 2005 and 2015. Considering the numbers of 2015, the amount of active agricultural area has recovered to a level that is still significantly below the number at the beginning of the data series. The issue, of a smaller growing number of active farm units that are cultivating more land, is identifiable. That is also owing to statutory regulations of the Agricultural Land Act, for example, which will be elaborated closer in the following. Intensification, specialisation, mechanisation and sectoral concentration characterise the primary sector in Norway. Resulting in the fact that the agricultural structure in Stryn develops into fewer and larger holdings.

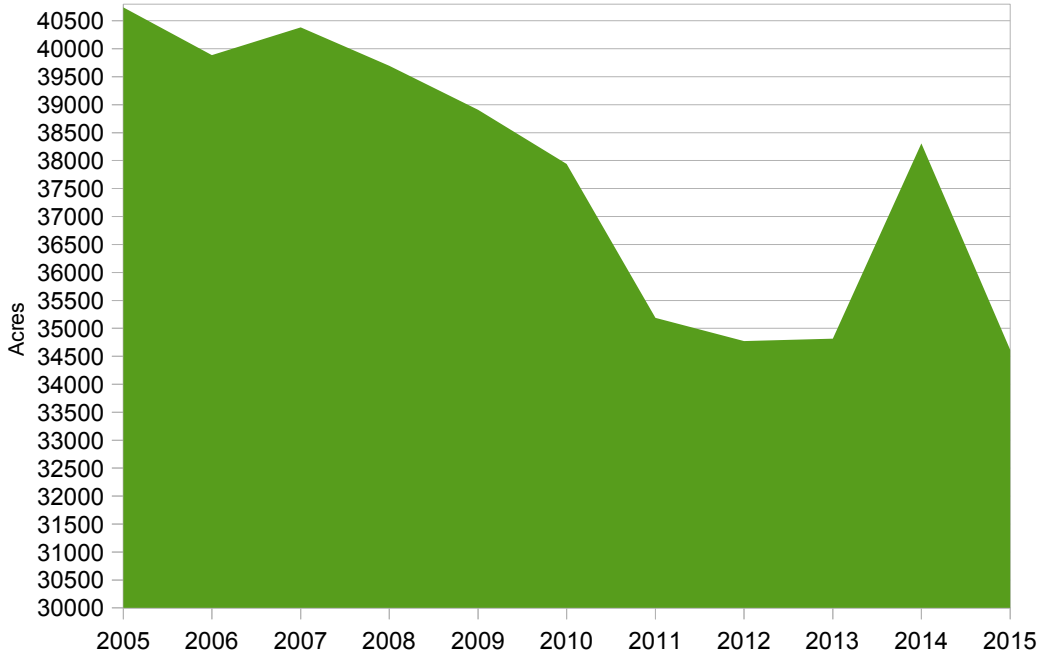


Figure 29 Agricultural area in Stryn Municipality (source SSB 2016).

Concerning cultural landscape maintenance, which inevitably rely on a diverse small-scale agricultural production and a dispersed settlement pattern in times of urban sprawl, new housing, industrial zones and road construction (BUGGE 2011: 203), the structural changes became challenging for management efforts of trivial cultural landscapes for food and fibre production and special protected areas with natural and cultural values. Although, the integration of both approaches is impelled, changing ways of agricultural production generate changing patterns of cultural landscapes that become visible in the landscape.

To point out the changes in agriculture and the effects on cultural landscape management, detailed numbers according to the type of land use on the cultivated areas have to be examined. Specific cultivation forms divide the agricultural area in use.

Figure 30 exhibits the development of surface cultivation for establishing grassland, cultivated areas for cutting grass and grazing and cultivated pastures within Stryn Municipality[233].

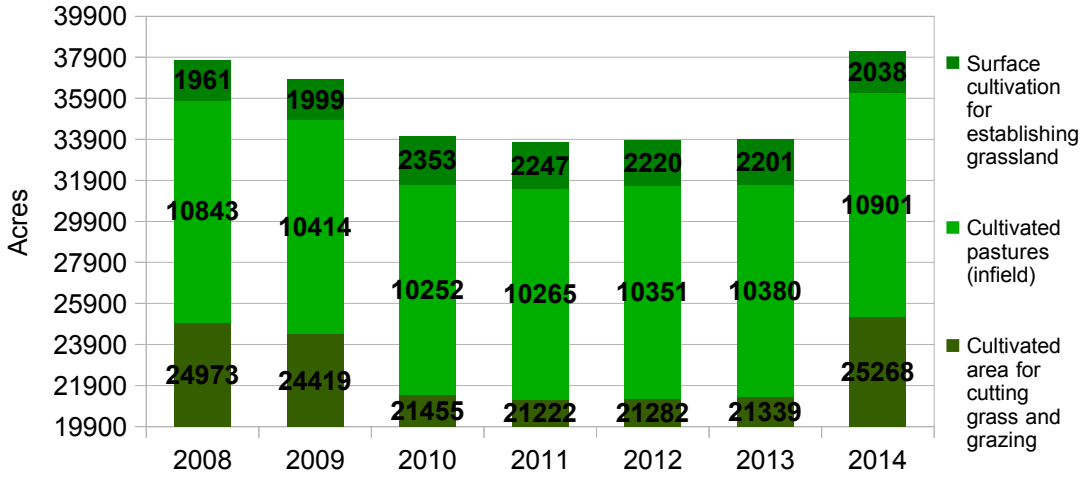


Figure 30 Division of arable land in Stryn Municipality during 2008-2014 (source SSB 2016).

As antecedently stated, the amount of cultivated area[234] in Stryn Municipality has declined during the research period, showing an increase between 2013 and 2014. Cultivated pastures[235] have reduced slenderly. Surface cultivation for

233 Detailed numbers for the case study valleys are not available.

234 Cultivated area *(Fulldyrket)* is classified as full farmland with normal ploughing depth (20 cm). It can be used for crop cultivation or as meadows. Cultivated area shall be renewed by ploughing (AGRICULTURAL AGREEMENT 2014: 34).

235 Cultivated pastures *(Innmarksbeite)* are classified as farmland that can be used as pasture but is not workable by machines. At least 50% of the area should be covered with grass (AGRICULTURAL AGREEMENT 2014: 34).

establishing grassland[236] has recognised a small increase. In order to qualify the structural changes in agriculture adequately, it is important to highlight data that have a significant impact on the trivial cultural landscape development. In order to classify the changes, it is important to give an overview of agricultural land in active use[237]. The cultivated infield pastures have changed insignificantly during the research period. An alteration of the cultivated area for cutting grass and grazing is recognisable in 2014. Winter fodder production takes place on the cultivatable fields in the lower valleys. These developments stand in close connection with the animal husbandry in the municipal area.

- Animal husbandry

Natural premisses and the topography on the foothills of the Jostdalsbreen complex pre-empted land cultivation to a great extent. Consequently, the farmers were heavily dependent on grassland-based animal husbandry.

Today, vast areas of the cultivatable land in the lower valley areas are used for the provision of livestock. The county Sogn og Fjordane promotes that close to 7% of the national milk, 9 % of lamb meat and 15 % of goat milk production is from the county Sogn og Fjordane (SOGN OG FJORDANE FYLKESMANNEN LANDBRUKSAVDELINGA 2015). Livestock husbandry is firmly rooted in the agricultural sector of the county Sogn og Fjordane. As previously outlined, the winter fodder provision restricted the amount of livestock per farm, due to limited access to resources. Today, the numbers of animals per farm are determined by the profitability. In any case, animal husbandry marks to somewhat the agricultural backbone of the area. Respecting cultural landscape management measures, livestock husbandry and in particular, the density and composition of herbivore communities in the outfield areas, have critical impact on structure and function of cultural landscapes (AUSTRHEIM et al. 2011: 286). The central objective is the grazing pressure, hence, the amount of grazing

236 Surface for establishing grassland *(Overflatedyrekt)* is categorised as cleared and levelled farmland (surface) that is workable and can be harvested by machines (AGRICULTURAL AGREEMENT 2014: 34).

237 According to the Agricultural Land Act (ALA), agricultural land in active use is subdivided into:

> *"'Cultivated land' (…) that must not be used for purposes that do not promote agricultural production (Art. 9), and 'Cultivable land' (…) that must not be disposed of in such a way as to render it unfit for agricultural production in the future" (Art. 9).*

livestock in the outfield areas of the case study valleys. Animal husbandry in the infield areas influences cultural landscape appearance in a mediate way. As depicted in Figure 31, the composition and amount of livestock changed during the examination period. Supposable effects on the cultural landscape are to be expected regarding an increasing overgrowing. Presently, sound decisions such as time consumption, the amount of work and the revenue by commercialisation and subsidies impact the composition of herbivore communities in the area decisively. The traditional tillering of livestock per farm changed throughout the past hundred years with recognisable effects. The various animal breeds grazing in the outfield valleys influence the visual aspect of cultural landscape relevantly throughout their variable grazing behaviour. The subsequent section presents the various livestock that is traditionally used for summer farming and pasturing in the valleys. Sheep herding has a long tradition in Norway. Wool, milk, meat and kidney fat became essential products (AUSTRHEIM et al. 2008: 52). Sheep prefer grass and herb species and in comparison to cattle, for instance, they are eating leaves from deciduous trees and scrub species. Although the grazing radius of sheep is wide, they prefer walking along paths (HESTER et al. 1999).

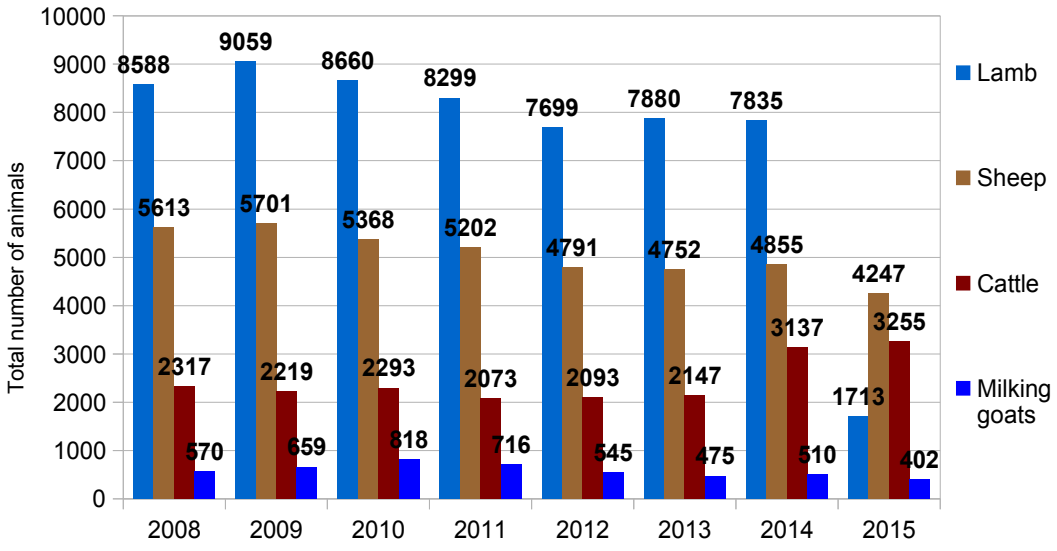


Figure 31 Number of the main grazing livestock species supported by the production and cultural landscape subsidies in Stryn Municipality (source SLF 2015).

As depicted in Figure 31, sheep and lamb are the majority of pasturing farm animals in Stryn. Sheep herding is entirely abandoned in Briksdalen valley, due

to the lack of active farm units. Erdalen farmers have relocated the sheep from Erdalen to Grasdalen[238]. Hence, sheep were not allowed to pasture in the outfield area on the Sandur of upper Erdalen according to specific agreements among the farmers.

> *"It's not allowed to have sheep on Storesetra. (…) almost every farm had sheep and goats. The sheep were sent out earlier in the spring, and when the cattle came, there was no grass it is an old rule" (INT VI 2007: 3).*

Bødalen is the only case study valley, in which sheep and lambs were grazing during the whole examination period of the inquiry.

> *" (…) sheep, there are, maybe between 200 and 250 (…) and we have also some kinds of sheep they are good to keep the landscape, but the sheep we have now they are only grazing but they are still holding open the paths and when they are away, also the paths are away" (INT III 2011: 5).*

The number of grazing cattle increased during the displayed period (cf. Fig. 31, p. 169). Regarding the summer farming, mainly economic decisions, particularly the production subsidies and the milk price are influencing factors.

> *"The situation here is, the cows get the calves in September, we milk them during the winter, and we dry them in June and 1st of July we dry them. So we have only the winter milk. The summer milk will be produced of the big; I call it cow house. It will be produced of the bigger; there are many farmers going together, building a big building. The calves are coming during the whole year. There is always milk. But the cows are not up in nature, that's the problem" (INT X 2013: 6).*

Cattle are selective grazers concerning vegetation height and terrain (WEHN et al. 2011: 183). Most likely cattle avoid areas dominated by junipers. They prefer graminoids, herbs, leaves of deciduous trees and shrubs. Cattle are assistive to prevent deciduous tree forest either by grazing or by trampling (ibid.). Cattle pasture in Bødalen and Erdalen. Animal husbandry as a driving factor is highly interconnected with other factors in agriculture, society and economy. About changing cultural landscapes in the case study valleys and the constant overgrowing of semi-natural landscapes, it becomes apparent that the general grazing pressure appears too low in the respective case study sites.

A significant trigger influencing the containment of green-tunnels are goats in the case study sites. They pasture junipers, leaves and bark. Pasturing

238 Farmers from Erdalen bought Grasdalen from the King to pasture sheep (INT VI 2007: 3).

behaviour of goats is less selective. It is proven that goats prevent continuous overgrowing by grazing the scrub vegetation (WEHN et al. 2011: 185). Goats are decisive for keeping semi-natural cultural landscapes sites open. In the case study sites, goat farming is an issue. In 1966, the last goats of Briksdal farm were grazing in Briksdalen valley (MELKEVOLL 2015). In Bødalen goat farming has been more or less abandoned in the early 1940s (INT III 2011: 3). Goat farming in Erdalen was suspended entirely in 2006 (INT LOG I 2007: 1). The composition and the degree of grazing pressure of livestock in the case study valley is dependent on:

  - Statutory regulations concerning the animal welfare that influences pasturing livestock in the case study sites.
  - Traditional grazing rights.
  - The amount of work that is connected to the livestock.
  - Production grants and other financial distribution systems influencing the type of animals in the outfield.
- Change of traditional animal breeds

An identifiable input to changing agricultural land use and, hence, dynamic cultural landscapes is represented by the change of livestock breeds. The study illustrates the variation of breeds on the example of cattle in the case study valleys. There are also endangered domestic goat and sheep species. With changing economic demands, traditional breeds in the Nordfjord, such as the *Vestnorsk Fjordfe*[239], became marginalised in agricultural production.

Figure 32 Comparison of domestic cattle breeds during the 20th century; Left: Norsk Rødt Fe, right: Vestnorsk Fjordfe (BUSKAP OG AVDRÅTT 1959 cited in LUNDBERG et al. 2004: 152).

Figure 32 illustrates the divergences in size and weight between the traditional *Vestnorsk Fjordfe* (VF) and the *Norsk Rødt Fe* (NRF) in 1959. The average

239 At the end of the 18th century, local variations of the *Vestnorsk Fjordfe* dominated. The Nordfjord breed was horned and black or grey (SKOG OG LANDSKAP 2007).

weight of a VF was about 250kg[240]; today the breed weighs around 400 kg. The NRF has an ordinary weight of 550 kg (LAGET FOR VESTLANSK FJORDFE 2012; SKOG OG LANDSKAP 2007; LUNDBERG et al. 2004: 152). The VF was commonly used for grazing in various valleys around the Jostedalsbreen.

> *"It was a rather small cattle breed that could live well with the meagre fodder offer and was very sure-footed in the landscape" (PROTOCOL LOG I 2008: 2).*
>
> *"The cows 100 years ago, they looked like a calve, and they were very small. So the animals are much heavier now than they were at that time" (INT III 2011: 6).*

Today, the VF is considered as an endangered breed and, consequently labelled as a national breed and supported by subsidies to protect it. VF typifies a cultural landscape element. A national cow register for domestic breeds was introduced, listing numbers of VF grazing in Norway (SKOG OG LANDSKAP 2015). Between 2011 and 2014, there were no records about VF grazing in the case study valleys (NORSK GENRESSURSSENTER 2015).

The NRF is the dominating breed grazing in the case study valleys. Respecting the average weight of the NRF, it is assumable that the animals may have problems with the pasture terrain in the outfields. They may not climb steep slopes for grazing that is affecting the landscape appearance significantly regarding the overgrowing.

> *"Perhaps use the different areas better than many of the cattle we are using now. Because they are very big, and they aren't that clever mowing in the steep hillsides. They can't use all the areas there are for grazing" (INT IV 2011: 4).*

An interrelation between the extension of roads leading to the summer farms and changing animal breed is recognisable because the animals are transported to the pastures by car.

- **Synopsis of the agricultural driving factors**

Pursuing statements can be made by summarising the cultural landscape driver agriculture in the case study valleys:

– An overall loss of active arable agricultural land in the infield is hardly significant but existing due to the numbers regarding the total decrease of agricultural area (cf. Fig. 29, p. 166) in Stryn Municipality. Out of that

240 Today, the breed weight in average is 400kg (SKOG OG LANDSKAP 2007).

fact and according to the regulations in the Agricultural Land and the Concession Act, a dilemma emerge: Tenancy farming is required and shall counterbalance the alteration of arable land. Albeit, tenancy farming does not promote the same level of cultural landscape management effects on farmland than the farming performed by the original land owner. Detail management of cultural landscapes might get lost (DRAMSTAD and SANG 2010: 947).

- Grassland farming is the dominant land use in Stryn and undergoes sectoral concentration.
- Abandonment of summer farming in the case study valleys is evident.
- A decrease of agricultural activities in the outfields based on livestock and a decreasing grazing pressure is recorded.
- A relation between relief parameter and intensity of land use is resultant, hence, a change in management measures is effective.
- Goat farming is abandoned in the case study valleys.
- Milk cows in Erdalen and Bødalen, and sheep in Bødalen are the remaining pasturing species.

The structural changes in agricultural production persist the trivial cultural landscapes. Particularly the outfield areas and former summer dairy farm sites beneath the glaciers are declining. Current activity ensues economic incentives rather than intended management actions.

Beside the aesthetic modification; these dynamics inflict the danger that intangible cultural heritage is disappearing. These processes in historical grown cultural landscapes demonstrate a firm de-vaccination of their distinctness with far reaching consequences.

5.2.4 Sectoral occupation[241]

The change of sectoral occupation interrelates to the demographic and agricultural driver of cultural landscapes (SCHENK 2008: 74). Norway is among the countries with the lowest percentage of the workforce employed in farming

241 Data are only available for the year 2014, data for 2015 will be available in June 2016 (SSB 2016).

(MURPHY et al. 2014: 228). That confirms an emblematical process for the primary sector in industrialised countries.

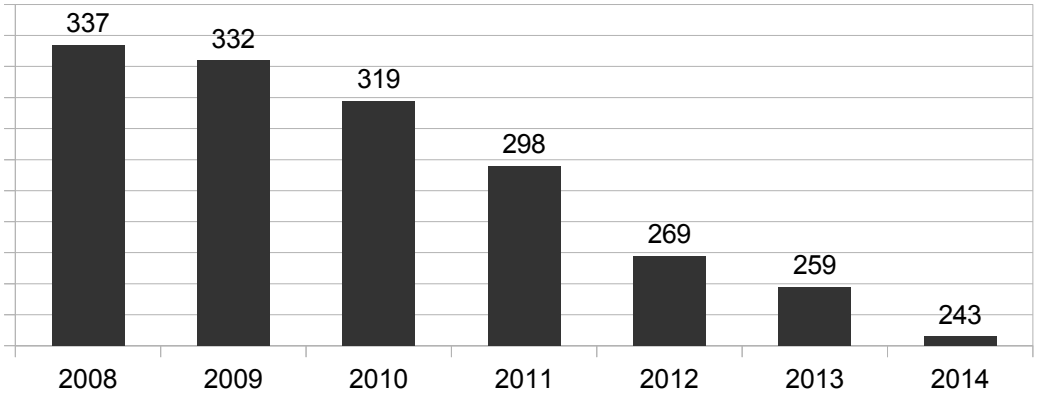


Figure 33 Employees in agriculture, forestry and fishing in Stryn Municipality 2008-2014 (source SSB 2014).

Figure 33 depicts the numbers of employed persons in the primary sector in Stryn Municipality. It is acknowledgeable that the amount of workforce in agriculture, forestry and fishing has steadily reduced during the study period analogous to the current structural changes in the agricultural sector and demographics. In 2008, 337 persons were employed in the primary sector in Stryn Municipality. 2014 displays the lowest sum with 243 people (cf. Fig. 33, 34). In the same year agriculture, forestry and fishing had an overall share of 7.29%.

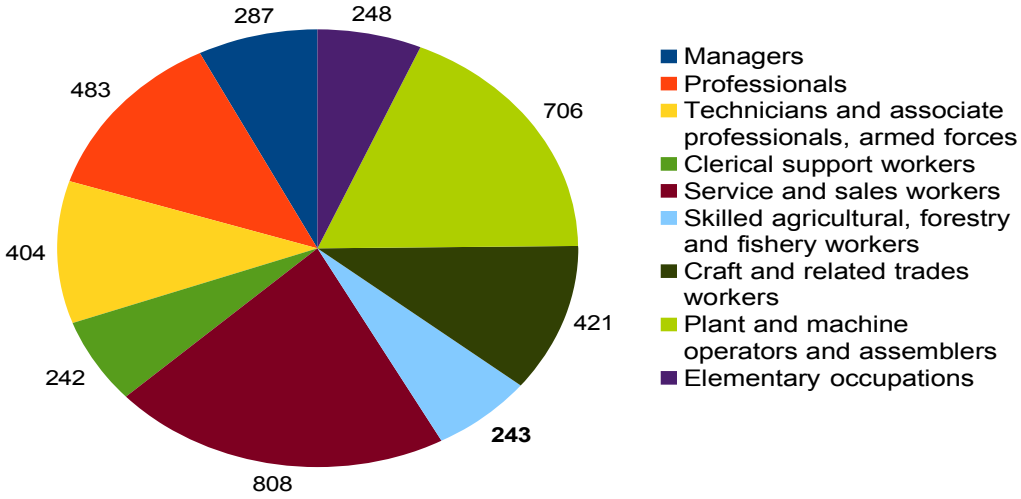


Figure 34 Workplaces in Stryn Municipality by occupational distribution 2014 (source STRYN MUNICIPALITY 2016; SSB 2014).

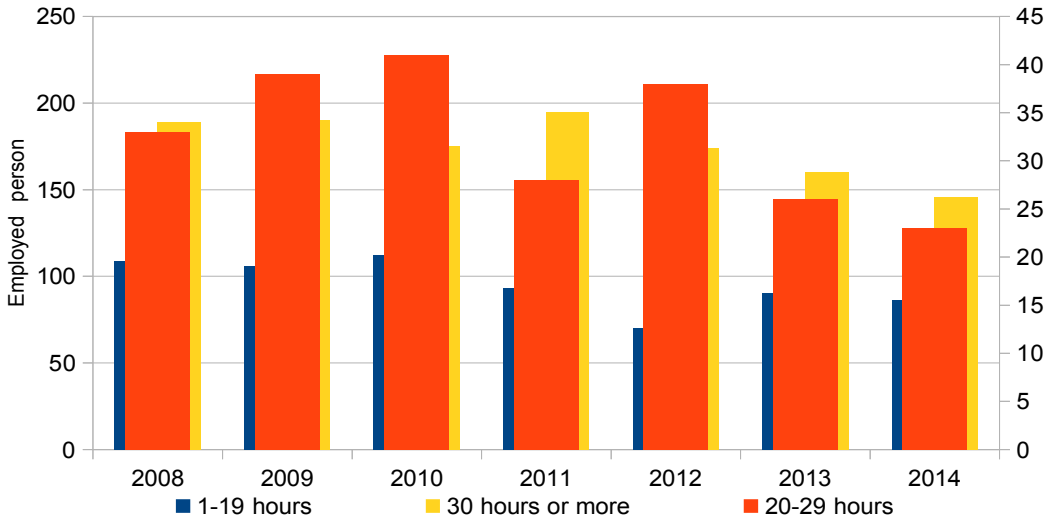


Figure 35 Employees in agriculture, forestry and fishing in Stryn Municipality by settled working hours during 2008-2014 (source SSB 2015).

In comparison to the county Sogn og Fjordane with 4.68% and the nationwide rate of 1.94%, Stryn is still widely dependent on agricultural production regarding employment (SSB 2015). During the research period, the amount of workforce in the agriculture decreased around 21,4% (STRYN MUNICIPALITY 2015). Close to a quarter of the employed persons in the agricultural sector are women (FYLKESMANNEN 2015). The change of occupation in rural Norway is an essential driving factor, as working in agriculture was the dominant form of employment. Unquestionably this is a nationwide process, although Stryn shows above-average numbers of employed in the primary sector. Considering the numbers regarding the fragmentation of the working hours in the primary, displayed in Figure 35, it is observable that the number of full-time farmers has dropped recognisably in Stryn. Part-time worker declined likewise. Such a process has noteworthy effects on the cultural landscape. Agricultural intensification and a reduction in working hours are directing to a lessening in cultural landscape management efforts. Moreover, pluractivity has been an employment adoption in rural Norway (HETLAND 1986: 385). Particularly the type of work outside the agricultural sector is decisive. The general occupational structure in 2014 is displayed in Figure 34 (p. 174). Since the industry growth in the first part of the 1990s, the food producing sector developed to the largest

employer in Stryn. 342 workplaces in Stryn Municipality were provided by the food production sector in 2014 (STRYN MUNICIPALITY 2015). Changing sectoral occupation indicates an increasing heterogeneity of the rural population in Western Norway.

5.2.5 Traffic

Accessibility and transport facilities played a crucial role in the case study area. Over time traffic intensified and left marks on the cultural landscape. The Jostedalsbreen operates as a traffic junction between the valleys on the east and the west of the ice cap. Until the *Gamle Strynefjellsvegen* was built, people crossed the glacier on bridleways, hiking paths and cattle drift tracks. Remnants can still be found on-site (STATENS VEGVESEN 2013). Central aim of today's traffic stipulation is:

> *"Facilitating travel and other outdoor activities. Cultivated pastures area, roads and paths in cultural landscapes are important for traffic and outdoor activities. It is desirable to help build traffic routes and increase availability to traffic particular in the vicinity of settlements and dense capitals" (REGIONALT BYGDEUTVIKLINGSPROGRAM 2013-2016 (2011): 26).*

- Inter-regional traffic

Today, the main road[242] 15 (RV 15) is the primary traffic link connecting Otta and Måloy on the coast. It is one of the major traffic ways into the Nordfjord (cf. **CHART 29** App.). Stryn Municipality is located on the main traffic route to the coast. In October 1978, the constructed road over Mt. Stryn, the *Grasdalslinia*, replaced the *Gamle Strynefjellsvegen*. Reinstatement was necessary because the old road was closed each year weather-bound between October and March. Economic reasons reinforced the constructions of the RV 15. To this effect, three tunnels[243] had to be built through the mountain range of Mt. Stryn. In 1996, the Hjelle tunnel (2561 m) was opened and operated as a by-pass for the moving traffic that connects Folven in Sunndalen and Erdalen continuing in the direction of Stryn. Before then, traffic had to transit through the small parish of Hjelle. At the same time, the *Gamle Strynefjellsvegen* was designated as one of

242 Called *Riksvei* in Norwegian.
243 *Ospelitunnel* (2549 m), *Grasdalstunnel* (3720 km) and *Oppljostunnel* (4337 m).

18 National Tourist Roads in Norway and is explicitly marked as a nationwide tourist destination. Long rows of guard stones on the wayside that is partially crossed by old cattle drift tracks, or traditional bridleways characterise the winding road up to the highest point of 1139 m (NRK FYLKESLEXIKON SOGN & FJORDANE 2014; STATENS VEGVESEN 2013). Until the 1930s, boats were the primary means of transport for the dweller in the fjords (RUI and GRENDSTAD 2004: 26). The road connection alongside Lake Stryn was built in 1923. Today, a tributary road via the E39 close to Hornindal Municipality attaches the E15 further westwards. E39 connects Trondheim and Bergen and ties Stryn Municipality on the north-south direction. In 2004, the Norwegian government decided to join Stryn Municipality directly to E39.

Constructions of a bridge over the Faleidfjord and a tunnel underneath Mt. Utvik became necessary. Traffic density rose. Respectively,

– Individual traffic improved.
– An increase of transportation of goods via truck traffic is assumable as some statistics conjecture (cf. **CHART 29** App.).
– Stryn Municipality is within reach for tourists by cars, campers and coaches.

The general response to an improved inter-regional connection is an increasing congestion[244] with attached consequences for the cultural and natural landscapes and the population living in the vicinity to the main traffic routes by an amplification of various driving factors. Cultural landscape areas are reduced by an expansion of traffic routes in the municipality. In reverse, the demographic development recognises a demographic increase along the main traffic routes in Stryn (SOGN OG FJORDANE FYLKESKOMMUNE 2016).

- Small-scale traffic

Road access plays an important role in safeguarding, managing and upholding cultural landscapes on-site. It is identifiable that summer farms around Stryn area that have no road access display a modification in grazing pressure with the consequence that meadows and pastures are fading and the green-tunnels are spreading. In contrast to these areas, summer farms with road access can

244 An increased heavy traffic is recorded, comprising vehicles that are longer than 5,5 m and >3,5 tonnes total weight (STATENS VEGVESEN 2015).

be characterised by either, an insufficient use due to economic and social reasons, or an excessive use of the outfield areas. Former moderately grazed cultural landscape ecosystems, often rich in species, are cultivated or fertilised for intensive grazing. As a result, a reduced species richness, and after some years soil degradation and erosion appear. Overuse by sheep or milk cows takes place by transforming the grown cultural landscape to a certain degree, as it is the case in Erdalen. In some mountain areas, the availability of road has led to an excessive sheep or cow grazing, far outnumbering the traditional number of grazing animals. Furthermore, the development of tourism and the building of second homesvon former summer farms is destroying valuable cultural landscape ecosystems (PANCULTLAND 2006).

- Waterborne traffic

Boat traffic was the only mean of transportation in the area to reach the dispersed settlements in the fjord valleys in the past. Because the area had no road system. Today, boat traffic mainly comprise water sports and recreation and with a growing and pertaining impact on cultural landscapes to tourist transportation on the lakes[245]. An increasing sum of cruise ships effects cultural landscape as tourist attractions in the case study valleys. Olden quay[246] is a popular destination for cruise ships. Figure 36 displays the growing passenger number shipping into the Nordfjord.

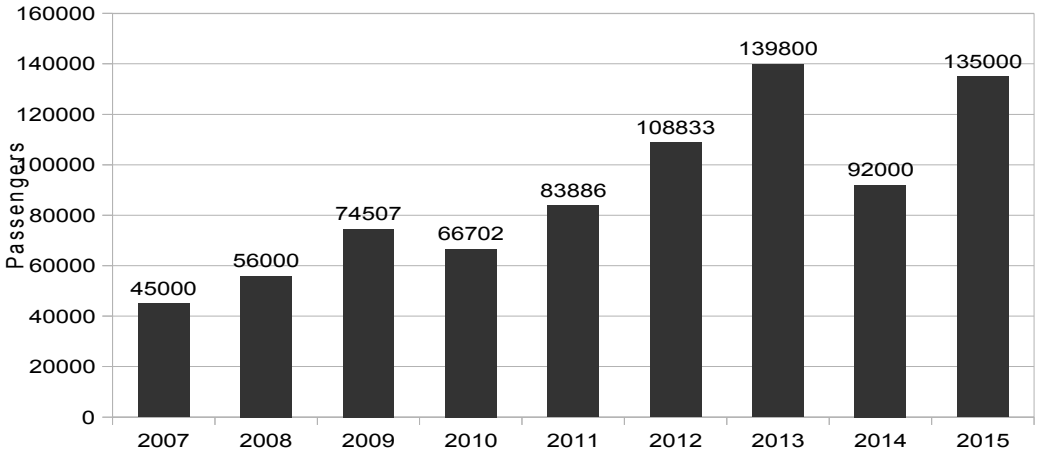


Figure 36 Passenger numbers for Olden quay 2007-2015 (source STEINAR 2014: 12; NORD-FJORD.NO 2015; FJORDINGEN 2015).

245 The revitalisation of tourist boat traffic on Oldevatnet in 2005.

246 A second quay is planned to be built in the near future, the planning process is ongoing (STEINAR 2014).

- **Interim conclusions on the driving factors of cultural landscape change**

Cultural landscape dynamics, as they occur in the case study valleys are the results of complex stimulus and response nexuses between natural, economic and social parameters. The so far discussed drivers and pressures of cultural landscape change enfold an individual impact scale on-site. In this regard, the study at hand differentiates between a quantitative and qualitative cultural landscape change. A quantitative change, referring to numbers that measure successively overgrowing[247] areas is not investigated in the present inquiry. The qualitative change becomes perceptible by a closer observation of the residual cultural landscape elements and components in the case study valleys and the management measures they are subdued. Furthermore, the qualitative change affects the associative cultural landscape. On this occasion, qualitative change assessment, as presented in the case study valleys, refers to protected cultural landscape environments, or entities, which rely on certain land use practices within a selected natural or cultural values protection approach. It plays a subordinate role, whether the change is immediately expressed by green-tunnels or by altering economic requirements in agricultural production. The earlier presented driving factors and pressures of cultural landscape change highlight only a segment and do not reflect the total range of influencing factors on cultural landscapes. A lot of participating sectoral policies try to comply or counteract these changes in multiple ways. Their effects on the qualitative change and potential correcting measures in the form of cultural landscape management are given precedence to in the present investigation.

Next paragraph interprets the change of the examined cultural landscape areas and the driving factors and pressures that force the change in the case study valleys, the related stakeholders, their interaction and behaviour become significantly important concerning measures that have to cope the change. Stakeholders implement cultural landscapes either as private or multifunctional and heterogeneous common goods. At the same time, stakeholders exert

247 The present study has not calculated a quantitative conversion of cultural landscapes to overgrown cultural landscapes. Such a matter is content for future research by applying methods of remote sensing, for instance.

specific drivers and pressures on cultural landscapes because of their behaviour, by applying preventive or institutive actions around those.

5.3 Multiple stakeholders on multiple scales

The contiguous section gives a summary of the key actors[248] and their constellation and networks regarding the constitution of cultural landscape action, communication and identity arenas in the case study sites. The section becomes essential for two reasons:

- The stakeholders' interconnection regarding the spatial qualities and resources provided by the multifunctional and heterogeneous common good cultural landscape on-site.
- The stakeholders constellation and their incorporation regarding cultural landscape management measures.

Moreover, the configuration and acquisition within the constitution process of cultural landscapes as action, communication and identity arenas facilitating cultural landscape governance frameworks are central. While discussing and constituting action, communication, and identity arenas, the organisational field[249] of the related stakeholders becomes fundamental. Notably, in the case about how cultural landscape management issues are broached and decisions are implemented within the powerful institutional framework. Despite, the perspective on common regulatory processes differ between administrative stakeholders and none-administrative stakeholders. On that account, conditions for governance arrangements and the constitution of communication arenas in cultural landscapes are subsistent. Introducing the term stakeholder[250] is a conscious decision in the present research and the term actor could be used

248 The term stakeholder has been given preference to the term actor in the research.

249 The term is applied as: "*Fields identify communities of organizations that participate in the same meaning systems, are defined by similar symbolic processes, and are subject to common regulatory processes"* (SCOTT 1994: 71 in GAILING 2012: 153).

250 The Cambridge dictionary (http://dictionary.cambridge.org/de/worterbuch/englisch/stake-holder accessed 15.12.2015) defines the term as: *"A person such as an employee customer, or citizens who is involved with an organization, society etc. and therefore has responsibilities towards it and an interest in its success."* The Oxford Advanced Learners dictionary (http://www.oxfordlearnersdictionaries.com/definition/english/stakeholder?q=stakeholder; accessed 15.12.2015) describes the term as: *"A person or company that is involved in a particular organization, project, system, etc., especially because they have invested money in it: The government said it wants to create a stakeholder economy in which all members of society feel that they have an interest in its success."*

instead. According to FÜRST (2008: 77), the term stakeholder comprises: *"(...) anybody who has an interest in cultural landscape"*. Moreover, the scope of cultural landscape stakeholders can be widened by the civic society per se. The ELC, for instance, defines cultural landscape as an area perceived by people (SCHENK 2011: 112; JONES and STENSEKE 2011: 8; COUNCIL OF EUROPE 2000 ARTICLE 1a) and supply a guiding principle regarding cultural landscape management. It can be expressed that: *"(cultural) landscape is the concern of everybody"* (JONES and STENSEKE 2010: 1). Such a brought definition of the apprehension of the term is leading to an extensive 'stakeholders landscape' that is hardly mappable. Within the examination, the wide definition includes all national, regional and local administrative units and organisations complying with formal institutions regarding cultural landscape management, central non-governmental or administrative organisations and individuals, who's cultural landscape management actions are driven by informal institutions, with a high affinity for cultural landscape on site. The stakeholder investigation focusses on three core occasions.

- Legitimacy, describing the institutional position, ascribed or acquired rights which are formalised by laws or through public consent.
- Resources, comprising knowledge, expertise and capabilities, as well as material and immaterial resources that allow the stakeholders to exert a formative influence on the issue.
- Connections, the number and quality of relationships with other actors who are under obligation to or dependent on other essential stakeholder (GESELLSCHAFT FÜR TECHNISCHE ZUSAMMENARBEIT 2007: 9).

According to this example, the study at hand refers to the glossary in the Appendix, in which the major stakeholders regarding cultural landscape management are listed and explained. According to the remarks made so far and with respect to cultural landscapes as multifunctional and heterogeneous common goods, it is assumable that a majority of people is positively interested in the success of cultural landscape management within communities. Identity and self-awareness as well as the economical use of cultural landscapes are unifying concepts that may capture the differing views. Thereupon, the

fundamentals for cultural landscapes as action and communication arenas are predicated. An effort to scale the wide range of stakeholders is made by FÜRST (2003), who fundamentally groups them according to their logics of action regarding cultural landscapes. Based on the theoretical remarks, FÜRST'S classification assists to operate with the terminology more adequate within the scope of the present study. It conjoins the institutional coherence of central sectoral policies and the respective organisations that implement them. Recurring to the variation of cultural landscape management in Norway, a multilevel management and the definition of goals is mainly influenced by central sectoral institutions predefined by formal political-administrative structures and policies that follow a political agenda[251]. On a decentralised level, municipality, civil society and commercial stakeholders cooperate on formal or informal institutions regarding cultural landscape management.

A synoptical view of stakeholders related to the study aims and objective of the current analysis is showing Figure 37 (p. 188). The mentioned constellation of stakeholders as regards to the constitution of cultural landscapes as action and communication arenas is complex. The involved parties are multi-scalar and partially interrelated (cf. Fig. 37, p. 188), hence, interconnected either functionally or individually. In the context of the case study valleys, various stakeholder levels can occasionally be occupied by the same person or group of persons. Related to the theoretical considerations for the intended design of cultural landscapes as action, communication, and identity arenas, the stakeholders constellation are of central importance. Stakeholders with overlapping logics of action are marked as intermediate stakeholders. By a variety of stakeholders that are appointed to different organisations and administrations, individual goal orientation is immanent. Either purposes of an action are determined by formal and informal institutions or by economic incentives. An effort to unify the concomitant stakeholders in a communication and identity arena plays an essential aspect. Cultural landscapes offer different stakeholders a platform of communication on the level of intended cultural

251 It becomes evident by contrasting the policy change in cultural landscape management after the conservative government took office in 2013.

landscape development, who otherwise would have possibly never entered into a dialogue.

- **Stakeholders constellations**

As regards to the multi-level and multi-scalar stakeholders in the research, the interrelatedness and connection among those are vital while highlighting current cultural landscape management measures. Particularly, according to the indication of potential evolving and actual discourses, conflicts, dilemmas and paradoxes around the management of cultural landscapes as heterogeneous common goods. The following section describes some substantial nexuses between the stakeholders and their impact on cultural landscape management and, hence, development on-site. Subsequently, a compiled summary on various stakeholder constellations is presented. Prior, each group of logics of action is outlined briefly:

- Hierarchy

Hierarchy comprises the national, regional and municipal legislative and executive administration (cf. Fig. 37, p. 188) (cf. **Glossary** App.) with their related structures of power. Table 10 gives an overview of the cultural landscape management levels within the hierarchy logics of actions.

National	Regional	Municipal
Parliament	Sogn og Fjordane County Council (Fylkeskommune)	Stryn Municipality Council (Kommunestyre)
Government (Ministries)	Sogn og Fjordane County Governor (Fylkesmannen)	Stryn Municipality (Stryn kommune)
Governmental Agencies (SLF, SNO, RA)	Regional SNO office	
	Jostedalsbreen National Park Board	

Table 10 Multilevel and multi-scalar cultural landscape management affiliated administration.

The hierarchy stakeholder unit has a strong legitimacy traditionally due to their institutional position and the ascribed and acquired rights and powers, which are mostly formalised by statutory regulations. In this stakeholder configuration, the power structure plays a crucial role. Related to the hierarchy of spatial

planning, the sectoral policies and statutory provisions are top-down affected[252].

The municipalities represent an exception; as they can manage cultural landscapes bottom-up oriented via zoning (cf. Chap. 5.4, p. 209pp). Even so, their plans can be reviewed by the county governor, if necessary concerning matters of environmental protection, agriculture, health and social care services, family affairs, education, building and planning, emergency preparation and municipal law and finance (FYLKESMANNEN 2015).

Agriculture and environmental protection, as two central sectoral policy fields regarding cultural landscape management effectiveness, are subordinate to the national policy aims and goals and the local implementation are monitored by the county governor. Since the reform of administration in 2007, the tasks of the Sogn og Fjordane County Council were expanded by diverse fields, including cultural heritage administration. The county council is an elected authority, this is the prior argument by transferring cultural heritage to the county council, and hence, cultural heritage becomes a more democratic legitimatise issue regarding the protection worthiness of single elements and components of cultural landscapes[253]. It is reasonable that the hierarchy's logic of actions align accordant to the three core strategies of cultural landscape apprehensions (cf. Chap. 5.4, p. 191) and, foremost, to comply with the deduced formal institutions (cf. Chap. 5.4, p. 194p).

Hierarchy’s logics of action regarding cultural landscape management are concentrated on the progression of the three primary paths regarding management efforts and an intended cultural landscape development in Norway. The general focus is on cultural landscape management within the sectoral policy field of agriculture.

- Market

The market-related stakeholder unit join economic logics of action around cultural landscapes. This structure incorporates:

– Farmers, land owners and the food processing sector.

252 Commonly conceptualised by the government, applied by the county and municipal administration and executed by the municipalities.

253 This reference was made by a member of the Norwegian Directorate for Cultural Heritage during informal talks at a conference.

– Small and medium-sized enterprises that operate in tourism, profit from tourism (cf. Fig. 37, p. 188) or apply the cultural landscape as an image or brand.

An ascribed prominent position of agriculture by hierarchy, public consent and resource provision exerting a formative influence, legitimising the domination of the primary sector in this stakeholders' group. Thereby, the agricultural market stakeholders deploy cultural landscapes intentionally as a private good that creates cultural landscapes as an external effect. All taken management measures are scaled and assessed according to profitability, incorporating cultural landscapes as important for food and fibre production. It is verifying that the profitable investment of private goods guides the logics of action among the agricultural related stakeholders. The tourism industry, on the contrary, exerts no specific logics of action regarding cultural landscape management. It is mainly integrated and networked by the intermediate stakeholder Destination Stryn & Nordfjord. The logics establish on-demand oriented and stated actions in consultation. Destination Stryn and Nordfjord is an influential institution to condense the varying and partly distinct stakeholders in the tourism division under hierarchical leadership.

• Solidarity

Solidarity comprises, as previously mentioned, those who have a genuine interest in cultural landscapes. This group of logics of action embraces many stakeholders, who are also categorised in the other two classifications. Every natural person is consuming common goods, services and resources provided by the cultural landscape; or individuals hold a private share on the heterogeneous multifunctional common good.

Logics of action respecting cultural landscape management are very much founded on informal institutions and common world views. The cultural landscape takes place on a cognitive level on which affiliation, identity, self-awareness and home grounds. Many solidarity stakeholders emerge as cultural landscape mediators due to their personal commitment and voluntary work in cultural landscape management in the case study valleys. These stakeholders are singly interconnected to the stakeholders of the other logics of action.

- Intermediate stakeholders

As displayed in Figure 37 (Fig. 188), intermediate stakeholders traverse the different categories. The two farmers associations acquire a prominent position intersecting market and solidarity. Another particular position intersecting the various categories hierarchy and market is the Destination Stryn& Nordfjord agency. This municipalities owned institution promotes and distributes tourist activities for the market stakeholders. Public research facilities transverse the solidarity and the hierarchy stakeholders group likewise. They can be seen as an information distributor about the physical-material cultural landscape and the socially constructed dimension. As earlier stated, some stakeholders belong to various categories. That is why it is, even more, necessary to indicate informal institutions that are essential for stakeholders logics of action regardless any statutory or economic prerequisites. The next parts of the research at hand examine the nexuses between the stakeholders concerning their logics of action and cultural landscape management efforts.

- Hierarchy and solidarity

According to the results of the institutional analysis, the interaction and link between hierarchy and solidarity respecting cultural landscape management are chiefly grounded on two leading nexuses. The first link is statutory incorporation as the public participation in spatial planning on municipal level is granted by the Planning and Building Act (PBA) in Chapter V Section 1:

> *"Anyone who presents a planning proposal shall facilitate public participation. The municipality shall make sure that this requirement is met in planning processes carried out by other public bodies or private bodies."*

Section 5-2 PBA gives the details about consultations and public scrutiny. According to section 5-3 PBA, regional planning forums should be introduced in every region. The second nexus is a less statutorily characterised network. Hierarchy encourages market and solidarity to use cultural landscapes actively for agriculture, recreation purposes and touristic development. Additionally, the state and the respective administration supports and address the valorisation of cultural landscapes for tourism (REGIONALT BYGDEUTVIKLINGSPROGRAM 2013-2016, SOGN OG FJORDANE REISELIVPLANEN 2010-2025). These networks are based on a functional incorporation. Affiliations are loose, project

related or forced by individuals[254]. Hereof, this specific stakeholder constellation inherits the highest potential for governance frameworks.

Understanding cultural landscapes as multifunctional, heterogeneous common goods, an activation of societal stakeholders can be effortlessly to enforce particular commitment and voluntary work regarding the management of the common good cultural landscape within communities, as the efforts ground on informal institutions. Hierarchy is willing to support such a commitment in return. Reciprocal economic expectations do not dominate these nexuses.

- Hierarchy and market

Mainly, this stakeholder constellation is characterised by formal institutions, statutory provisions deduced from sectoral policies and financial approval. Particularly, the agricultural actors are influenced by the distribution of the financial allocation systems regarding cultural landscape management with an immanent focus on farming activities. The stakeholders constellation between hierarchy and market is comparatively well structured, at least according to the formal institutional system. The total amount of financial support is a central part of the annual negotiations[255] about the agricultural subsidies in Norway between the two farmers unions' and the government. The results signify the frame of the financial extent, cultural landscape management measures are fiscally supported. Cultural landscape subsidies are an object of the yearly negotiated agricultural settlement between the Norwegian government and the farmers unions. Hierarchy is conscious of the economic realities farmers have to cope with and the practical cultural landscape management implementation they impose.

"(…) one very important aspect here is that it's very difficult to make your farm go around today in Norway with the high costs of living. Everything costs a lot except the products of a farm. So they are just working very hard just to survive, and they are looking for everything that can help the farm go on and in most cases, what they need is to produce more or to get more for what they produce or to get them more subsidies (...), we introduced a director for nature management, for looking after management of projects, in particular, biological important areas. (...) stream through farm testing to make the farms go on so that was what originally intended to

254 Such as the reconstruction of build elements in the outfields on national park ground, for instance. The previously mentioned cultural landscape mediators play a pivotal role.

255 *Jordbruksavtalen.*

be used for management of particular interest areas, by particular important areas and so on. It wasn't very easily canalized into the just ordinary run on the farms to help them survive" (INT II 2011: 1).

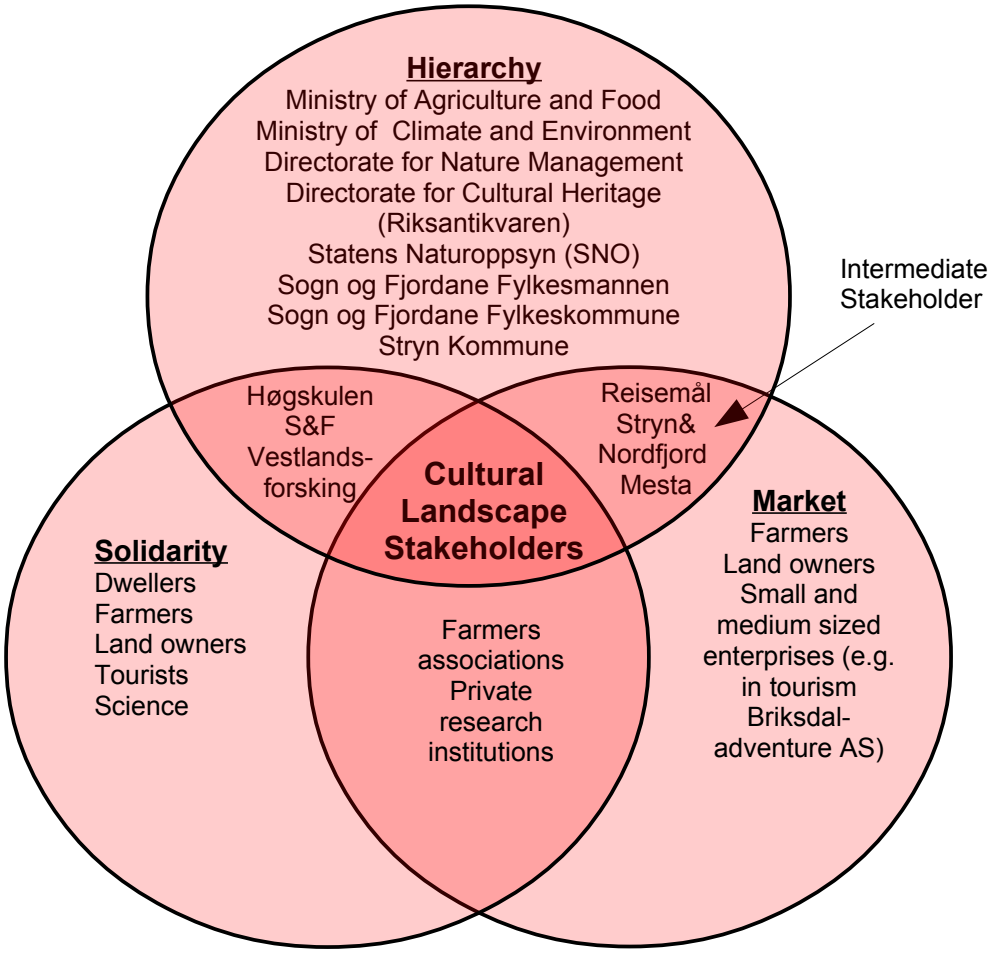


Figure 37 Identified cultural landscape stakeholders.

Hierarchy tries to set incentives for the farmer to carry out cultural landscape management measures. Farmers, on the other hand, consider the financial allocation system:

> *"(Grants) it is another anchor to fund your farming. It is important to get money from all the places you can. But also to get out the money (out of the farming)" (INT IV 2011: 2).*

Regarding management the market stakeholders (agriculture) demand reciprocally a local commitment of the hierarchy towards cultural landscape management measures:

> *"For Stryn Municipality it should be extra important to encourage steady grazing (...). A combination of measures that, among other things involving both local support schemes*

and an increasingly strict enforcement of residence and drive duty is important here" (BONDELAGE STATEMENT 2012).

Besides, the administration is aware of the free-rider problem by the tourist industry. The tourist sector uses cultural landscape as a common good to derive economic advantage but is not directly participating in the management costs or measures.

"The tourist industry does not see the problem good enough. We have tried in years to make them see that there is a connection between the tourism and the open cultural landscape and that open landscape is a quality that somebody has to pay for to keep it open and beautiful and so on and as a tourist destination among other things. But they don't see that also that the tourist industry has to pay some money for that" (INT VII 2013: 7).

In summary, the stakeholder constellation between hierarchy and market is based on reciprocal monetary anticipation. A common world view based on the interaction of these two logics of action is not to be identifiable.

Particularly concerning the subsidies, SELMAN (2012: 33) articulated: *"(...) as a general basis for landscape policy massive public subsidy to farmers may be neither desirable, affordable nor practicable in the long term. (…) Scenic and ecological values could be recaptured in alternative land use patterns that were compatible with efficient modern practices."*

- Solidarity and market

Undoubtedly, Norway's agricultural sector is highly subsidised. Solidarity comprises the taxpayers, who finance the state and consequently the subsidies. The farmers associations, as an intermediate stakeholder between solidarity and market, happen to be the representative of both groups of logics of action market in the annual negotiations with the hierarchy. The negotiations include vast subsidies for cultural landscape management. HAMPICKE (2013: 196p) describes such a construct as a pact between agriculture and solidarity, partly to safeguard and maintain cultural landscapes. This pact is heavily influenced by the economic success of the individual farmers by applying cultural landscapes as private or club goods that the farmers deploy as an economic agent. Mostly adjusted to the most advantageous land use. On the other hand, solidarity profits from the public good cultural landscape. The agricultural

production partly externalises that. Regarding cultural landscapes as an external effect and a heterogeneous common good with inherent spatial qualities the nexus between both stakeholder categories are heavily dependent on a joint learning process (cf. Chap. 5.7, p. 249p). As long as there is no mutual agreement between both logics of action on spatial qualities of cultural landscapes, hierarchy dominates with top-down oriented sectoral policies conducting cultural landscape management. Market stakeholders and solidarity stakeholders differ in two functional objectives regarding a common worldview:

- The externalisation of cultural landscapes by agriculture.
- The active economic valorisation of cultural landscapes by tourism.

Hierarchy	Market	Solidarity
Predicate term	Marketing term (tourism)	Identity concept
Political term (defining a political agenda)	Production concept (agriculture)	Cognitive concept (landscape in mind)
Concept for financial allocation	Image term	'Vernacular landscape'
Planning term	Proof of origin concept/brand	Recreation concept

Table 11 Applied conceptualisation and terminological apprehension of cultural landscapes among the various logics of action Hierarchy, Market and solidarity.

Within the categorisation of cultural landscape stakeholders in the case study valleys, each group of logics of action subdue differing conceptualisations and apprehensions to cultural landscapes and define their management objective differently. Table 11 gives an summary on the analysed conceptualisations and terminological apprehensions of cultural landscapes among the various logics of action. These terms either solidify within stakeholders constellations or they are incorporated by sectoral logics of action. These developments are often a result of reciprocal interconnections between hierarchy, market and solidarity. Next paragraph presents the formal institutional regime of the present cultural landscape management.

5.4 Formal institutional regime of cultural landscape management

The so far analysed latter-day aims of cultural landscape management are defined by top down oriented sectoral policies in Norway and conceptualised as:

- An area for a sustainable supply of food, fibre and raw materials by agriculture and forestry.
- The conservation area of abiotic, biotic, spatiotemporal and cultural resources.
- The provision of recreational and aesthetic spaces for the value creation in tourism.

In reference to the applied theoretical approach of GAILING and RÖHRING (2008), the accomplished institutional analysis in the present examination objectives the identification of:

- Deduced cultural management regulations by sectoral policy logics of action foremost represented by formal institutions.
- The motivation of cultural landscape management action by non-sectoral policy stakeholders represented by informal institutions.

Both objectives have an emphasis on examining the institutional framework stipulating the contemporary cultural landscape management efforts and measures. The applied concepts of cultural landscapes understanding in formal policy and administration are elaborated in the subsequent part. Related to to the remarks made in Chapter 2.3 (p. 15pp) and based on the examination results, the conceptualisation of the terminology cultural landscape in terms of management approaches applied by the national, regional and local Norwegian administration authorities is founded on three main developed paths that progressed throughout time:

1. Cultural landscape management apprehended in trivial or everyday landscapes for food and fibre production with an emphasis on active use.

2. Protection management of cultural landscapes in special valuable cultural landscapes for biodiversity and cultural heritage with a strong emphasis on legal propositions, partly combined with an active use approach in large protection areas.

3. The management intentions of aesthetic valued cultural landscapes with quality for tourism and recreation is also examined. These three developed management paths are by some means individually reflected in the formal institutions applied for cultural landscape management by the multi scalar top

down-dominated administration. Particularly, the national policy requirements accentuate cultural landscape terminology in essence as a rating term[256]. To protect and upkeep several historical grown cultural landscapes in a museum posture or to ascribe areas as agricultural core areas. Non-institutionalised stakeholders, on the contrary, have a less formalised cognition towards such top-down formulated management visions. They partly apprehend the cultural landscapes of summer farming, for instance, as:

> *"a cultural treasure[257]"* or as a *"living cultural artefact[258]."*

Regarding a spatial fitting of these analysed apprehensions of the term and regarding to the formal institutional framework and the related cultural landscape management scope, a principle differentiation between cultural landscape management in the infield and outfield is detectable and cultural landscape management inside and outside the borders of the JBNP. Subsequent chapter displays the results of the institutional analysis. Institutions play a crucial part in contributing to cultural management defaults. As previously stated, formal and informal institutions determine the range of construction respecting cultural landscapes as action and communication areas significantly (GAILING 2012: 150). The following presentation of the institutional analysis constitutes the nominal condition of intended cultural landscape management by reference to national, regional and local formal institutional framework. Formal institutions recognise the intention of the state to exert cultural landscape management by central sectoral policy regulations. The terminology of the sectoral institutional systems paraphrase fields of management of equal or similar directed institutions according to cultural landscapes (GAILING 2012: 150). Formal institutions are in the present investigation codified systems of rules, such as constitutions, laws, administrative codes of practice and financial distribution systems (NORTH 1992: 43pp). Focus of the present examination are the sectoral policy fields of:

- Agriculture
- Spatial Planning

256 Terminology refers to the German expression *Prädikatsbegriff* (GAILING 2011: 5), in which cultural landscapes are rated as protection-worthy.
257 *Setra en kulturskatt*, propagated by the *Norsk Seterkultur* organisation.
258 *Setra som levende kulturminne* (SKOG OG LANDSKAP 2009).

- Cultural Heritage
- Nature conservation
- Tourism and Recreation

These central sectoral policy fields predefine cultural landscape management efforts. Statutory laws, regulations to such and financial grant systems in varying degrees derived in Norway. The three most important and action leading paths regarding cultural landscape management are represented by national, regional and local policy. According to a top-down oriented centralised administration, these are applicable for all parts of the hierarchical administrative system in the country. The three mentioned policy fields comprise succeeding development paths:

- Cultural landscapes of agriculture contributing to national food and fibre production (trivial or everyday cultural landscapes),
- Cultural landscapes with values to cultural heritage and biodiversity (special or distinctive cultural landscapes),
- Cultural landscapes with aesthetic values for tourism.

The spatial planning system fundamentally overarches all efforts by national, regional and municipal plans that are a portion of the formal institutional framework of cultural landscape management.

Neither the terms landscape nor cultural landscape are an individual subject of the Norwegian constitution or they are dealt with by a separate statutory regulations (MOFLAG SYNOPTIC PRESENTATION OF THE STATUS OF LANDSCAPE POLICIES PURSUED BY THE MEMBER STATES OF THE COUNCIL OF EUROPE 2006: 50; HAVERAAEN IN: MEETING OF THE WORKSHOPS FOR THE IMPLEMENTATION OF THE EUROPEAN LANDSCAPE CONVENTION 2002: 50). Anyway, laws and statutes, in common with specific subsidy and grant systems create the maintenance, the development and the management efforts and measure of cultural landscapes in the case study valleys chiefly influenced by sectoral policies. The terminology cultural landscape is chiefly subjected to sectoral policies and is analysed accordingly (BUGGE 2013: 1).

The following paragraphs display the results of the accomplished institutional analysis on the basis of the selected formal institutions[259] that comprise cultural landscape management in Norway. Pursuing formal institutions were detected and subjected to the institutional analysis and being, thereto, intrinsically relevant to the study aims and objective regarding the examination of the contemporary cultural landscape management in the case study valleys:

Primary laws and statutory regulations[260]:

Agricultural Land Act (ALA) - *Lov om jord*[261]

Concession Act (CA) - *Lov om konsesjon ved erver av fast eiendom*[262]

Cultural Heritage Act (CHA) - *Lov om kulturminne*[263]

Nature Diversity Act (NDA) - *Lov om forvaltning av naturens mangfold*[264]

Outdoor Recreation Act (ORA) - *Lov om friluftsliv*[265]

Planning and Building Act (PBA) - *Lov om planlegging og byggesaks-be-handling*[266]

Regulations on Cultivation (RC) - *Forskrift om nydyrking*[267]

Act Relating Motor Traffic on Uncultivated Land and Watercourses (AMTU) - *Lov om motorferdsel i utmark og vassdrag*[268]

Regional and local spatial and management plans and programmes:

Sogn og Fjordane (S&F) County agriculture plan[269] - *Fylkesdelplan for landbruk*

S&F County land use plan[270] - *Fylkesdelplan for arealbruk*

S&F County plan for tourism - *Reiselivsplan Sogn og Fjordane 2010-2025*

259 Collection of laws and statutory regulations is not considered conclusively. It comprises the major formal institutions, on which cultural landscape management is based the *"Strategi- og Handlingsplan 2003-2006"* (KULTURLANDSKAPSGRUPPA I SOGN OG FJORDANE 2003: 26p).

260 This includes all amendments, guidelines and regulations regarding the enlisted acts.

261 From 1995, as of 2013.

262 From 2003, as of 2012.

263 From 1978, as of 2010.

264 From 2009, as of 2014.

265 From 1957, as of 2013.

266 From 2008, as of 2014 (old version from 1985).

267 From 1997, as of 2009.

268 From 1977, as of 2015.

269 *Fylkesdelplan for landbruk i Sogn og Fjordane 2002.*

S&F Rural development program - *Regionalt Bygdeutviklingsprogram for Sogn og Fjordane 2013 - 2016*

Stryn Municipality plan - *Stryn kommuneplan*

Jostedalsbreen National Park management plan - *Forvaltningsplan for Jostedalsbreen nasjonalpark*

Management plan for Bødalen, Erdalen and Sunndalen in the Jostedalsbreen National Park - *Skjøtselsplan for Bødalen, Erdalen og Sunndalen i Jostedalsbreen nasjonalpark*

National cultural landscape programme:

Selected cultural landscapes in agriculture (UKL) - *Utvalgte kulturlandskap i jordbruket*

Subsidy and grants system:

Regulations on production subsidies in agriculture - *Forskrift om produktionstilskudd og avløsertilskudd I jordbruket*

Grants for cultural landscapes - *Tilskudd til kulturlandskap*

Regional environmental schemes (RMP) - *Regionalt miljøprogram*

Special environmental measures in agriculture (SMIL) - *Forskrift on tilskudd til spesielle miljøtiltak I jordbruket*

Cultural Heritage Fund – *Kulturminnefondet*

5.4.1 Primary laws and statutory regulations

The following section displays the results of the institutional analysis of the primary legislation and statutory regulations determining the organisational fields of cultural landscape management in the case study valleys by formal institutions. Regrading the limitations of the research, only formal institutions that immediately affect cultural landscape management are discussed. As repeatedly stated, cultural landscape management is chiefly restrained to the agricultural sector. Therefore, agriculture is considered as the main upholder of

270 *Fylkesdelplan for arealbruk i Sogn og Fjordane 2001* (https://www.regjeringen.no/nb/dokumenter/godkjenning-av-fylkesdelplan-for-arealbr/id90938; accessed 07.03.2015).

such. A vast number of acts, regulations and subsidy schemes target on cultural landscape measures in the agricultural sector. Norway's agricultural sector is almost entirely centralised controlled. The subsequent statutory regulations imply cultural landscape management out of the sectoral policy of agriculture.

- **Agricultural Land Act**

Agricultural Land Act (ALA) obtains the purpose:

> *"(…) to provide suitable conditions to ensure that the land areas in the country including forests and mountains and everything pertaining thereto (land resources) may be used in the manner that is most beneficial to solidarity and those working in the agricultural sector" (§ 1).*

General intention is to alleviate the land expanses and land resources. The purpose of the provision states further that the:

> *"(…) management shall be environmentally sound and, among other things, take into consideration protection of the soil as a production factor and preservation of land and cultural landscapes as a basis for life, health and well-being for human beings, animals and plants" (§ 1, 3rd passage).*

The general objective of the act is the safeguarding of the environment and the cultural landscape as something fundamentally to the agricultural sector. ALA itself does not imply direct management obligations for landowners or licensees of the farm land. Anyhow active measures against pollution or the damage of the cultural landscape must be proactively applied (BUGGE 2013: 4; 2011: 203). In summary, it is statable that three main principles are established by the Act regarding cultural landscapes (BUGGE 2011: 206):

– All cultivated land should remain cultivated, insofar as it may be the basis for profitable agricultural activities (§ 8 ALA[271]).
– Cultivated land cannot be taken for uses other than agriculture, and cultivatable land should not be used in such a way that agriculture could become impossible in the future (§ 9 ALA[272]).

271 *"All cultivated land that can provide a basis for profitable operations shall be maintained."*
272 *"Cultivated land must not be used for purposes that do not promote agricultural production. Cultivable land must not be disposed of in such a way as to render it unfit for agricultural production in the future."*

– An agricultural property may not be divided into several parts without the consent of the agricultural authorities (§ 12 ALA[273]).

§ 9 is fundamental to the Norwegian agricultural policy. An agricultural property cannot be used for any other purpose without a special permit. Properties within specially protected cultural landscapes (UKL), in which the farming operation contributes to a key value are not be allowed for reassignment at all. Agriculture includes agricultural infrastructure, such as buildings and roads for agricultural purposes. Equally relevant for the protection of cultural landscapes is the regulation in Article 8. The agricultural authorities may require the owner to lease out the land, to plant a forest, or impose measures to maintain cultural landscapes (BUGGE 2013: 4). There is a good case to believe that cultural landscape management measures are conducted less on agricultural land that is rented out, than by the actual owner, as an example in the case study valley Erdalen proofs:

> *"What I think is perhaps one of the biggest tasks now is perhaps the buildings on the summer farms. Because many of the farmers lay down the running of the farm. They don't harvest; they rent it out to other farmers in the area. And their summer houses on the summer farm they just fall down. That will be a loss for the aspect of how it was used at the time. I think you are requested to do forest cutting and maintain, we have some natural fences. We cut down dangerous trees for them (cows)" (INT IV 2011: 6).*

ALA itself does not consider more precise obligations for the owners of agricultural properties. Such necessary obligations can be introduced throughout regulations within the Act's broad frame. The ministry or the county governor can impose measures to the landowners or licensees to do so by agreement (RESOLUTION No. 413 12 May 1995). BUGGE (2011: 204) states that this is quite common in Norway and pertains to nearly half the agricultural land in Norway. What the obligation to keep the ground cultivated or in cultivable conditions indicates, appears somewhat unclear. ALA claims that the soil must be held in conditions:

> *"To ensure the environmentally sound cultivation of agricultural land, the Ministry may issue provisions regarding cultivation. Such provisions may, among other things, aim at*

273 *"An agricultural property may not be divided into several parts without the consent of the agricultural authorities."*

preventing erosion and regulating the use and storage of fertilizer and other inputs in the production process" (cf. § 1, 3rd passage).

Furthermore, the law requires that the output characteristics of cultivated land do not deteriorate over time and that any overgrowing over time has to be avoided, at least by the request to clear some overgrown areas. The last main principle of the ALA is settled in § 12 and states that agricultural land property is not divided unless it occurs necessary and is permitted.

- Regulations to the Agricultural Land Act

ALA is compiled relatively broad. Regulations introduce specifications to the statutory law. The coming section gives a short synopsis of the relevant regulations concerning cultural landscapes.

§ 11 ALA issues that the Ministry of Agriculture may direct regulations concerning the farm operation. According to the main aims and objective of the institutional analysis, the important regulations shall ensure environmentally sound operations and restoration of agriculture and roads for agricultural functions (REGULATION 2 MAY 1995 No. 423 ON CULTIVATION; REGULATION 20 DECEMBER 1996 No. 1200; REGULATION 27 NOVEMBER 2009 No. 1476 ON PLANNING AND APPROVAL OF ROADS FOR AGRICULTURAL PURPOSE). Environmentally sound operations comprise explicitly taking into account special natural values (BUGGE 2013). So far, no operational regulations take up on rating cultural or universal natural values that are compatible with this substantive law. ALA also contains a separate authority for regulations on subsidies as addressed in § 18 ALA. Further, ALA has a broad purpose that includes the protection of cultural landscapes. In practice, environmental and cultural values in agriculture are ensured through a combination of regulations and subsidies schemes that are listed in the national production support. Commitment to the environment, henceforth cultural landscape, is primarily related to receiving financial grants. The scope of the scheme is on the operation as a whole and the maintenance of the agricultural area in general. Specific management measures are not deduced by the ALA.

- **Concession Act**

Concerning the management of trivial or everyday cultural landscapes, the Concessions Act (CA) plays a significant role (BUGGE 2011: 207). The core objective of the legislation is the protection of productive agricultural land and a viable property and ownership structure (ibid.). Further purposes of the Act (§1) pertain the common good character of the investigated cultural landscapes are named in particular:

> *"(…) securing land for development needs, environmental considerations, public nature and recreation interests, and local settlement (...)."*

§ 4 reputes exemptions from the requirement of concessions[274]. Concisely it concerns the acquisition of real property that requires a public license. Bugge (2011: 208) stated that the CA leaves a broad range of discretion to the concession authorities[275]. § 9 accounts supportive concessions for the acquisition of agricultural land:

> *"(…) whether the acquisition supports the general management of the natural resources and the cultural landscape in the area."*

Hence, the CA supports the management of cultural landscapes by the determination of protecting productive agricultural areas that are important to food and fibre production (here trivial cultural landscapes).

- **Cultural Heritage Act**

§ 1 of the Cultural Heritage Act (CHA) states:

> *"The purpose of this Act is to protect archaeological and architectural monuments and sites, and cultural environments in all their variety and detail, both as part of our cultural heritage and identity and as an element in the overall environment and resource management. It is a national responsibility to safeguard these resources as scientific source material and as an enduring basis for the experience of present and future generations and for their self-awareness, enjoyment and activities. The intention of this Act must also be taken into account in any decision taken pursuant to another Act that may affect the cultural heritage."*

274 Concessions are not necessary for undeveloped ground, for residential or recreational houses of less than 2 acres, plots of undeveloped ground, which are designated for development in a municipal master plan, properties with less than 100 acres, if less than 25 acres are fully cultivated (§ 4 CA). Heritage is included, except the property transfer between spouses, parents and children of the owner (§ 5 CA).

275 Initial authority is Stryn Municipality Council.

The term 'heritage' is defined broadly by the CHA. 'Cultural' signifies:

> *"(...) all traces of human activity in our physical environment, including places associated with historical events, beliefs and traditions."*

In this context 'Cultural environment' attempts

> *"(...) areas where cultural heritage is part of a larger entity or relationship" (§ 2).*

CHA names three main categories of cultural heritage:

> *1. "Monuments and sites which are automatically protected by law",*
>
> *2. "protected objects" and*
>
> *3. "protected cultural monuments".*

Monuments and sites under 1. are also defined as legally protected heritage and comprise heritage from the time before the Reformation in 1537. Comprising, as described in § 1 CHA, first paragraph letter a:

> *"Houses and structures of all kinds, and remains or parts of these, artificial mounds marking ancient farming settlements, farms, homesteads, courtyard sites or any other groups of structures remains or parts of them",*

and,

> *"(...) traces of land cultivation of any kind, such as clearance cairns, ditches and plough furrows, fences and enclosures, and hunting, fishing and trapping devices" (§ 4 CHA subsection c).*

The CHA automatically protects all physical traces of agricultural activity before 1537. If cultural heritage of the categories mentioned above is found in cultural landscapes, these will, therefore, be protected additionally.

> *"If the ground below any monument or site that is automatically protected by law or in an area as described in Section 6 has previously been used for grazing or cultivation, it may continue to be used in this manner unless the competent authority decides otherwise. The soil must not be ploughed or otherwise worked more deeply than previously without the permission of the competent authority" (§ 3 CHA second paragraph).*

Automatically protected monuments integrate a security zone of five meters around the to be protected perimeter, as far as is necessary to protect it from damage and destruction. The zone shall be determined by the heritage authority. Until official establishment of the protected site is accomplished a five-meter wide security zone extending from the monument visible perimeter is installed. § 8 CHA says:

"The competent authority shall decide as soon as possible whether and how the project can be implemented.[276]*"*

Special resolution may protect the cultural heritage that is not automatically protected under Chapter V of CHA. § 15 CHA states that:

"(...) Structures and sites that may be protected in accordance with the first paragraph include monuments and sites as described in § 4, first paragraph, a-j, regardless of their age, special sites such as parks, gardens, avenues, etc. and public memorials, and other places with important historical associations."

An essential point is the inclusion of natural elements in the case they contribute to the integrity of parks, gardens and avenues for instance. Area around a protected monument may be protected likewise

"(…) inasmuch as this is necessary to preserve the effect of the monument in the environment or to safeguard scientific interests associated with it" (§ 19 CHA).

A premise of the efforts to preserve cultural landscape is deducible. Although BUGGE (2013: 4) connotes that the provision is openly formulated, and the decision is up to the respective conservation authorities. In addition to that § 20 CHA mentions explicitly the protection of cultural environments:

"A cultural environment may be protected by the King in order to preserve its value to cultural history."

These protection entities are partly traceable in Erdalen and Bødalen (cf. Chap. 5.1.2, p. 140; Chap. 5.1.3, p. 145p). The meaning of cultural environments can be highlighted by the paragon of cultural environments Bygdøy[277] island close to the city centre of Oslo. Protection also:

"Include natural elements when they help to create the area's character[278]*."*

276 Anyone who intends measures that may affect an automatically protected monument or site must normally conduct research to determine which values would be at stake. In larger development plans of roads, power plants, and the development of ancient urban areas, for example, major excavations and other "*investigation*" have to be carried out in the area can designate to the planned development (§§ 8 and 9 CHA).

277 The protected area is 2.2 km^2 large and tied to Bygdøy royal residence. The purpose of the protection is *"to ensure a unique cultural environment on Bygdøy island that the public gain knowledge, experience and use by taking care of the cultural heritage, landscape features and natural values that characterise the environment and testify about the area's history*" (VERNEPLAN BYGDØY KONGELIG RESOLUSJON 2012). The area is protected as a cultural heritage and protected as a nature reserve under the NDA. The Royal Decree states that "*both acts have the authority to protect cultural heritage and biodiversity considerations (...)*."

278 BUGGE (2011: 6) states that this is an instrument that seems to be able to secure valuable farmland, at least when cultural values are prevailing. If the management of the protected area is any contradiction between cultural, environmental and natural values, the cultural ones prevail.

Regarding the management of protected cultural heritage and cultural environments, special management measures can be required to upkeep the protected values. The owner has a restoration duty in case of damaging (§ 17 CHA) and the duty to maintain the monument (§ 17 CHA). § 21 CHA states that:

> *"In areas protected pursuant to Sections 19 and 20, the competent authority may undertake whatever upkeep is found necessary to achieve the purpose of the protection. Such upkeep may comprise the maintenance of the protected area, including clearing and tending the vegetation, and other measures to preserve the cultural environment, etc."*

Respecting the administrative procedure § 22 CHA regulates the process of:

> *"1. When work commences on a protection order in accordance with the present Act (cf. Sections 15, 19 and 20), the municipalities involved must be contacted for a discussion of the delimitation of the area, the details of the protection provisions, and other matters of importance to municipal and county planning. The authority responsible for the protection shall publish an notice, as a rule in at least two newspapers with wide local circulations, describing the intended protection order and its likely consequences. Landowners and holders of rights should as far as possible be informed by letter and given a reasonable time limit for comment before the protection order is drawn up. When a protection order is being prepared, cooperation shall be sought at an early stage with public authorities, organizations, etc. with special interest in the matter.*
>
> *2. When a protection order has been drawn up, notice shall be given in the Norwegian Gazette and in at least two newspapers with wide local circulations that a protection proposal has been made available for public inspection. The notice must include a description of what the proposal comprises and set a reasonable time limit for comment, which must be no less than six weeks after the publication of the notice. As far as possible, landowners and holders of rights in the area should be informed by letter. In connection with the publication of the notice, the matter shall be submitted for comment to the specialist government agencies concerned.*
>
> *3. Before a protection order is finalized, the proposal shall be submitted for comment to the municipal council. A time limit may be set for the municipal council's response.*
>
> *4. The Ministry may impose a temporary protection order until the matter has been settled.*
>
> *5. Protection orders in accordance with Sections 6, 15, 19 and 20 are subject to judicial registration. (...)"*

- **Nature Diversity Act**

Nature Diversity Act (NDA) is a far-reaching law with objectives, principles and a number of measures for the protection of biodiversity including (cultural) landscape values. NDA has the purpose:

"(...) to protect biological, geological and landscape diversity and ecological processes through conservation and sustainable use, and in such a way that the environment provides a basis for human activity, culture, health and well-being, now and in the future, including a basis for Sami culture" (§ 1 NDA).

Biodiversity is defined by the act as:

"Biological, geological and landscape diversity: includes all diversity that is not largely a result of human influence" (§ 3 NDA section i).

This provision may be interpreted to that extend that cultural landscapes are virtually excluded, in which traditional livelihoods and built structures are key elements. § 33 NDA for example sets out general goals for the preservation of:

"Natural environments that reflect human use through the ages (cultural landscapes) or that are also of historical value, and facilitation of forms of use that help to maintain biological, geological and landscape diversity" (§ 33 NDA section f).

§ 36 reinforces the connection between natural and cultural landscapes in terms of biodiversity:

"*Natural or cultural landscapes that are important in ecological or cultural terms, as a source of enjoyment or as a basis for forming an identity may be protected as protected landscapes. Cultural monuments that contribute to the distinctive character of a landscape are considered to be part of the landscape*."

Legislators have shown consciousness about the important relationship between natural and cultural landscape and have therefore enclosed cultural landscapes and cultural heritage under the act's main purpose that is the protection of biodiversity (BACKER 2010). NDA acquires determined instruments for the protection of cultural landscapes. Relevant to the study main aims and objective are the instruments:

- Conservation areas
- Priority Species
- Selected Habitats

Regarding the conservation area, forthcoming, cultural landscape values are protected under the provision of a national park (§ 35 NDA) and nature reserves (§ 37 NDA).

- Conservation areas

Through protection measures a large area of valuable cultural landscapes can be secured. Thereto, conservation areas may protect

"(...) natural or cultural landscapes of ecological, cultural or experiential value, or is identity. The landscape is also considered cultural heritage that contributes to the landscape distinctiveness"(§ 36 NDA).

The act assigns following protected areas:

"National parks (§ 35 NDA),
Protected landscapes (§ 36 NDA),
Nature reserves (§ 37 NDA),
Habitat management areas (§ 39 NDA),
Protected marine environments (§ 40 NDA), and
International status for protected area by Royal Resolution (§ 41 NDA)."

For each area that is protected under the provisions of the NDA regulations that specifies the purpose of protected areas have to be worked out in a draft management plan that has to be issued simultaneously with the resolution to protect an area.

In order to preserve, safeguard and strengthen conservation values in a protected area the NDA requires a management plan. General provisions regarding the management in the protected areas (§ 47) includes areal management and respective boundary marking by the administration. The law mentions explicitly that management:

" (...) may include measures to maintain or achieve the state of the natural or cultural environment that is the purpose of the protection, including measures to channel access or passage, removal of vegetation or alien tree species and restorative measures after works affecting the natural environment" (§ 47 NDA).

Moreover, the paragraph carries out that:

"No management measures that entail the harvesting of natural resources or a significant change in the state of the natural environment as it was when the protection process began (…) may be carried out" (§ 47 NDA).

§ 47 is understood as a legal basis for the authorities to launch and pay for initiatives within the protected area even though the landowner or other holders of rights in property disagree to the protection measures. The law does not give the government the authority to impose landowners or other holders of rights in property to implement management measures. This appears unclear from the wording but it is forenamed in the preparatory works and the comments on the NDA (BACKER 2010: 4). A voluntary understanding must therefore agreed beforehand between administration and landowners and holders of rights in

property. Such agreements include measures and actions that prevent overgrowing without a remuneration by the administration. NDA requires both an overall management plan that needs to be worked out and implemented by the administration and a plan to facilitate a strategy of agreements on voluntary management efforts by landowners and or holders of rights in property.

NDA has introduced new rules for compensation regarding area conservation (BUGGE 2013: 11). § 50 NDA states:

> *"A landowner or a holder of rights in property that is wholly or partly protected as a national park, protected landscape, nature reserve, habitat management area or marine protected area is entitled to compensation from the state for financial losses incurred when protection makes current use of the property more difficult. In the case of use requiring a permit from an official authority, the right to compensation only applies if a permit was granted before an announcement was made under section 42. Contrary to what was the situation alter the former conservation act, now applies the same rule for protection as a national park, conservation area and nature reserve."*

Distilled it can be noted that regardless which type of protected area the landowner or holder of rights in property is entitled for compensation, if protection will:

> *"(...) make current use of the property more difficult."*

As long as the farmer is eligible to conduct its business in same way before an area became protected he is not entitled for compensation regarding § 50 NDA.

Cultural landscapes can be further protected via the protection category nature reserve (§ 37 NDA). Thereto, the natural conditions amount the reasons that primarily justifies protection. Nature reserves with the strictest protection. Anything that reduces the conservation value by anybody is permitted (BUGGE 2011: 188). Not infrequently nature reserve protection values are based on human activities in terms of harvesting and land use throughout time that has created both cultural and biological diversity or other natural values that are important to care for within the nature reserve. Examples are bogs. Individual natural preconditions decide which protection purposes in terms of rules and regulations that will be issued individually. Status as a nature reserve does not oppose the possibility of grazing and hay making for example (BUGGE 2013: 8). As previously stated, active use can be a prerequisite in order to protect the individual natural value in a nature reserve. It means in effect that any active

measures are necessary in order to achieve the aim of protection. A connection to the PBA becomes important, the local development plan[279]. Any measures that must be taken in order to maintain a nature reserve such as tree removal etc. must be carried out by authorities and not by the landowner. (BUGGE 2011: 187).

- Priority Species

These provisions occur to be relevant to the study at hand as cultural landscapes may inherent species that need special protection because they represent an important element in the cultural landscape. Generally:

> *"(...) Harvesting and other removal of plants and fungi occurring in the wild are permitted to the extent that they do not jeopardise the survival of the population concerned or are not limited by statute or by a decision pursuant to statute."*

§ 3 NDA intensifies that

> "*The provisions of the first and second paragraphs do not preclude lawful access and passage, agricultural activities or other activities that take place in accordance with the duty of care laid down in section 6*."

It is arguable that regular agricultural activity can be conducted even if it means that wild plants are removed assuming that it happens accordingly to the duty of care. Should endangered plants need stronger protection they must be designated as a priority species throughout a regulation under the provisions of § 23 and 24 NDA. Suspending the previous system of protection the regulations may impose a ban against any kind of withdrawal, damage or destruction of the species or specific populations. General rules on species protection including the right to harvest (cf. § 15 NDA) and only apply to the extent that is then coordinated by the issued regulation. The regulations in the act may also provide rules concerning the protection of certain types of ecological functions. The conditions that apply to designate an "ecological function" must not result in a significant impediment of present land use. Landowners even may demand an area protection under Chapter V NDA with the right to compensation by the state as provided in § 50 NDA. If provisions on the protection of certain types of ecological functions for priority species imply active management or other types of measures that are essential to safeguard the area, the state need to put

279 *Reguleringsplan*.

forward an action plan in order to protect such areas. Public may enter into further agreements with the landowner or holder of rights in property according to the management of an area with ecological functions for priority species (§ 24 NDA 3rd paragraph). The state cannot impose specific management measures to ensure the protection of priority species to landowners. Such measures need to be implemented and financed by the public and the farmer must respect the implemented management actions in an agreement. NDA provides guidance according the measures in an agreement with the landowner.

- Selected habitats

In addition to the area protection under Chapter V natural values can be protected by other measures. An instrument is described by the rules of Chapter VI (§§ 52-56 NDA) on selected habitats. Generally, the provisions cover the protection of nature in non-protected areas with the focus on *"every day"* nature management. Aim is that nature shall receive better protection outside formally protected areas without the need for a decision on area protection. Regulations regarding specific habitat types are royal regulations issued by the King directing specific habitats as *"selected"*, either countrywide as a whole or in parts of regions. Criteria to designate an area as selected are described in § 52 NDA:

> *"(…) in deciding whether to designate a habitat type as selected, particular importance shall be attached to whether a) trends for or the status of the habitat type are contrary to the objective set out in section 4, b) the habitat type is important for one or more priority species, c) a significant proportion of the natural range of the habitat type is found in Norway, or d) international obligations apply to the habitat type."*

Essentially the habitat type must show a development or a condition that differs significantly from and does not meet the overall management goal of habitats and ecosystems and differs essentially from the law that comprises in § 4 NDA:

> "*At diversity of habitat types within their natural range and the species diversity and the ecological processes that characterises each habitat type.*"

The significance of a habitat type that is classified as selected contains special considerations by the public and private sector. Management of selected habitats is stipulated by §§ 53-55 NDA. Referring to the study at hand hayfields

have received the status of selected habitats among four other habitats[280] that were designated by the regulations 13th May 2011 No. 512 on the NDA regarding selected habitats. Besides the importance to biodiversity the hay meadows are considered as a part of the Norwegian cultural history with the cognitive dimension that traditional knowledge is based on the habitat type (NORWEGIAN MINISTRY OF THE ENVIRONMENT 2011: 2).

- **Outdoor Recreation Act**

The purpose of the Outdoor Recreation Act (ORA) is outlined in § 1:

> *"(...) to protect the natural basis for outdoor recreation and to safeguard the public right of access to and passage through the countryside and the right to spend time there, etc., so that opportunities for outdoor recreation as a leisure activity that is healthy, environmentally sound and gives a sense of well-being are maintained and promoted."*

§ 1a ORA defines the terms uncultivated land and cultivated land: The following are considered to be cultivated land or equivalent to cultivated land for the purpose of this Act:

> *"Farmyards, plots around houses and cabins, tilled fields, hay meadows, cultivated pasture, young plantations and similar areas where public access would unduly hinder the owner or user. Small uncultivated plots of land lying in tilled land or hay meadows or fenced in together with such areas are also considered to be equivalent to cultivated land. The same applies to areas set aside for industrial or other special purposes where public access would unduly hinder the owner, user or others. For the purpose of this Act, uncultivated land means land that is not tilled and that is not considered to be equivalent to cultivated land in accordance with the preceding paragraph[281]".*

Main assertion of the ORA is a defined outlook on what is cultivated and uncultivated land. Further, there are no mentioned immediate management measures to cultural landscapes. Although, the act pass on the wide range of goods and services that are promoted by cultural landscapes.

280 *Slåttemark* (haymeadows), *slåttemyr* (bogs), *hule eiker* (hollow oaks), *kalklindeskog* (clacerous lime forest), *kalksjøer* (lime lakes).

281 The following paragraphs regulate the access and passage through cultivated land.

- **Planning and Building Act**

Cultural landscapes in Norway are statutorily embodied by the Planning and Building Act[282] (PBA). According to BUGGE (2013: 7, 2011: 270) the PBA is the principle control mechanism for land use by the solidarity. The main objective of the regulation is to draw important lines of development patterns in land use within a county or municipality. As already depicted, the Norwegian planning system is hierarchically designed (cf. **CHART 1** App.). The act constitutes the hierarchical planning system in which government policies affect the regional and municipal plans by governmental or parliamentarian requirements. Regional plans provide guidelines for the municipal planning. Notwithstanding, the system is relatively flexible and countervailing. In turn, Municipal Plans provide the foremost guidelines for restricted zoning, for example. Therefore, all public authorities, notwithstanding on which level they operate on, have the duty and the right to participate in planning (BUGGE 2011: 271). Hence, the state can obtain and impact the final decision in terms of conflicts. PBA purports that planning is the responsibility of the highest political bodies in the counties (§ 3-4 PBA) and the municipalities (Art 3-3 PBA). Virtually all control over land use is in municipal responsibility. Most changes affect new buildings and facilities, the change of use of buildings and areas that require a prior application and authorisation under the provisions of Chapter VI and VII PBA (BUGGE 2013). A crucial point regarding the examination of the law's ability to protect and manage cultural landscapes is precedent to the cultural values that can be considered and ensured in land use plans. According to the study aims and objectives, the elaboration of the PBA will focus on the most relevant aspects regarding cultural landscapes that are:

– The land use part of the General Municipal Plan
– The related zoning of the General Municipal Plan[283].
– The provisions to the land use and zoning of the local development plan[284].

282 *Lov om planlegging og byggesaksbehandling (plan- og bygningsloven)* with amendments of June, 7th 2008 No. 71.
283 *Stryn Kommuneplan.*
284 *Reguleringsplan.*

Accordant to the study aims, the PBA as a formal institution designates planning functions, which are relevant to the research, by § 3-1 PBA:

"(a) establish goals for the physical, environmental, economic, social and cultural development of municipalities and regions, identify social needs and functions, and state how these functions can be discharged,

(b) safeguard land resources, landscape qualities and the conservation of valuable landscapes and cultural environments, (…),

(d) facilitate value creation (...)."

§ 3-1 PBA further states that:

"Planning shall promote coherence by ensuring that sectors, functions and interests in an area are seen in an overall context through coordination of and collaboration on the discharge of functions between sector authorities and between central government, regional and municipal bodies, private organisations and institutions, and the public at large."

As expressed at the beginning of the section, PBA is considered as the main tool to implement the EHC the paragraph foster expresses:

"*Plans shall contribute to the implementation of international conventions and treaties within the scope of the Act*."

- Land use part of the General Municipal Plan

Chiefly, municipal plans regulate the municipal area. They explicitly have no clear time limitation (BUGGE 2011: 273). Regarding the case study sites Stryn general municipal plan was compiled for the period between 2006 and 2017. It was issued in 2006 by the municipal steering committee (STRYN KOMMUNEPLAN 2006). Land use part is not only eminent in the context of the research at hand, land use part of the municipal plan is considered as the most important instrument regarding the control of land use (BUGGE 2011: 273). Land use objectives that apply to municipal plans are described in § 11-7 PBA:

"1. Buildings and installations.

Sub-objectives: Housing, holiday homes, city centre functions, shopping centres, shops, buildings for public or private services, recreation and tourism facilities, raw material extraction, commercial buildings, sports facilities, other types of installations, outdoor public areas, cemeteries and cremation grave sites.

2. Transport and communications installations and technical infrastructure.

Sub-objectives: Roads, railways, airports, ports, main bicycle networks, public transport networks public transport hubs, parking places, trench routes for technical infrastructure.

3. Green structures. Sub-objectives: Nature areas, green corridors, recreation areas and parks.

4. The Norwegian Armed Forces.

Sub-objectives: Various types of military objectives

5. Agricultural, nature and outdoor recreation objectives and reindeer husbandry.

Sub-objectives: (a) land for necessary projects for agriculture and reindeer husbandry and farm-related business activity based on the farm's resource base,

(b) land for scattered housing, holiday homes or commercial buildings, etc., see section 11-11, no. 2.

6. Use and conservation of the sea and river systems, with associated shore zones.

Sub-objectives: Traffic, shipping lanes, fishing, aquaculture, drinking water, nature and outdoor recreation areas, separately or in combination."

Moreover, the paragraph indicates:

"Various land use objectives may be established within the same area or in the same building. It also stipulates that an area or building of a specially defined period of time or when other specific conditions have been fulfilled can be be transferred from one land use category to another. However, the land use categories open-air recreation area and nature conservation area may not be combined with the category agricultural area. It may also be stipulated that an area or building, after a specifically defined period of time or when other specific conditions have been fulfilled, shall be transferred from one land use category to another."

Primarily, land use cannot be changed in a way that is contrary to the purposes and provisions applicable to that area indicated by the plan (BUGGE 2011: 274). Exemptions can be the case. The local development plan shall decide changes in the master plan principally. To that, municipal plans are mandatory to landowners and other stakeholders in the field of planning. Building applications function as the central control mechanism (ibid.). An application for a measure, which is contrary to the plan shall be rejected. Municipal plans are also guidelines for the decisions of the various sector authorities to plan, ensure and maintain the objectives related to land use. For all practical purposes, valuable cultural landscapes, such as designated UKL are largely areas that are dominated by agriculture and thus considered as space in local area plans within the categories of

"*agriculture, natural and recreational areas*"

and are further advised as LNF-R[285] areas (cf. § 11-5 PBA (a) & (b)). Regarding cultural landscapes it is paramount to determine permitted activities in an LNF-R

285 *Landbruks, natur- og friluftsformål (LNF-R).*

area. The act comprises mainly construction measures in LNF-R that are specified in § 11-11 PBA paragraph 1-5. Statutory regulations of the PBA do not further provide rules and guidelines regarding the operation and management of agricultural businesses, for example. Municipalities cannot determine measures about the way a farm operates in the local area plans. Nor can municipalities issue obligations for the farmer regarding active farm management, clearing or maintenance of buildings. By designating *"(...) zones requiring special considerations (...)*" that are organised in § 11-8 PBA, a new tool for cultural landscape management was introduced in 2008 (BUGGE 2013: 7). Applying such zones of special considerations provide municipalities additional rules and guidelines for land use in certain surroundings of the municipality. Thereto, municipalities receive the possibility to decide cases in each zone of special consideration separately. These zones have to be pointed out in the plan. § 11-8 PBA equips the municipality with independent measures to issue rules and guidelines accordingly. Legal basis for cultural landscapes is settled in § 11-8 PBA subsection c, as a:

> *"Zone in which special consideration is shown for agriculture, reindeer husbandry, outdoor recreation, green structures, landscape or the protection of the natural or cultural environment, with an indication of the interest in question." In such zones "guidelines may be issued regarding limitations on activities and conditions for projects in order to safeguard the interest in the zone".*
>
> *"Guidelines may be issued regarding which considerations shall be emphasised when applying other legislation to the extent that the municipality has been given authority pursuant to the statute in question."*

Consequently not only municipal authorities but other authorities can have their decisions included in the plan, if necessary (BUGGE 2011: 276). Becoming relevant to cultural landscapes regarding the necessity to change land use including constructions on the site. The municipality highlights cultural landscape sites in the plan and establishes guidelines for assuring the conservation of the respective values, which are embodied by the landscape. The guidelines are not mandatory to landowners in contrary to provisions. Legal significance is effective in that way that municipalities issue "*zones of special considerations*" as a ground for the exercise of other provisions under the PBA

and/or other relevant statutory acts. Therefore, this is important and becomes evident while considering applications for exemptions pursuant to § 19 PBA or other legislation. Ordinarily, such regulations would be identified within LNF-R areas in the plan, as the municipality can hardly put further restrictions on agricultural activities than it is consistent to § 11-11 PBA. Hence, the act contains no provisions on how agriculture should be run in favour of cultural landscape protection, management or development. The regulations are largely limited to: *"(...) the size, location and design of buildings and facilities" (§ 11-7 PBA).*

- Zoning of land use parts in the General Municipal Plan

Zoning within the general municipal master plan is a tool that shall assist the state, the counties and the municipalities to ensure and safeguard cultural landscape values. Local zoning provide better opportunity to protect the values of the cultural landscape and will serve as a tighter legal framework once it is adopted (BUGGE 2013: 8). Firstly, LNF-R category are specified according to their particular purpose regarding cultural landscapes. § 12-5 No. 5 PBA mentions:

> *"Agricultural, nature and outdoor recreation objectives and reindeer husbandry, collectively or separately, including areas for farming, forestry, reindeer husbandry, nature conservation, soil conservation, cultural landscape considerations, conservation of cultural environments or cultural monuments, outdoor recreation areas, summer dairy farming areas and areas where the land use element of the municipal master plan allows scattered housing, holiday homes and commercial activity".*

The listing is not complete, suitably a site can be customised by a particular purpose and frequently regulated regarding the cultural values or values

> *"(...) based on agriculture with particular landscape and cultural values".*

It might also contain provisions that are necessary to realise the selected objective. In addition to the initial general legal authority formulated in § 12-7 to give provisions, § 12-7 precaution also included a more precise list to clarify what can be determined. Pursuant to § 12-7 6 to provide:

> *"(...) provisions to safeguard the conservation value of buildings, other cultural monuments, and cultural environments, including protection of frontages, material use and interiors, and to safeguard habitat types and other valuable natural assets,"*

and in section 12-7 to 12-9:

"(...)guidelines for specific operational and management measures within the area of objectives 3, 5 and 6 in 12-5."

The PBA provides a wide legal framework for supplementary provisions in connection with the various types of zones in a local development plan.

Preparatory works to § 12-7 makes it clear that the provision cannot be transferred entirely. Preparatory works to § 12-7 makes it clear that the provision cannot be transferred entirely. It is relatively doubtless what could be determined with effect for agriculture and thus for the individual farmer (Proposition No. 32 (2007-2008): 234). It states inter alia (BUGGE 2013: 8):

"The basis for the rules on operating and maintenance measures are limited to measures that are clearly related to maintaining the purpose of land application and the considerations behind it. It may e.g., apply vegetation care in open areas and parks, protection of vegetation and banks along waterways and general maintenance of cultural considerate parts in particular buildings and environments where there is need for maintenance of the qualities of the area in accordance with the land use purpose."

A master plan may not be used to regulate ongoing agricultural activities as restrictions regarding farming, which must be issued by sectoral legislation of agriculture, for example (BUGGE 2011: 275). Hereto, BUGGE (2013: 8) emphasises that the: "*Master plan shall only serve as an outer framework for land use so that economic activity can take place within line that is determined by the competent commercial regulation. Legislators passed enough back to give the municipality an independent authority to regulate agricultural activities adjacent to agricultural legislation. As we have seen, however, the Land Act is neither a clear authority to regulate how a farmer should run his estate. The operating mode for each use, which may affect the cultural landscape must be primarily influenced through financial support, mentoring, etc."*

- **Regulations on Cultivation (RC)**

Regulations on cultivation are widely discussed through their financial allocation system[286], which frames the applicable measures more adequately (cf. Chap. 5.4.2, p. 219pp).

286 Cultural landscape subsidies.

- **Act Relating to Motor Traffic on Uncultivated Land and Watercourses (AMTU)**

Right of way to the public pursuant regarding the Outdoor Recreation Act is only granted on foot, on a bicycle, horseback and the like (BUGGE 2011: 252). The purpose of the Act Relating to Motor Traffic on Uncultivated Land and Watercourses is to limit strictly motorized traffic outside ordinary streets, roads, airfields and so on, which is prohibited (§ 1). The main aim is limiting motorised traffic in to protect the nature and to promote public welfare (§1). On uncultivated land, such traffic is prohibited (§ 3).

> *"(...) uncultivated land means uncultivated land that is pursuant to the Outdoor Recreation Act § 1, first paragraph is not considered to be cultivated land or equivalent to cultivated land. Mountain pasture, their house but, hay meadows, cultivated pasture and plantations situated in uncultivated areas, calculated in this Act as the outfield. Roads in uncultivated areas that are not constructed for motor cars are considered in this law as uncultivated. The same applies to roads that are not ploughed for motor cars."*

§ 4 of AMTU formulated exceptions. Permission of motor traffic on uncultivated land is accepted for:

> *"Police, ambulance and rescue services and the like, and public postal or telecommunication services;*
>
> *Essential transport of passengers and goods to and from permanent dwellings and in connection with commercial agriculture and forestry;*
>
> *Military exercises, construction and operation of public roads and the like, and scheduled and licensed transport services."*

Municipality council may issue local regulations on the right to use motor vehicles. Stryn Municipality has the administrative and reporting responsibility for the act. Implementation and enforcement are the responsibility of the Norwegian Nature Inspectorate (SNO). Violations are not uncommon as vast parts of the population oppose the strict law (BUGGE 2011: 224). For helicopters and aircraft take-off and landing in outlying areas permission are required. Adjacent the legislation Stryn Municipality denominated:

> *"The use of snowmobiles on public roads is prohibited unless the road is opened for such traffic. Exemptions are the "Fjelltaxis", these shall be used for all freight contracts as authorized by law. Sports clubs and tourism businesses can run the up permanent tracks for skiing that is presented in the Municipal plan. For most types of freights,*

contracts must have exemption from the Act. For simple cases, such as transporting materials for approved building mission in the mountains, there is a standard form at Stryn Municipality (STRYN MUNICIPALITY 2014)".

The farmers and landowners in Bødalen have an individual agreement with the county governor:

"So, all the farmers can drive into Bødalssetra by car or tractor once a week. We have permission to do that (INT III 2011: p. 4)."

The formal institution does not impose direct management measures in the legal text. With respect to management efforts regarding cultural landscapes, particularly in he outfields, it plays an essential role. The right to pass the land by motor vehicles also determines additional efforts that land owners and farmers execute in order to stop the successive overgrowing, primarily in the outfield areas bordering the JBNP.

- **Regulation about the Jostedalsbreen National Park**

Within the scope of the Nature Diversity Act[287] and the royal decree of October 1991[288], the protected area named Jostedalsbreen National Park within the Municipalities of Luster, Sogndal, Balestrand, Førde, Jølster, Gloppen and Stryn was declared.

"- To treasure a large, varied and appreciated fully glacial areas with an appurtenant area from lowland to high mountains, with plant and animal life and geological features in nature or the essential nature of state.

- To give an opportunity to nature experience through the practice of traditional outdoor activities that are very dependent on technical adaptation.

- To protect the cultural heritage and cultural landscape (§ III)".

According to the regulation a management plan, issued by the county governor, is mandatory. The regulation entered into force in 1998. The national park was already installed in 1994. The time lag is due to the expansion of the NP area by Bødalen, Erdalen and Sunndalen in 1998. The respective management plan gives recommendations for management in the adjacent areas bordering to the national park, but it is the land owners and municipalities that are responsible for the management of these areas. These areas are regulated according to

287 No. 63 § 3 c, f; § 4 and §§ 21, 22 and 23.
288 Edited by the Royal Decree of 18th, June 1998.

Planning and Building Act. The county governor and county administration have the responsibility for supervising and inspecting and to give advice and objections to municipal regulations. Anyhow, the implementation of any area designation of cultural landscapes is strongly related to cooperation with the farmers, for instance.

> *" (…) this guidelines for the management plan (…) is done in cooperation with the farmers and the county governor because we do not have a large management body in Norway and for this work we are dependent on cooperation with the farmers (INT V 2011: 1)."*

In 2009, the management authority for large-scale protected areas in Norway should be transmitted from the county to an inter-municipal national park board[289]. A circular submitted the timetable for the revisal process of the National Park Management Plan in 2013. Regarding this, it is stated that the revision[290] of the JBNP management plan should be due until the end of 2015[291]. Main purposes of the new management plan are:

> *"- Refining and deepening protection regulations*
>
> *- Defining overall management objectives and conservation*
>
> *- Describing the state of the natural environment, cultural heritage and cultural landscapes*
>
> *- Describing the status and needs from various user groups*
>
> *- Facilitating a good routine in managing dispensation matters according to protection regulations" (PROJECT PLAN FOR THE REVISION OF THE JBNP MANAGEMENT PLAN 2013).*

The Jostedalsbreen National Park Board intends to incorporate economic activity (agriculture and tourism), as well as a visitors strategy in the revised JBNP management plan (ibid.). At present, the administration and management plan (1994, 2002) include safeguarding of natural, biological and cultural diversity. Human-influenced areas should be kept humanly-influenced if it is desired. The management plan recognises that most of the value establishing cultural landscape in the area are marked by overgrowing. Furthermore, it is an

289 Members of the board are representatives from the neighbouring municipalities, the county council and the county governor (JOSTEDALSBREEN NASJONALPARKSTYRET 2012).

290 The present research examined the valid JBNP management plan and the maintenance plans for Bødalen, Erdalen and Sunndalen.

291 Until the end of the research process, the revised management plan was not published openly.

essential need to retain traditionally managed areas, such as pollarded woodlands or pastures. Further, the management plans appreciate that an increase in grazing pressure and additional wood removal are required measures.

- **National cultural landscape programme**

Selected cultural landscapes in agriculture (UKL) were established as a cooperation of Norwegian agricultural and environmental authorities in 2009 . Collaboration should evolve necessary measures to safeguard Norwegian cultural landscapes. The purpose is to take care of a variety of particularly valuable cultural landscapes in Norway, in which agricultural activities have been and are central elements. Values worthy of protection are part of the combination of significant cultural and natural heritage and the interaction between those. They are threatened by the loss of agricultural operation, decay or overgrowing. Safeguarding these selected cultural landscapes are partially dependent on continuous use and active management. The UKL scheme aims at ensuring a holistic management of selected cultural landscapes based on a viable farming operation that concordantly safeguards biodiversity, valuable architectural heritage and natural and cultural values in the landscape. In Sogn og Fjordane two[292] of the overall 22 selected cultural landscape sites are located. UKL comprises an overall management plan that sets out objectives for the protection and outlines the most important tasks regarding cultural landscape protection. Secondly, it includes voluntary cooperation between administration and landowners. Agreements are based on financial support for the landowner that shall support the maintenance actions on his property by the management plan. UKL funds are provided by the Ministry of Agriculture and the Ministry of Climate and Environment budgets. Efforts of the UKL programme are based on the government's environment policy 2005:

> *"(…) cultural landscapes should be managed so that historical and aesthetic values, biodiversity and availability are maintained"* (St. msg 21, 2004-05: 33).

292 Grinde-Engjasete in Leikanger Municipality and Hoddevik Liset in Selje Municipality are the two UKL sites in the county.

UKL are constructed as a project programme. It was a conscious decision by the authorities to agree on voluntary cooperation between government and landowners. Financial support is distributed to safeguard and maintain cultural landscapes. Hereof, mutual agreements replace statutory authority. The lack of regulations allows the participants freedom of implementation of the project aims in each cultural landscape region (BUGGE 2011: 8). The scheme does not affect cultural landscape management measures in the case study valleys but it is remarkable, as the assigned areas are encouraged to develop a form of governance concerning cultural landscape management measures aside the dichotomy of formal and informal institutions according to the above named proceedings.

- **Regional and local spatial and management plans**

The regional and municipal spatial plans as formal institutions of cultural landscape management, in particular the Municipal Zoning Plan (cf. **Chart 1** App.), exert measures in a mediate way, as they determine the area's use and, henceforward, the type of land management to a great extent.

Within the analysis process, the other county plans (cf. Chap. 5.4.1, p. 218) equal a declaration of national derived policy goals and are mostly researched related to the stakeholder interactions in Chapter 5.3 (p. 188). They include intentions, propositions and projects often revised or applied in cooperation with science institutions and other intermediate stakeholders. A clear cultural landscape management assignment is not by legal or statutory provisions identifiable outside the institutional interplay of the administration.

5.4.2 Subsidy and grant system

The following production and cultural landscape subsidies examples are the central targets of the annual negotiated agricultural settlement[293] between the Norwegian government and the two big farmers associations[294]. With reference to the settlement, the study at hand is not going into detail about the annual negotiations. Only immediate financial allocation systems concerning cultural

293 *Jordbruksoppgjøret* (cf. **GLOSSARY** App.).
294 *Norges Bondelag* and *Norges Bonde- og Småbruklag*.

landscape management are discussed in the subsequent sections. An interesting notion about the Norwegian primary subsidy system was made by a n article in the Aftonposten newspaper *"Farm settlement for dummies*[295]*"* in 2013. It illustrates the incomprehensibility of the system:

> *"Sharp tongues say that it is only a handful of people who fully understand the agricultural settlement. Some say three. Some stretch to point to a single, Secretary General Per Harald Grue. However, he retired four years ago. The same voices rise with allegations that the Norwegian agricultural agreement is specially designed so precisely that no one will understand the approach. The Master Agreement for agriculture and the annual negotiations on financial framework and distribution is a huge tangle of loose ends tied together into a compact ball. If someone is pulling on a thread, the tangle will tighten even more."*

Financial allocation and distribution networks concerning cultural landscapes almost entirely comply with those of active agriculture and farming in the country. By referring to the main aims and objective of the current investigation, the subsidies appear as a valuable incentive to engage farmers in cultural landscape management measures.

The first and foremost instrument overarching the subsidy systems are the regulations for production and compensation subsidies in agriculture[296]. A crucial subsidy scheme regarding cultural landscape management measures is in the parliamentary hearing process. The Ministry of Agriculture and Food is submitting for consultations on the regulations on subsidies to view clearance[297]. The scheme was negotiated in the agricultural settlement of 2015 and shall apply to the counties Hordaland, Sogn og Fjordane and Møre og Romsdal. The grant will contribute to the clearance of cultural landscapes, roadsides, and viewpoint of valuable character set from the agricultural and tourism industries side. The consultation period is set to April 11, 2016 (REGJERINGEN 2016).

Thus far, the presented formal institutions are legal propositions that impact cultural landscape management immediately. Next sections give an overview of the financial subsidy system that determines cultural landscape management mediately by setting incentives for specific management measures.

295 http://www.aftenposten.no/meninger/kommentarer/Jordbruksoppgjor-for-dummies-7181223.html (published 23rd, April 2013; Accessed 20.02.2016).
296 *Forskrift om produksjonstilskudd og avløsertilskudd i jordbruket (FOR-2014-12-19-1817).*
297 *Tilskudd til utsiktsrydding* shall include 20 million NOK (REGJERINGEN 2016).

- **Regulations for production and compensation subsidies in agriculture**

The main purpose of the production subsidies is:

> *"(..) to contribute to an active and sustainable agriculture within the objectives the Parliament has drawn up"* (§ 1).

The grants are calculated at a rate per animal or acres of land. Diverse targets are equipped with a separate plan. Production support includes the following objectives as grant schemes:

- Areal grants
- Cultural landscape grants
- Subsidies for livestock
- Subsidies for lamb slaughter and yeanlings
- Grants for grazing animals
- Grants for grazing animals in the outfield
- Operating subsidies for milk production
- Operating grants to specialized beef production
- Grants for conservation worthy cattle breeds
- Area Grants for organic farming
- Subsidies for organic livestock production
- District grants for fruit, berries and vegetable greenhouses
- District grants for potato production in northern Norway

By referring to the study aims and objectives, the research at hand performs a closer examination of the cultural landscape subsidies and the grants for grazing animals in the outfields. Those two grants have a central significance for the active management of the cultural landscapes in the case study sites.

- **Cultural landscape grants**

Cultural landscape subsidies comprise requirements for the preservation of the cultural landscape of active agricultural land. According to the grants it is prohibited to cause significant changes in the cultural landscape, comprising:

- Rivers and streams should not be channelled or closed;
- Open ditches should be kept open;

- Forest edges, buffer zones and other residual areas of arable land should not be cultivated;
- Islets in fields, stone walls and old clearance cairns should not be removed;
- Agricultural land shall not be levelled;
- Thoroughfares should not be cultivated or closed;
- Vegetation islets in fields should not be sprayed unless this is part of the maintenance measures of the cultural landscape.

The requirements are not precluded: Regular bottom and side scraping of rivers, streams and ditches, maintenance of trees and shrubs (such as felling, thinning, cutting) and measures necessary to crossing with heavy equipment are tolerable. The municipality may admit exceptions to these provisions by special applications in the Municipal Plan. If a measure is implemented without derogation, it may be required that the previous state is restored. Areal and cultural subsidies lapse when imposed recovery measures are not completed within the given deadline. If the matter can not be recovered, the areal and cultural subsidy rejected wholly or partially for up to 3 years. If there is soil erosion on agricultural property, the county establishes as conditions for land use and cultural contribution that the applicant follows specific tillage practices or the like (LANDBRUKSDIREKTORATET 2015).

- **Grants for grazing animals in the outfields**

There are two schemes for grazing animals[298]. Grants are given to animals that graze in cultivated areas and supplements provided for animals that graze in the outfield areas. The purpose of the schemes is to safeguard cultural landscape through pasturing[299].

Furthermore, a more optimal use of the the outfield resources is intended. A positive effect on animal welfare is recognisable. Grants for animals on outfields

298 The Ministry for Agriculture and Food established new regulations on subsidies for grazing measures in 2013. They replaced the funds to organised grazing.

299 The current research analysed immediate statutory regulations concerning the aims and objective. The Grazing Act (LOV 1961-06-16 no. 12), the Fence Act (LOV 1961-05-05) are not included in the present examination as they have only mediate effects on cultural landscape management regarding direct execution measures and practical regulations concerning the pasturing and fencing rules.

are designated to impact particularly livestock pasturing in the outfields (LANDBRUKSDIREKTORATET 2015). Additional work is related to outfield pasturing, for instance, driving the animals back and forth to the mountain areas. The requirements are:

- Animals must pasture a minimum of 5 weeks in the outfields.
- Animals gain the main forage part (min. 50%) in the outfields. Externally supplied fodder must not comprise more than half of the daily fodder.
- Outfields should be permanently fenced around the arable land.
- Pasturing in outlying areas forests, islands, islets, mountain areas).

Funding for joint initiatives in grazing is a broad grant scheme with the purpose to facilitate the foremost exploitation of pastures in outlying areas, reduce the loss of animals on the pastures and promoting joint actions in the outfields. The scheme covers all types of measures that optimise grazing conditions in the outfields. Following management measures are entitled to financial support: Blocking fences, cattle guard, bridge maintenance, goat shelters, plucking- and distinguishing plants, clearing and improvement of cattle drift tracks, salt block automat, transport measures, electronic monitoring equipment (radio collars). Entitled to the scheme are individual farmers and landowners that meet the main criteria, as well as, joint pasturing and land owner associations[300], ownership rights and land leasers. Joint actions can be prioritized higher than private initiatives to engage as much farmers to pool their outfield grazing efforts and to cooperate (FYLKESMANNEN SOGN OG FJORDANE 2015).

- **Subsidy payments in Stryn Municipality**

By taking a closer look at the financial allocation and distribution systems discharged to the agricultural sector in Stryn Municipality, Figure 38 (p. 224) gives a summary of the disbursed grants and the various development during the research period. Although the amount continually raised since the beginning of the period, it peaked in 2011 with the highest amount of 28.795.322 million NOK. Since then, stagnation is noticeable in the following two years. In 2014, the number dropped about 2 million NOK.

300 Such as the *Erdalen Beitelåg*.

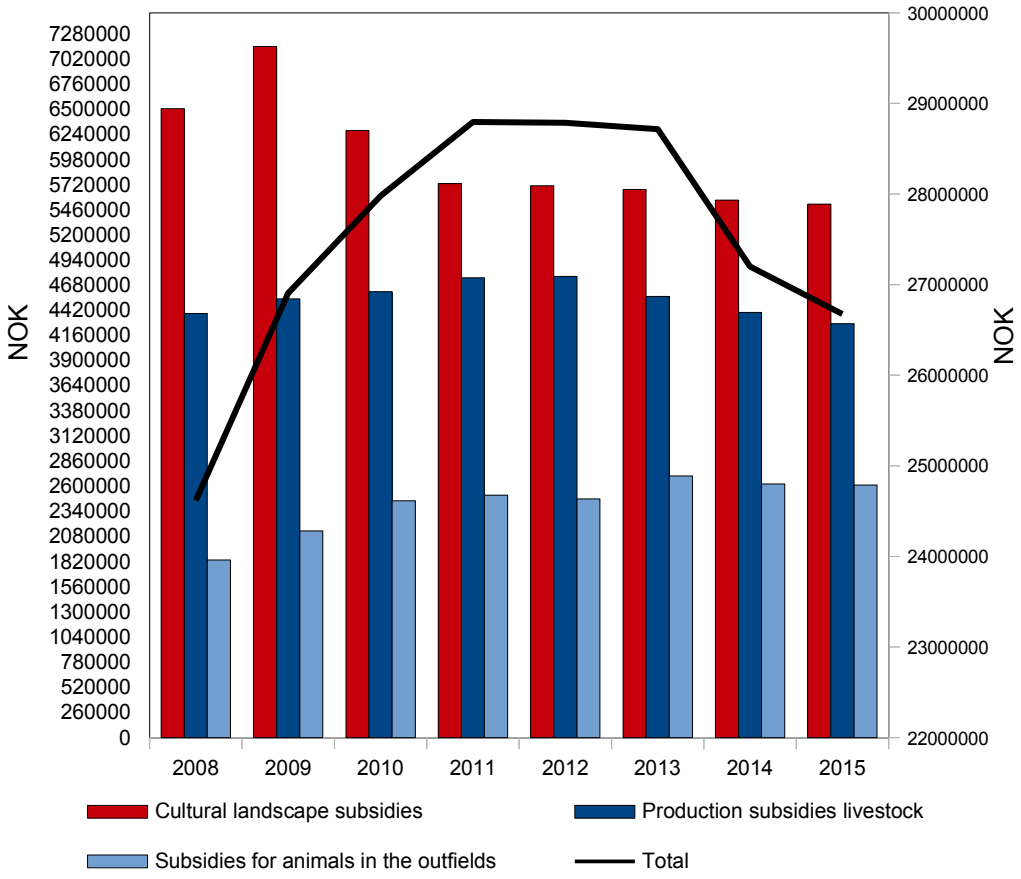


Figure 38 Major disbursed cultural landscape subsidies in Stryn Municipality 2008-2015 (source SLF 2016; SOGN OG FJORDANE FYLKESMANNEN 2016).

In the years 2013 and 2014, the total quantity of all state and regional subsidies for the primary sector increased in Stryn Municipality. In correspondence to the structure of agriculture in Stryn, the operational level of farming has remarkably transformed. Several measures regarding cultural landscape maintenance rely on animal husbandry, particularly regarding cultural landscape management in the outfields. The primary measures regarding cultural landscape management are based on the previously outlined financial distribution systems, and the generated numbers concern the subject matter for grants and subsidies in the municipality. Assumable explanations for the decrease in the total sums regarding cultural landscape subsidies in Stryn Municipality are:

– The number of active farm holdings and the number of arable lands deteriorated in the case study valleys.

– Cultural landscape management actions are time-consuming. It can be the case that farmers, who rent out neighbouring farmland will not apply concrete management action on the leased land and rather increase the amount of grass cutting acres.

The sum of subsidies for animals in the outfield is relatively constant after a remarkable increase in 2008. There is a coherence with the fact that animals pasturing on the Jostedalsbreen National Park ground, as all three valleys are partly located on, are additionally subsidised. Financial allocation and distribution systems constitute an important part of the formal institutional framework, as they support active and direct cultural landscape management measures by financial incentives.

> *" (…) all the Norwegian farmers get a bit amount of money for producing food, and that's a complicated system and it influence of what kind you produce" (INT VIII 2011: 2).*

The subsidies are coupled to statutory provisions that link management standards for maintaining and safeguarding cultural landscape elements and components. The centre of the examination at hand is solely aligned on subsidy systems relevant to cultural landscape management measure related to agri-environmental and/or (agri)cultural landscape aims.

Cultural landscape grants are hierarchically detached into national, regional (county) and local programme schemes. These are the national environmental scheme[301] (NMP), the regional environmental schemes[302] (RMP) and the local scheme for special environmental measures in agriculture[303] (SMIL). The NMP is the largest subsidy scheme in Norway. Payments are related to farming activities but not to production outcome of individual farm units. A key goal is to secure continuous farming in Norway. NMP is divided into sub-schemes and organised by the Norwegian Agriculture Agency (SLF[304]). Cultural landscapes are part of the area and cultural landscape scheme[305]. Mainly the AKS impose requirements to the farmers who are entitled to the scheme, such as the preservation of stone fences., for instance. An ongoing monitoring programme

301 *Nasjonalt miljøprogram (NMP)* – national environmental programme
302 *Regionalt miljøprogram (RMP)* – regional environmental programme
303 *Særskilte miljøtiltak i landbrukett (SMIL)* – special environmental measures in agriculture
304 *Statens Landbruksforvaltning (SLF).*
305 *Tilskot til kulturlandskap.*

of Norwegian agricultural landscapes (3Q) also targets the most elements described by the AKS (BLUMENTRATH et al. 2014: 10).

- **Regional environmental programme (RMP)**

Due to administrative reasons parts of the subsidy system are regionalised. The RMP scheme was established under regional control in 2005. Counties adjust, which criteria must be fulfilled in order to receive financial support. Criteria and activities to do so are prioritised regionally, and farmers obtain subsidies by implementing these activities (BLUMENTRATH et al. 2014: 12). Two main categories, pollution control and agricultural landscape management, characterises the RMP. By committing to the present research, only the latter category is examined. Six main themes have been in focus within the RMP since 2009 (LANDBRUKSDIREKTORATET 2009):

- Agricultural landscape management, focusing on traditional management that is considered specific for the region
- Biological diversity - small biotopes, rare and threatened habitats as well as genetic resources, for instance, traditional livestock breeds
- Cultural heritage and cultural environments
- Accessibility and possibilities for recreation, e.g. through establishing footpaths and possibilities for crossing fences
- Prevention of run-off
- Reducing pesticides and ensure safe disposal of waste

Subsequently, the RMP in Sogn og Fjordane are conferred.

- **Regulation relating grants for regional environmental initiatives in agriculture in the county Sogn og Fjordane[306] (RMPSF)**

Particularly the improvement of pastures as a central management approach has been a challenge in many counties. A vast amount of the total funds was initiated for grazing (BLUMENTRATH et al. 2014: 12). In respect to the study aim, the RMP in the county Sogn og Fjordane become effective according to the prioritised funding stated in Chapter 2 of the Regulation (FORSKRIFT OM

306 The regulation has been renewed in 2015.

TILSKOT TIL REGIONALE MILJØILTAK I JORDBRUKET, SOGN OG FJORDANE, FOR-2015-06-03-637):

"§ 4 Funds for mountain dairy farming

§ 5 Operation of steep areas

§ 6 Funds for organised grazing

§ 7 Funding for the management of goat and yeanlings grazing

§ 8 Funds for preserving traditional livestock breeds

§ 9 Funds for grazing animals in protected areas

§ 10 Funds for valuable elements in the cultural landscapes

§ 11 Funds for managing particularly valuable hay meadows and pastures".

Statutory provisions regarding the measures are defined in the regulations of the Regional Environmental Programme in the county of Sogn og Fjordane (RMPSF). § 1 RMPSF names the purpose that

"The purpose of these regulations is to contribute to the cultural landscape of Sogn og Fjordane (...) and that agricultural production happens in an environmentally sound manner."

Regarding § 3 RMPSF financial support:

"Entitled to subsidies for environmental measures under these regulations are:

- Entities entitled to production subsidies (...), and/or

- Grazing associations that are approved by the local authority and registered in according to the Entities Registry Act 13 June 1994 no. 15.

- All enterprises that have agricultural land with crop production and who are entitled to production subsidies that fulfil the requirements for fertilization plan regulations 1 July 1999 no. 791 on fertilization planning § 3. When using pesticides, it is a condition that meets the requirements for recognition and retention of records in the regulation of 6 May 2015 no. 455 on pesticides, § 20 and § 26, and the keeping of the register of pesticides in the same regulation, § 67."

§ 4 regularises the grants for mountain dairy farming:

"Grants may be given for at least four weeks of summer farming with dairying where the total milk production happens on the pasture during this period. It may be given additional grants for at least six weeks mountain farming."

§ 5 funds the operation of steep areas:

"Funding may be given to enterprises that joined full grown and cultivated the soil surface with a slope of 1: 5 or steeper. It is a prerequisite that the area is mowed at least once per. year. It may be given extra support to areas with a slope gradient of 1: 3 or steeper. It can set an upper limit on total support per agricultural unit. […]."

§ 6 finances organised grazing:

"Grants may be given to the operation of approved grazing associations pasturing on common grazing grounds in outfield areas and reduced loss through organized supervision, gathering and other joint measures."

§ 7 subsidises goat husbandry:

"Funding may be given to goats and yeanlings that graze on a fenced/demarcated area for at least eight weeks reducing the overgrowing."

§ 8 funds for preserving traditional livestock breeds:

"Grants for preserving traditional livestock breeds that originate in, or have a special habitat and are of national value in Sogn og Fjordane."

§ 9 grants for animals grazing in protected areas:

"Funding may be given for livestock that is grazing for at least eight weeks in a conservation area or national park prescribed by the Nature Conservation Act and where cultural landscape with grazing is one of the protected values."

§ 10 financially supports valuable elements in the cultural landscapes:

"Funding may be given to agricultural companies that take care of valuable elements in the cultural landscape. It may be given grants to:

1. *Automatically protected monuments, restricted to a maximum of 10 prehistoric elements per enterprise.*
2. *Stone walls and ground walls.*
3. *Pollarded trees."*

§ 11 grants for the management of especially valuable hay pastures:

"Funding may be given to enterprises that take care of old hay meadows and pastures that are particularly valuable for biodiversity in the cultural landscape."

RMP funds have firm prerequisites regarding cultural landscape management efforts. Financial subsidies are closely related to formal institutions regarding active cultural landscape actions that have to be applied by the farmers in order to receive the money.

- Special environmental measures in agriculture (SMIL)

SMIL subsidy scheme is managed by the local authorities. First action strategy for applying SMIL grants in Stryn Municipality was developed and adopted in 2004. According to the White paper (St. meld. No.19 2001-2002) municipalities were conferred more powers and responsibility on agricultural policy. An increased local democracy approach was practised in order to implement a local adoption of the funding in agriculture. At this time, national agricultural policy emphasised agriculture as a producer of common goods recurring to the

concept of a multifunctional agriculture. Since then agriculture is admitted a central role in the management of biological diversity and cultural heritage sites on a local scale (TILTAKSSTRATEGI FOR SPESIELLE MILJØTILTAK I JORDBRUKET STRYN KOMMUNE 2013-2016: 2). The municipalities are responsible for announcing the funds and prioritize projects and initiatives out of a local angle and local strategies. In addition, the county expects that municipalities stimulates SMIL measures that may be building up under objective and grant schemes within the Regional Environment Programme for Sogn og Fjordane (HANDLINGSPLAN 2015: 13).

Main objectives of the SMIL funds are according to Stryn Municipality (TILTAKSSTRATEGI FOR SPESIELLE MILJØTILTAK I JORDBRUKET STRYN KOMMUNE 2013-2016):

> *"- To take care of a living culture, displaying that Stryn is and was a vivid farming village ('living cultural landscape').*
>
> *- To emerge agriculture as an industry in Stryn that is not crisis-prone or polluting, but environmental protective and securing biological diversity.*
>
> *- To facilitate that the public can benefit and experience landscape and nature, by retaining access (ancient routes and footpaths).*
>
> *- To demonstrate that society appreciate cultural landscape by giving appreciably financial support to its owners that they will take care of the cultural heritage."*

Regulations[307] on grants for specific actions in agriculture 04.02.2004 and Circular 33/2004 from the Norwegian Agricultural Authority comments that the regulation on specific actions in agriculture is the basis for allocating the funds. Engagement is voluntary; and in relation to the RMP and the national subsidy scheme, not only active farmers can apply for SMIL. Funding is available for those who are willing to conduct particular activities such as restoring an old building or haying. The purpose of such measures is to safeguard the natural and cultural heritage values. Examples of actions in landscapes may safeguard biodiversity, old cultivated land and cultural heritage. Stryn Municipality admits utterly that overgrowing is a notable threat to the cultural landscapes.

307 *Forvaltning av forskrift om spesielle miljøtiltak i jordbruket, Rundskriv 3/2004.*

- **Regulations for funds for investment and enterprise development in agriculture**

The Ministry for Agriculture and Food has issued new regulations for funds for investment and enterprise development in agriculture[308]. The recent regulation replace the former regulations for funds for rural development. § 1 states the purpose of the funds:

> *"The purpose of the funds for investment and enterprise development in agriculture is to facilitate long-term and profitable value creation and contribute to employment, settlement and a varied agriculture in all parts of the country on the basis of agricultural resources in general and agricultural property in particular."*

Cultural landscapes as a central objective are not specifically mentioned nor operational provisions. The posed statement strongly intertwines with the strategy of the central sectoral policy field of agriculture to intensify agricultural production in the case study valleys. Each county may, through their strategies specify regulations and priorities within the framework. The Ministry of Agriculture and Food administers the central rural development funds . The scheme will contribute to private sector development in agriculture. This includes both the development of traditional agriculture and of rural industries. Main objective of the scheme is to contribute to the reputation management of Norwegian agriculture and food. The following projects will be prioritized:

- Projects that contribute to increased utilization of uncultivated land resources and infields,
- Projects that contribute to better resource utilization in the food chain and projects that contribute to recruitment to agriculture.
- Projects must be of paramount national character or contribute to regional cooperation.

The purpose of the central rural development funds is to facilitate long-term and profitable value creation, as well as decentralized settlement based on agricultural resources in general and agricultural property in particular. The funds are managed by Innovation Norway. § 3 of the regulations names the target groups for funding. According to the earlier presented demographic

308 *Forskrift om midler til investering og bedriftsutvikling i landbruket, FOR-2014-12-19-1816.*

situation as a driver of cultural landscape change, § 3 f subsidises measures to counteract this development:

> *"Investments in connection with generational change: For people under 35 who take over agricultural property may be granted subsidies to less investment by up to 40 percent of the costs, limited to 40 percent of the approved cost estimate for the measure. Women can grant share increased to 60 percent (…)."*

Other programme parts of the Rural Development Programme in the County of Sogn og Fjordane 2013 to 2016 relate to cultural landscape management efforts that were already mentioned in the section discussing the RMP.

- **Cultural Heritage Fund**[309]

The Norwegian Cultural Heritage Fund is organised by the Regulations on the Norwegian Cultural Heritage Fund[310]. §1 defines the purpose of the fund:

> *"Norwegian Cultural Heritage Fund shall:*
>
> *a) help strengthen efforts to preserve conservation and protected monuments*
>
> *b) contribute to a diversity of cultural heritage that can be used as a basis for future experience, knowledge, development and wealth creation."*

Section b of the paragraph captures the cornerstone intention of the research at hand that cultural landscapes are actively used for regional and consequentially for economic development and valorisation. Financial support may be granted also for the cultural landscapes applied in the current research:

> *"Cultural Heritage Fund may be used for measures in the whole field of cultural heritage (§2)."*

Applicants to funding are defined by §4:

> *"Private owners and Non-Governmental Organisations (NGO) can apply for the Cultural Heritage Fund. Municipalities may in certain cases apply for own cultural heritage ref. § 11-5."*

§11 regulates the terms and the limitations of the Cultural Heritage Fund:

> *"The Fund shall initiate and support projects that:*
>
> *a) co-financing between public and private actors, as well as projects that trigger private funds or considerable effort*
>
> *b) benefit the general public good and that creates great synergies.*
>
> *It can as a rule not granted to actions commenced on the date of the decision. If there are special reasons, the Board may still provide subsidies. Grants from the fund require a*

309 *Norsk Kulturminnefondet.*
310 *Forskrift om vedtekter for Norsk kulturminnefond (FOR-2003-06-27-801).*

minimum of 30 percent private co-financing of individual projects. The aim should be that the Cultural Heritage Fund's share on average does not exceed 50 percent. In special priorities set by the Ministry within the purpose, in matters relating to protected monuments and culturally important churches, the board may waive the requirement for private co-financing. Cultural Heritage Fund's share of such cases can be a maximum of 70 percent. The same applies in cases relating to municipally-owned cultural relics, which predominantly benefit the general public good. In such cases, it should be stipulated that the municipality signs a long-term agreement with private cooperations in the process, and that such land use plan adopted for the conservation of the monument."

Particularly the latter statement assigns cultural heritage in cultural landscapes a heterogeneous and multifunctional common good character. The cultural heritage fund published booklets that give practical management proposals concerning the restoration of stone barns, reconditioning of soil basements, reconditioning of clay masonry hearth, reconditioning of hay barns, repair of roofs covered with birch bark, reconditioning of grind built boathouse and the repair of roofs covered with wooden shingles. These examples give an outlook that the management efforts are largely related to constructions on point or linear elements and components.

- **Synopsis of the analysed formal institutions appointing cultural landscape management**

A summary of the analysed formal institutions regarding cultural landscape management by central sectoral policies is displayed in Table 12 (p. 234/235). The quoted formal institutions imply or apply active management measures by mainly constituting mediate and immediate legal propositions. Active management measures are tied to requirements in the subsidy regulations. It can be concluded that the agricultural sector with its formal regulations, mainly exerted by the national production subsidies, the tremendous impact on the trivial cultural landscapes for food and fibre production.

"The trivial landscape is taken care of through certain conditions in the regulations of the production subsidies and the regional and local management planning" (INT VII 2013: 2).

Focus is on the expansion and sustaining of agricultural production in the infield areas of the case study valleys, even though the trivial cultural landscapes are enlarged to the outfields. In the case of Bødalen and Erdalen:

"Trivial cultural landscapes in our county are for instance hayfields and pasture for conventional food production" (INT VII 2013: 2).

It seems that there is an overwhelming consensus between all three logics of action regarding the firm position of central agricultural policy and cultural landscape management, persistently in the trivial cultural landscapes. Otherwise, the massive financial support could not be justified.

" (…) It's a great culture for farm subsidies in Norway. I think, so there is a large support in subsidies (…)" (INT II 2011: 4).

The summer farming cultural landscapes in the outfields of Bødalen and Erdalen, to which the associative cultural landscape is so closely attached, have to face the consequences of an insidiously transforming due to the distribution of production subsidies. The historically grown and vertically connected cultural landscape of the Inner Nordfjordscape is still in use but the domination of milk production and cow husbandry on the cultural environments of Bødalen and Erdalen lead to gradual changes. The cultural heritage sector and nature conservation must be mentioned as the leading policies that dominate the protection of cultural landscapes with specific cultural and natural values in the area. Regarding values and ontologization, the areas with specific cultural and natural values are somewhat neglected.

Nature conservation and cultural heritage mostly regulate the distinct cultural landscapes with specific natural and cultural values. Either by protecting built point, linear or laminar elements and components constituting or by the protection of extensive cultural environments. It can be made the assertion that cultural landscape management by formal institutions is not a cross-sectional task between the varying sectoral policies. The domination of the primary sector and the existing regulations regarding the protection of areas with cultural and natural values by nature protection and cultural heritage is evident. An accomplishment of management actions in the respective areas is missing. Next section gives a brief overview on the examined discourses that are analysed according to a presumed institutional gap between formal institutions that regulate cultural landscape management and the informal institutions that define actual cultural landscape management action by the management operating stakeholders.

Formal institutions sectoral policy fields of:	***Agriculture***			***Cultural Heritage***	***Nature Conservation***	***Spatial Planning***	***Tourism and Recreation***	***Rural development***
Legal basis	*Agricultural Land Act*	*Concession Act*	*Regulations on Cultivation*	*Cultural Heritage Act*	*Nature Diversity Act*	*Planning and Building Act*[311]	*Outdoor Recreation Act/National and regional strategies on tourism*	*Regulations for funds for investment and enterprise development in agriculture*
Instruments	Regulations, provisions and permissions for exceptions regarding active farming areas	Public concessions (statutorily regulated)	Active farming (National, regional and local environmental grants/cultural landscape subsidies/other subsidies)	Automatic and special protection by Royal Resolutions concerning cultural environments, protection and active measures to buildings; Mapping Cultural Heritage Fund	Regulations and zoning (in protected areas, here: Jostedalsbreen National Park Management Plans), compensations	Land Use Part of the General Municipal Plan, Zoning of land use in the General Municipal Plan	Cultural and natural values are the basis for tourism (joint marketing effort), tourism development plan and local tourism marketing associations (intermediate stakeholders such as *Destination Stryn & Nordfjord*)	Financial grants
Stakeholder constellation	Interaction between administration and landowner	Interaction between landowners, farmers and administration	Provider and receiver relation (almost entirely farmers)	The owner applies maintenance duty in agreement with the administration; Intervention possible; Private public cooperation	Guidance by agreement with the land owner	Interaction between administration, community and land owners	Interaction between: Administration and community (landowners, farmers, tradesmen, etc.), National, regional administration and local stakeholders (activity accommodation providers)	Diffuse constellation between various stakeholders (hierarchy, market and society), tourism as a central cooperation partner to safeguard cultural landscapes (cultural landscape board on the level of the county)

311 Including Regional and Municipal Plans.

Effects of formal institutions	Use oriented	Use oriented	Use oriented, but protection through use (agri-environmental goals)	Protection-oriented	Protection through traditional use (where it is necessary to protect the natural values)	Protection of cultural heritage	Protection-oriented	Combined use and protection orientation (not otherwise specified)
Management modes (scaling of the organisational field)	Top-down and complex scalar organisation (regarding special cases government/ municipality); Hierarchical coordination and cooperation between the varying levels of administration	Complex scalar organisation in the case of conflicts (other than governance discretion of the municipalities)	Complex scalar regarding the subsidy distribution	Top-down administrative imposed management measures	Top-down (hierarchical determination, management plans); Individual management efforts agreed in a contract; Horizontal cooperation between farmer and administration and vertical cooperation between administration units → Inter-municipal steering committee	A bottom-up planning assignment for municipalities that is assessed and evaluated in case of conflicts by the county governor; Top-down hierarchical targets	Complex scalar organisation	Attempt to initiate governance and cooperation; although the main policy aims stay top-down; Innovation Norway as a promoter and facilitator

Table 12 Synopsis of formal institutions including their legal basis, their management instruments, the stakeholder constellation, the effects and the mode of governance.

5.5 Discourses in a nutshell

The next chapter of the inquiry relates the so-far described management effects by formal institutions, which are presented and compiled in Table 12 (p. 234/235), to the represented cultural landscape change to point out potential discourses that deteriorate the current situation of cultural landscapes in the case study valleys. It is the fundamental interest in the recovery of cultural landscapes advised as distinct spatial-social patterns, relying on perceptions, ontologizations and reification peculiarly concerning a future intended development.

In the process, the current scrutiny correlates the term discourse according to the definition of HABERMAS (1972: 130): "*Among the heading 'discourse', I introduced the argumentative form of communication, in which problematic validity claims are thematised and are examined due to their permission*[312]*."*

Succeeding chapter confers the question, whether potential discourses around the so far debated cultural landscape management efforts and measures establish accordant to an argumentative form of communication, in which validity claims regarding the formal institutional framework of cultural landscape management under the perceived cultural landscape change are broached. Following, results are displayed in a paraphrasing journal that reproduces the examined narrated discourse fragments in a nutshell. Within the discourse analysis[313] of the different fragments, either made in interviews or documents and by investigating the production process of the collected data, leading discourses or frictions about the principle conception, comprehensions or apprehension of the terminology of cultural landscapes in Norway were not identifiable. In contrary, it is observable that a broad societal consensus prevails concerning the three comprehensive paths in Norway regarding the terminology cultural landscape almost expressionless minted by agriculture, since the

312 *„Unter dem Stichwort ‚Diskurs' führte ich die durch Argumentation gekennzeichnete Form der Kommunikation ein, in der problematisch gewordene Geltungsansprüche zum Thema gemacht und auf ihre Berechtigung hin untersucht werden."*

313 The intention of applying the discourse analysis was to exhibit the socio-cultural significance and assumed facticity of cultural landscapes and the respective management in the case study valleys to capture symbolic procedures, material facts and social institutions (GLASZE and MATTISSEK 2009: 12).

increasing elaboration of the term by the administration and spatial planning in the 1990s. The assumptive high level of approval among the society regarding massive subsidy payments in the primary sector, also supporting the different paths of cultural landscape apprehensions.

As regards to the interrogation perspective raised by HABERMAS and his definition of discourse, some interview statements reproduce a validity claim concerning cultural landscapes' eligibilities of being thematised as something to subdue management measures to, outside the sectoral policies' views. Portrayed by some interview statements and referring to the formal institutional analysis, the associative Inner Nordfjordscape is considerable as a toponym affected by the long-lasting agricultural land use via traditional practices and comprehended for the whole areas of the case study valleys. Particularly the beginning of the process of introducing national parks in the case study valleys created the perception about intended cultural landscape management measures aside the current agricultural orientation.

- **Cultural landscape management a discourse of the past?**

Cultural landscape management efforts and measures have already been contested between formal and informal institutions imposing the diverging application of cultural landscapes as common or private goods. A discourse of power has been disputed among the related stakeholders around the installation of the JBNP in the 1990s. The designation of the national park and its basic orientation precipitated as a conflict that was grounded on the rejection of the concept by many farmers and landowners in the case study valleys.

> *"(...) in the late 70's a national park was a dirty expression. Presumably, people in the countryside, especially farmers didn't want national parks because it took away their right to use the land but the government in Norway did not buy the land. They didn't buy it, they just said this is a National Park, you are not entitled to compensation (...)" (INT I 2011: 4).*

Out of this statement, it can be concluded that the beginning of the JBNP designation process confronted the traditional land users with fact that they loose their supervision of the land and the extractable land resources by formal institutions without being compensated. Aside the goals were questioned

because to date the farmers exerted cultural landscape management by the ontologization of a farmer and his work on-site:

> *"I was very against the National Park when they began to talk about the National Park. I meant it was not necessary (…)" (INT III 2011: 3p).*
>
> *"The National Park administration said we have to protect it (cultural landscape), so it will not be destroyed. I think the owners wanted also to protect it they want to have it like it was" (INT III 2011: 4).*

Foregrounding this discourse took place as a dispute about the ontological setting and the worldview of a farmer, who was brought up in the case study valleys and versus nature protection.

> *"(…) this was an obstacle to popular understanding for Norway's protecting and the people of countryside were saying that the landscape always protected itself, why etc. The farmers said the same thing, we have taken care of the land and we continue to do so" (INT I 2011: 4).*

Moreover, it was a question of who is entitled to outright the power to use and manage the goods and services in the cultural landscape of which the national park was assigned. Conducive to the effort made by individuals or communities, all stakeholders are, at least in the process of an intended development of cultural landscapes perceptible as rational deciding agents. The rights of the farmers in the case study valleys would have been dispensed. Although the would have been a higher trade off for other purposes than nature conservation, such as hydropower development, for example.

> *"They would get compensation for their rights that they would possess up there, certain rights that some possesses determine the extent of those. They would have got something. Stryn Municipality would have brought a lot of money and there would be work for three, four, five years building. I also know that was part of the resentment (INT I 2011: p. 5).*

So, the discourse about the cultural landscape management measures around the JBNP was not a discourse about the introduction of nature conservation measures by central sectoral policies on behalf of individual private goods and the right to determine the development of such in a traditional matter as a farmer. It was a discourse about the highest trade-off between hydropower production and nature conservation. This example demonstrates that formal institutions are needed to push through interests of weaker. According to some statements, these conflicts between farmers and nature conservation regarding

the right to furthermore use the land and subtract resources from the outfields as they were used to are settled.

"They belong to the past. (…) They know what the basis is" (INT V 2011: 3).

A Fjordingen newspaper article[314] headline from October, 26th 2011, written in the context of the 20 years anniversary of the JBNP, draw a more consensual upshot regarding the issued discourse.

"Celebrating the national park."

Furthermore, the discourse around the installation of the JBNP initiated a collective learning process at that time.

" (…) so there's been a time with very big change. I think also we look, we have learned from all of us, all forms, experts and to keep the cultural aspect alive really. Major change since 1999" (INT II 2011: 1).

To some degree, a communication arena around the installation and implementation process of the JBNP already emerged, to a greater or lesser extent unintentionally. Subliminal disagreements respecting the JBNP cultural landscape management dogma maintained, particularly within the setting of cultural landscapes as a heterogeneous and multifunctional common good and the respective spatial qualities (cf. Table 14, p. 251).

After an already mentioned mutual learning process commenced, practical aspects of subduing cultural landscapes to certain management measures within nature conservation efforts highlighted, which not unilateral concerned the national park area and unfold among planning and building issues and other sectoral policies comprising cultural landscape management in their respective field somehow.

- **It is not the power of rules...**

Concerning the earlier described facts and according to discourse fragments, these are not about how to comprehend the different conceptions of the cultural landscape in the case study valleys. It is about the asymmetry of the enacted regulations based on formal institutions and the understanding of how to execute and implement cultural landscape management measures by the respective stakeholders.

314 *"Feira nasjonalparken".*

"I suppose was once legislated, were left to abandonment or many of them intensifying management which can be as harmful as just abandoning it. So there is some of them which are still good, but there has been too little direct management from the local authorities and maybe they have thought that this was not their problem or their task. (INT I 2011: 1).

"So they tried to find a typical, culture landscape. Whole landscapes, first of all, but also particular kinds of cultural nature types. So to say. Plants and vegetation. (...) I feel sorry for it, is that this works, that was laid down has not been applied as it was supposed to be. Because for some reason I think, the farmers in the municipalities, they didn't take this challenge as we wanted them to do" (INT II 2011: 1)

The downright protection status of the cultural environments and other protected areas, including areas on the JBNP, in the case study valleys, are not reckoning any imposed mandatory management efforts and measures.

"You need active management. Not only management rules" (INT I 2011: 8).

So standards and regulations are neither the main promoters of cultural landscape management measures and efforts in the case study valleys nor considered as a legal obligation. It can be pointed out that discourses around cultural landscape management efforts and actions and active cultural landscape management are most probably a question of time.

- **...it is the power of time**

It turned out due to some expressions made that time is the critical factor regarding the application of practical cultural landscape management activities.

"But of course, a negative effect is that more marginal areas, which may contain the most valuable biodiversity, the modern farmer has no time for those areas" (INT VII 2013: 7);

"Then you don't have time to do that all the time. Because you are doing your farming" (INT IV 2011: 2011).

"Because we are very few people now who are farmers also, that's much more difficult to keep the landscape and when my generation is away away, it will run quicker the problem" (INT X 2013: 3).

"Then you, I think, you perhaps do more time doing voluntary work just to apply for the money that is perhaps more work doing that, than the money you get out again. It is very, very much depending on voluntary work. It is not the size of the sum of the funding to keep the project going isn't enough to give it reasonable pay for the work you do. Then you don't have to pay with your own money for doing this; it is much more voluntary work" (INT IV 2011: 2);

In particular the last argument visualises that it is to a lesser extent the pressure to subject to formal institutions (here: financial grants to execute cultural landscape management activities) than the relevant expertise to invest the same amount of time spending to apply for financial subsidies could be invested in cultural landscape management measures by the farmer.

Inside the scope of the time discourse, the fact arises that a number of formal institutions regulating cultural landscape management strengthen the cultural landscape change based on a consequent transformation of the cultural landscape areas on-site, although they actively use the space of the specifically protected cultural landscape. The stakeholders and institutions which are in charge of issuing these formal institutions vindicate oneself for that.

> *"(...) in some way you have to make it interesting for the farmer. So in some way you have to combine the individual requirements and use them and so on with what is most interesting piece to them. Try to find some combination that doesn't violate too much the requirements of that nature types or vegetation unities. So it's also a meta-psychology because you have to sell the ideas to the farmer" (INT II 2011: 7).*

- **Cultural landscape of the Inner Nordfjordscape is agricultural landscape of the past and the present**

Albeit the three comprehensive paths (cf. Chap. 5.4, p. 191), the Norwegian government states clearly that agriculture is the main upholder of cultural landscapes and that any changes within the primary sector effect cultural landscapes likewise.

> *"Agriculture contributes to the upkeep and preservation of cultural landscapes, a significant national asset, characterised by cultural and natural diversity" (REGJERINGEN 2014). "Preservation of culture, heritage and biodiversity in the agricultural landscape require the continued utilization and maintenance of farmlands. (…)" (REGJERINGEN 2014). "Where agricultural activities change or cease, the cultural landscape is also affected" (REGJERINGEN 2014).*

A recourse to cultural landscapes areas, such as the Inner Nordfjordscape, is not taken. Identity is rooted in the cultural landscapes of agriculture that intertwine with the changes in agricultural production as some cultural landscape experts stated.

"(...) they don't sell their property. (…). They hold onto them because they mean so much to their identity. Their name is often the same as the name of the farm or their village or their hamlet village and the landscape is memories of growing up hunting in the woods, fishing in the lakes and rivers and all that. That is part of a cultural landscape, countryside, Norwegian countryside" (INT I 2011: 5).

The scope of cultural landscapes is wide and the dichotomy between nature and culture has dissolved within time.

"(...) we can hardly imagine wilderness, a pure wilderness (...). So all of the Norwegian landscapes have been used exhaustingly ever since the big ice sheet disappeared That's a shape and the valleys have been used for grazing and more intensive forms of farming" (INT I 2011: 2).

Moreover, cultural landscape always help to reflect the current development in societies.

"The agriculture landscape also tells us about the hard work and life of our ancestors, which give us perspectives concerning our situation and living standard today. That is important for me and also the oldest cultural landscape also contains important biological diversity and genes that we may have use for in the future food production and other purposes. And I mean, I think to secure our future, we need both the cultural landscape of the modern times conventional food production and also to take care of the traditional cultural landscape from the past. We cannot, or will not live as our ancestors, but we are dependent on the values of that landscape they made((INT VII: 8).

Cultural landscapes always represented sequences of different times with different demands on space by different forms and intensification of agriculture and has been often subdued to change.

"The typical Western cultural landscape has always changed, I think. But I think that it is important that there be some open areas (where) grass (is) growing, not too many forests on it, that's typical, but then the size of the area that is open landscape is not static. It will increase and then grow up with a little bit of forest sometimes. When the forest gets big enough then there will be grass (again) around the trees when we cut down so that you get a little bit openness around between the trees" (INT V 2011: 1).

It can be taken for granted that the so far described toponymical affection of the dwellers to the cultural landscapes and the formal institution of the ALA, for instance, appoint a discourse regarding active cultural landscape management. The ALA regulates that agricultural land is kept (cf. Chap. 5.4, p. 196), but the inhabitants relinquish active agricultural production on their agricultural property, albeit they feel attracted to the farm. Tenant farmers take over the farmland and

disregard intensive and specific cultural landscape management, as the property is leased for agri-economic reasons and not for improving or creating cultural landscape values. As the government statements approve, change is an omnipresent issue concerning cultural landscape management in Norway.

- **Green-Tunnels**

By recurring to the data analysis framework, the main task respecting the examination of the research aims and objective is the enquiry of the problems and specifics pertaining an intended regional cultural landscape management approach. The physiognomic transition of the grown cultural landscapes in the case study valleys is significant. Additionally, it involves the change of environment, biodiversity, climate, demography and agricultural production. The fundamental concern that was vastly expressed in a majority of analysed documents and interview statements (cf. INT VII 2013: 7; INT X 2013: 2, 3; INT I 2011: 2; INT II 2011:6, INT III 2011: 5, 6, 7; INT IV 2011: 3; INT VIII 2011: 2, 4) is the universally mentioned and visual perceivable overgrowing by successive vegetation, known as *gjengroing*'.

> *"When the trees are growing up on both sides, they talk about the 'green tunnels'. You can't see the fjord, you can't see the mountain, you are driving through a green tunnel" (INT VIII 2011: 4).*

The cultural landscape modification of overgrowing attends the experience of identity loss perceived by the dwellers ad a potential loss of tourism potential.

Such a graspable process of change is only the visual expression of more complex and amorphous problems that are connected to cultural landscape change, particularly in industrialised countries (LOORBACH 2010: 162). Unquestionably, change comes about to be constant in cultural landscape dynamics. Corresponding to pristine landscapes, exogenous and endogenous factors drive cultural landscapes to change in appearance, composition or material fluxes. On the far side, respective human-made parameters must be factored into the discussion about the type of dynamics. A strategy is needed beyond the plain protection and preservation of a fine scenery or the aesthetic values of cultural landscapes. Cultural landscapes comprise more than that. It is about the perceived spatial qualities and resources provided by cultural

landscapes as a heterogeneous and multifunctional common good. These are strongly related to landforms, customs, traditions, rules, history and regional identity. Particularly within affluent societies, spatial qualities of cultural landscapes supply a wider range of human demands that are immanently connected to landscapes (SELMAN 2012: 27pp).

As it is the case in the primary sector, for instance, new technologies, mechanisation, specialisation and intensification determine the economic realities of the farmers' transmitting an unfortunate consequence for wildlife, aesthetics and other spatial qualities, cultural landscapes provide. SELMAN (2012: 30) stated: "*The cultural landscapes that we typically most wish to retain are those that were produced by obsolete economies and technologies, especially those farming practices that are being abandoned because of their capital or labour inefficiency.*" Furthermore, the paradox develops into a dilemma by answering the question, which cultural landscapes we want and produce in the future? Correspondingly, multiple and entangled driving factors of cultural landscape change are responsible for the improvement of living standards, a non-linear and more complex societal process itself developed (LOORBACH 2010: 161p). By significantly impacting the landscape with a permanent effect on societies and the natural landscape, a natural and cultural heritage was created, installed and preserved by the impact of culture over centuries. The grown cultural landscape, although most of the interview partners wish to retain, are challenged by:

- The abandonment of agriculture, particularly summer farming, and reduction of agricultural land use activities in the outfield areas with the effect of overgrowing vegetation.
- The replacing of past land use practices by market forces, technological improvements, public policies and popular cultures.

SELMAN (2012: 30) argued that such impacts on traditional, historical grown cultural landscapes are making them more international in appearance and function, disintegrating the distinctive and intimate character they have, with far reaching effects on the regional and local communities. These sorts of changes are characterised by processes that SCHENK (2011: 111) portrayed as:

- The disintegration of fauna and flora habitats. Cultural landscapes are: *"the florist and fauna memory, which is based on the historically grown environment"* (ibid.). The number of threatened species rose to more than 2400 species at risk in Norway. Increasing stress on fauna and flora is caused, for instance, by growing tourism, recreational houses and other related activities (BUGGE 2011: 26).
- The loss of aesthetic landscapes, creating standard landscapes[315] with a low attraction to tourism and recreation (SCHENK 2011: 111).
- The disappearance of identity anchors, the local and historical cognition, which is connected to historical structures and elements in the cultural landscapes (ibid.).
- The loss of historic-cultural and natural monuments. BUGGE (2011: 26) argues that approximately 1% of valuable objects of cultural heritage disappear annually in Norway due to negligence or lack of knowledge.

The here presented discourses around the action, communication and identity arena cultural landscape, gives a brief ontologization about the related stakeholders on-site and notes that:

- Cultural landscape is comprehended and intertwined as agricultural landscape.
- Cultural landscape management is a question of time consumption than of statutory regulations and legal propositions.
- The green-tunnels are a mutually percept problem.

On this reading, there is no contradiction acknowledgeable regarding cultural landscape management approaches in changing cultural landscapes. What is to take away by the outlined discourses in a nutshell. When considering the distinct discourses, they can contribute to the fact that the formal institutional framework and the cultural landscape management action on-site, driven by informal institutions, is leading to discrepancies and restrictive measures of coping with the cultural landscape dynamics by active cultural landscape management. Those opposing effects partially solidify the cultural landscape change.

315 In the present study this point can be displayed by the increasing overgrowing creating green tunnels.

5.6 Informal Institutions

As outlined in the theoretical remarks (cf. Chap. 2.7.2, p. 42), informal institutions are understood as non-codified systems of rules, such as traditions, culturally imparted standards as well as perception and behavioural patterns (NORTH 1992: 43pp), which culminate in a special pond of knowledge (BERGER and LUCKMANN 1996: 71p). Informal institutions are basic patterns of reality interpretation that enter the cognitive awareness of cultural landscapes remarkably. Ipso facto they influence the perception and action of cultural landscape management of the respective stakeholders sustainably. Present study recurs to the main categorisation of informal institutions that are classified according to GAILING (2012: 150pp) as ontological settings, fundamental values and toponyms.

Ontological settings are very powerful and comprise world views, culturally and mutually shared viewpoints. They are advised as fundamental common constructed realities and closely connected to a belief systems. Values are additional informal institutions. According to PARTO (2003: 25) values are part of the cognitive type of institutions and reflect strong cultural and social values. They imply the perception of good and bad, principally apparent in what society anticipates of individuals and groups. Values become important regarding the perception of the threat by successive overgrowing in the area.

Toponyms are cognitive related landscape boundaries. The Inner Nordfjordscape forms such a spatial frame, it is distinguishing from other landscapes. Traditions, customs, festivities, local food, myths, legends and other symbols with importance for the spatial image are incorporated by toponyms. The analysed and researched informal institutions that direct the cultural landscape management action, largely by non-institutionalised stakeholders, are compiled in Table 13 (p. 248) as a result of the performed analyses. It is important to state that the informal institutional analysis only reflect the individual attitude of each person. The current analysis does not claims to be statistically representative. First and foremost, the present research intents to give an insight on informal institutions that constitute a particular behaviour or a general orientation towards the institutional framework of cultural

landscape management. By comparing the initial aims of the formal institutions regarding cultural landscape management and the informal institutions to implement the management measures following significances need to be captured. The formal institutions, especially the financial subsidy systems, ensure and incentivise a constant use of the trivial cultural landscapes. There is an important effect to the marginal pastures and meadows bordering the food and fibre production areas in Bødalen and Erdalen. According to their cultural and natural configuration, they belong to cultural landscapes with specific cultural and natural values. On the other hand, these areas rely on a traditional and ongoing cultivation to keep their cultural and natural distinction, so sectoral policies of nature conservation and cultural heritage allocate financial resources. Consequently, stakeholders assign these outfield areas to economic values. By investigating the intended future development of the cultural landscapes on-site, a crucial question regarding the forthcoming of the agricultural landscape dominated the ontologization of the farmers in the valleys, as they are considered the central upholders of cultural landscapes. To give an impression how informal institutions affect cultural landscape management, the reaction of the local stakeholders regarding the future development on-site[316].

> *"No. I don't think so, no. Because the time is changed. The people who are growing up now they are not so interested in where the food is coming from" (INT X 2013: 2)."The Norwegian people they are sitting more by the computer and they want to have not many, not too many hours working; they want to be free people and earn a lot of money but not do so much" (INT X 2011: 3). "So, and it is also by economic, you earn more money to get a job at a factory or in a store or whatever" (INT VIII 2011: 3). „It is also an* issue *for the whole society. It's not just the agriculture perspective, but you have the whole society how they do this. Because I think, I may say you don't earn that much doing farming, but maybe you earn too well on doing other things, perhaps" (INT IV 2011: 7).*

316 Particularly regarding the question, whether an increase in the subsidy payments on traditional land use would keep more cultural landscapes open.

Informal institutions	*Agriculture*	*Cultural Heritage*	*Nature Conservation*	*Spatial Planning*	*Tourism and Recreation*	*Rural development*
Ontological settings	Cultural landscapes of the infield: ● The farming landscapes per se ● An integral part of the food and fibre production in Norway ● Justification for high subsidy payments ● The basis for regional agricultural brands ● The space of a fundamental self-conception and identity	Cultural landscapes of the outfield: ● Grown cultural landscapes (tangible) with elements and components (e.g. buildings, pollarded trees, stone walls, drift ways, dairy farm areas, etc.) including intangible aspects ● An important component of the common Norwegian national identity and individual local identity ● A passed down aesthetic ideal of small scale agricultural landscape ● A commitment towards the lifetime achievement of past generations ● As a palimpsest ● Restricts the usage and creates additional costs	Cultural landscapes as: ● Aesthetic ideal (glacier) ● Areas with a specific idiosyncrasy	Cultural landscapes as: ● The main control mechanism for landscape development ● Area for spatial planning (infield) ● Area with specific requirements and need for preservation	Cultural landscape as: ● Main attraction for tourists ● A possibility to retreat	Cultural landscapes as: ● Integrated area of agricultural production, cultural heritage, nature protection, economic development, outdoor recreation and a particular space for tourism as a direct alternative draft to metropolitan areas in Norway
Attached fundamental values	- Economic values with integrated cultural values (tendency on increasing economic values based on time saving and revenue) - Cultural landscape as a private good - Maintenance of cultivated and cultivable land (economical and traditional values) - Self-conception as a farmer - Tradition - Memories	- Identity value (tangible elements, such as the Setra huts, and intangible values, such as the knowledge of land use traditions, property rights, etc.) - Cultural heritage value → passing on to the following generations - Predicable value → designation of protected areas (UKL)	- Dominant natural values (glacier protection areas and biotopes) with included cultural values (places of sagas etc.) - Economic value → designation of protected areas for touristic purposes	- Value to participate - Rating value	- Values of well-being and living - Second home value - Economic values regarding tourism	/

Table 13 Synopsis of the analysed informal institutions based on the interviews and additional statements.

5.7 Cultural landscape spatial qualities in the valleys

Landscape qualities are already advised in the PBA in § 3-1b:

> *"(b) to safeguard land resources, landscape qualities and the conservation of valuable landscapes and cultural environments."*

A communicative abstraction of spatial qualities promotes the constitution of cultural landscape action, communication, and identity arenas in a first step, as cultural landscapes germinate as multifunctional and heterogeneous common goods with intrinsic spatial qualities (cf. Chap. 2.7.1, p. 36). The idea of spatial qualities is uneven conceptualised (MOULAERT et al. 2013: 389). MOULAERT et al. (2013)[317] displayed in their article: *"Building a meta-framework to 'address' spatial quality" an inter- and transdisciplinary methodological framework to analyse, assess and work towards spatial quality"* a scientific approach to operating with the term. Assessment and improvement of spatial qualities are matters of collective learning, negotiation and interaction between stakeholders (such as dwellers, activists, policy-makers). In consequence, it can be measured as a central impulse for the constitution process of cultural landscapes governance forms in a next step.

This fact solidifies, particularly in the case study sites that apparent discourses, problems and conflicts regarding an intended development of cultural landscapes by contemporary cultural landscape management measures snooze within such a communication arena. In a cross-disciplinary reading of social conception and spatial development, such a reflexive approach allows the evaluation of the spatial qualities, the role of various stakeholders (MOULAERT et al. 2013: 404) and institutions. The applied spatial quality meta-framework in the research valleys are by implication that:

Space is internally and externally identity-related.

> *"The existence of cultural, protected cultural landscapes like Erdalen and Bødalen helps preserve the mental identity of people that have moved to the city" (INT I 2011: 6); "Yeah, we have a feeling ourself for the landscape, we want to keep it" (INT X 2013: 3).*

317 Research background is the SPINDUS project (University of Newcastle, University of Leuven et al.) that is aiming at the improvement of efficient and pedagogical planning and design methodologies to assess, evaluate and implement spatial quality (http://e-scapes.be/spindus/?ref=about; accessed 05.10.2015).

A comparative approach to social space involves reflections on ‘spatial justice’. Therefore, scales that define the relation between space and stakeholders must be involved and balanced by a diachronic nexus of cultural landscape management rules and management actions.

Power structures are significant forces respecting the usage of space in the case study sites. A strong imbalance of power regarding a spatial quality portfolio among the stakeholders is leading to hierarchically decision-making dominated by sectoral policies.

Varying types of interactions allow to reading space differently, by substantiating the fact that cultural landscapes are multifunctional and heterogeneous common goods in the case study valleys.

> *“(...) there should have been economically incentives, (…). For the surrounding gateway communities, they should have gotten funds to develop tourism. Maybe guiding tourism (…) in Stryn 50 years later (…) those things had to develop from entrepreneurship” (INT I 2011: 7).*

Modes of experiencing space, as well as understanding how users feel about space and place, are diverse and creating differing viewpoints.

> *“(...) if we had greater efforts in interpretation and managed to increase the consciousness of the value between nature and so on (...)” (INT I 2011: 8).*

Corporate learning processes must be inaugurated to evaluate and implement spatial qualities in the case study sites. Cultural landscape in the area is subdued to a multi-level and scalar administration (national versus local approach) and central sectoral policies.

A sustainable development approach, such as the cultural landscape dimension of the Jostedalsbreen National Park, can be considered as a significant starting point for the ontogenesis of spatial qualities and thence socially-constructed cultural landscape action arenas, which have to cross the borders of the national park to take full effect outside the protection entity.

Potential seen and unseen spatial qualities of the cultural landscapes in the case study valleys are compiled in Table 14 (p. 251).

	Connections	Patterns	Processes
Cognitive content	Memories, symbols, images, meanings, aesthetics, sense of belonging, stories, in-dwelling	Creating meaningful places, experiencing health and well-being through landscapes,	Globalisation of culture, Inhabiting virtual landscapes, place-making
History	Genealogical links, laws and customs	Traces (remnants) of previous land uses and structures, legacies of invasion, colonisation, etc.	Decay and renewal
Land use	Formal land ownership and property rights	Construction, farming, forestry, tourism & recreation (economic valorisation)	Influencing water, air and soil dynamics (climate change)
Nature	Ethical attitudes towards nature, cultural perceptions of invasive species	Effects of afforestation, deforestation, agricultural intensification	Life-cycle processes of wild species
Natural form	Sacred sites (Mt. Ramnefjell disasters)	Land drainage, restoration and reclamation	Land form evolution, soil development and degradation dependent as a function of the glacier

Table 14 Overview of seen and unseen qualities of cultural landscapes in the case study valleys (based on SELMAN 2012 in PLIENINGER et al. 2012: 34).

The connections column comprises the results of people-people interactions within cultural landscapes and people-landscape interactions. Patterns render the results of human activities in the cultural landscapes. The last column depicts processes of cultural landscapes or developments restrained to cultural landscape change. Either they reflect natural or anthropogenic actions. In this respect, cultural landscapes can be appreciated as the product of livelihoods that were created at past times.

Combining the framework of assessing spatial qualities with the table, an initiating point for future learning processes and negotiations around and in the communication arena cultural landscape by acknowledging that spatial qualities are vulnerable to cultural landscape change is created. A workshop in Stryn Municipality with interested participants from the area would be imaginable and the results would acquire a picture of the actual perceived spatial qualities in the

case study valleys is further suggested in the section recommending future research (cf. Chap. 6.3.3, p. 283p). From such a meta-framework regarded, spatial qualities are expressed controversially according to differing institutional systems mostly impelled by sectoral policies. On the contrary they construe qualified spaces of collective identity.

- **Interim conclusion**

Regarding the central case study aims and the general objective of the study at hand, the Chapters 5.4, 5.5, 5.6 and 5.7 are summarised below in an interim conclusion. The goal is to subsume the results of the analysis process and the previously mentioned institutional gaps expressed by a sectoral policy and an institutional lock-out of cultural landscape management that precipitate around the contemporary efforts to safeguard cultural landscapes in the current process of cultural landscape change in the case study valleys. Moreover, the findings of the analysis are giving approval to the formation of conflicts, dilemmas and paradoxes around cultural landscape management on-site. The reason for these is not singly based in the institutional framework of the current cultural landscape management.

Within the contemporary setting of the sectoral policy dominated formal institutions that rule cultural landscape management on-site, the formative cultural landscape management activities, which are mostly founded on informal institutions, are leading the stakeholders' actions. On that account, following investigated conflicts, dilemmas and paradoxes are collected and compiled in Table 15 (p. 253). SELMAN (2013: 33) circumscribed cultural landscapes as areas of conflicts between production and consumption. In this regard, the question arises whether the investigated conflicts evolved because the formal institutions rather aim at the production function of the cultural landscapes?

Accordant to the data, two major conflict lines develop crucial for the further examination of ambivalences around cultural landscape management, peculiarly for the constitution of cultural landscapes as action, communication and identity arenas:

– Firstly, conflicts in the application process of the heterogenous and multifunctional cultural landscape and its private good character for the property owners and farmers appear.
– Secondly, conflicts around the interpretation prerogative of the cultural landscape apprehension in space among the stakeholders and the future application of such interpretation occur.

These two biasses can be acknowledged as the central conflict lines around an intended development of the heterogeneous and multifunctional common good cultural landscape concerning its management efforts on-site.

Conflicts	Dilemmas	Paradoxes
Private good cultural landscape vs common and public good cultural landscape, resource management (right of use, type of use, intensity of use, property rights and liabilities to pay)	Tenancy farming shall promote active cultural landscape management regarding the protection of trivial cultural landscapes, but cultural landscape management effects are reduced on rented land than on own property, partially reinforced by formal institutions and subsidies.	Cultural landscapes are produced by obsolete economies and technologies in agriculture, although these prior land use techniques constitute and support the key cultural landscape management measures.
The prerogative of interpretation about the meaning of space, the cultural landscape and spatial qualities between the stakeholders on-site.	Increasing tourism demands more built areas on the account of cultural landscapes in the spatial planning process.	New economies and technologies create new cultural landscapes with a differing character or they produce overgrown areas.
Protection and use conflicts within the case study valleys regarding management rules and actively applied management → partly transformation of the cultural landscape.	The free-rider (tourism industry) problem concerning the provision of money regarding cultural landscape management.	Protected cultural landscapes have to be kept accessible to gain income. More cultural landscapes must last for other planning and building measures (such as a second home phenomena).
Who wants which cultural landscape in the future, and who is willing to work/pay for it?	Areas once signed as protected lack of constant cultural landscape management due to missing responsibility among the stakeholders (problems of vertical interplay).	Agriculture is the main caretaker and the main threat to the cultural landscapes in the case study valleys at once.

Table 15 Significant conflicts, dilemmas and paradoxes regarding the institutional framework of the contemporary cultural landscape management and the interplay with cultural landscape dynamics.

The first conflict line can be described as mainly economically motivated and displays, for instance, the problem of cultural landscapes appearing as an external effect. Contradictions emerge mainly according to uprising transaction costs and the valorisation potential of the heterogeneous and common good cultural landscape. Thereto, an example is given by an issue concerning the main bridge on Bødalssetra (cf. **CHART 30 No. 5** App.). The bridge is important for hikers and tourists in the valley. The river shows temporary high discharge. It occurred that the old stone bridge construction over Bødalselva was destroyed by flooding in November 2010. Affected cultural landscape stakeholders were interested in an immediate reconstruction because of optimal weather conditions during that time. A low river level due to snowfall, made construction works in the river possible. Heavy construction machines still had the chance to drive up to the valley on the road. Any delay in the authorization process regarding motor machinery tools for material supply entering the JBNP[318] could confound a fast realisation of the construction scheme. Spring time was inconvenient for construction works because the snow melt would cause high discharge. After the stakeholders presented an outlined plan to built a new bridge to the county governor in consultation with the respective authorities, the construction work began. After six days a new wooden bridge based on two steel stingers was built on the same place the old stone bridge was located. Furthermore, the river embankment beneath the bridge was excavated and stabilised. The resulting costs[319] for the construction led to conflicts between the administration and the property owners of Bødalssetra. This example illustrates that the administration is dependent on the stakeholders' efforts and working hours, but the transaction costs of the performed measures remain at the executing stakeholders as well. In this regard two chief disagreements can be

318 Cf. Act Relating Motor Traffic on Uncultivated Land and Watercourses (Chap. 5.4, p. 215).

319 Private persons can claim money from the Norwegian Natural Perils Pool as an affected party. Additionally, national park administration granted a sum of 200.000 NOK as an emergency relief for the construction. National park administration stated the cost would amount the sum of approximately 500.000 NOK, in case the county governor would have to commission the constructions. Total costs were kept comparably lower after the property owners agreed with the relevant authorities to rebuilt the bridge on their initiative. Sogn og Fjordane County Governor was alleged to get the total 200.000 NOK refunded but he reduced the amount of 50.000 NOK. 150.000 NOK have to be paid by the property owners.

investigated. For one thing, only some of the related stakeholders[320] have to pay for the maintenance of the heterogeneous and multifunctional common good cultural landscape[321] because they own the private character of the common good and for another thing the fact of the free rider problem concerning the tourism stakeholders that benefit from cultural landscapes and do not participate in costs of direct maintaining and managing cultural landscapes on site appear. Without a functional bridge, the tourist cannot not pass the river. Experts unanimously condense and exceed the free rider dilemma regarding tourism and cultural landscape management in this regard.

> *"The tourist industry does not see the problem good enough. We have tried in years to make them see that there is a connection between the tourism and the open cultural landscape and that open landscape is a quality that somebody has to pay for to keep it open and beautiful and so on and as a tourist destination among other things. But they don't see that also that the tourist industry have to pay some money for that" (INT XII 2013: 7).*

The second conflict principle presents the divergence between the physical-material structure of cultural landscapes (trivial cultural landscapes, cultural landscapes with natural and cultural values and the aesthetic cultural landscape for tourism) and the actual associative cultural landscape in mind. ØIAN and RØNNINGEN (2013) examined in their article: *"Utvalgte kulturlandskap - mellom landbruksdrift, endring, forståelse og mening i landskapet"* the value of the 22 selected cultural landscape sites (UKL) respecting the regional identity and self-awareness of the people. As antecedently outlined (cf. Chap. 5.4.1, p. 218), these 22 sites typify a predication of the cultural landscape terminology aiming on a museum type of preservation. Results of their study depict a more complex picture regarding the prerogative of interpretation. A group of interviewees consider stereotypes of historical grown cultural landscapes in Norway, as landscapes of the past, in which the majority of the population subsisted from. Another interviewee unit cast doubt on the authenticity of particularly preserved cultural landscape sites, such as the UKL. Protection and preservation of past cultural landscapes is regarded artificial among some respondents. Others percept the protection as a recreation of poverty, and, yet

320 Here the land owners of the private ground in Bødalen.
321 Here to used the valley for agriculture, tourism and recreation, for instance.

others equated the UKL as an idealisation of a time that no longer exists, creating obstacles for modernisation and development (ØIAN and RØNNINGEN 2013[322]). A potential imposed predicate by sectoral policy dominated formal institutions of a selected cultural landscape might impose such notions.

The interviewees in the present study reflected the cultural landscape in the case study valleys in a different way. According to the remarks made in the section discussing the formal institutions, the cultural landscape in the case study site is valued as a palimpsest, manifesting the change of agriculture and the land use during time in space and first and foremost a valuable potential for tourism. Regarding the interpretation prerogative, of cultural landscapes on-site further discourses among the relevant stakeholders is necessary. It must be taken into consideration that the meaning and value of cultural landscapes differs in Norway from region to region. One question evolves out of this discrepancy between the state of cultural landscapes on-site and the desired condition: which cultural landscape communities want, and how to implement those[323] within the displayed cultural landscape dynamics and the present-day cultural landscape management measures available. By suggesting the reintroduction of goat farming in the case study sites, which would increase the grazing pressure on the summer farming areas, the farmers tend to retain the less time consuming and the most beneficial cultivation as a form of cultural landscape management. In order to reintroduce goat farming, for instance:

> *"(...) you have to rebuild all of the infrastructure on your farm to do that, and I think it's maybe a lost knowledge" (INT IV 2011: 6).*

The presented affirmable discourses developing conflict lines, dilemmas and paradoxes are immediately or mediately analysed in relation to:

- The delineation of the associated cultural landscape with its remaining elements and components on site.
- The drivers and pressures of cultural landscape change.
- The respective contemporary management regulations based on formal institutions issued by sectoral policies.

322 Article is pubulished online http://www.utmark.org/utgivelser/pub/2013-1/Oian_Ronningen_Utmark_1_2013_pv.html; accessed 07.04.2015).

323 This complex is understood as future intended development of cultural landscapes.

- Informal institutions that drive the operative stakeholders and their cultural landscape management action.
- The chance to apply cultural landscape governance frameworks on site.

A sort of delineation of such disagreements is essential for accessing cultural landscapes within the framework of constituting governance forms in action and particularly in communication arenas. As previously noted cultural landscapes are material and immaterial products of stakeholders, who intervene or non-intervene in reproduction services of natural and cultural resources on-site, which are presently subdued to formal institutional regimes applied by sectoral policies. These material and immaterial resources are valued by the consumer. They conclude that the consumer is essentially involved in producing the immaterial goods and services due to their own perception and assessment of the goods and services of cultural landscapes created by their own appreciation (KNOEPFL and GERBER 2008: 21). The borders between the two categories tend to obliterate. As earlier stated, the essential fear of losing cultural landscape as an identity anchor is not connected to the cultural landscape change per se that is taking place. It is the rate of change, and often the irreversibility of processes connected to cultural landscapes change and the attached spatial qualities that emerge such perceptions (SELMAN 2012: 27; SCHENK 2011: 110; 2008: 10; VOS and MEEKES 1999: 3).

A logical consequence is, concerning the availability of allocated means in cultural landscape management that administration and communities feel limited in applying formal institutions towards the consequent regrowth:

> *"Yes first of all we are living in a part of the world, which are naturally covered by forests. So forests will eventually get back what humans have once cleared away, I think all meadows and pastures so regain from forests if we don't keep it open by the maintenance. It's quite basic and then I think we'll see it in various ways. How in large herbivores grazing on formerly cut meadows and trees get back in on that. I would not say it's bad always. Some places I think you have to accept it but we have to be very clear on what kind of cultural landscape and which localities are important to keep open (INT II 2011: 6)."*

The central issue of *gjengroing* is percept among all stakeholders as a common problem that obviously is not manageable with present management means.

This is where residuary physical-material structure of the identity based cultural landscape could possibly lock-in in order to amplify the problem perception, to visualise that potential economic development is prevented and to give a certain instrumentation for governance approaches. FÜRST et al. (2008: 318) spoke of a window of opportunity regarding the constitution of cultural landscape governance.

Governance approaches might pin down a raison d'être to cope with the objective problems, such as development, economical or environmental problems. PRITTWITZ further stated (2007: 201) that only adequate addressed and thematised problems accomplish the requirement profile of governance. Aside the commonly percept green-tunnels, the allocation of measures to manage the cultural landscape change occur critical and the necessity to have a critical look at an intended future cultural landscape development.

> *"You have to have an opinion. If you have small resources to keep on that maintenance, where should you put them to get the most back to society? (INT II 2011: 6).*

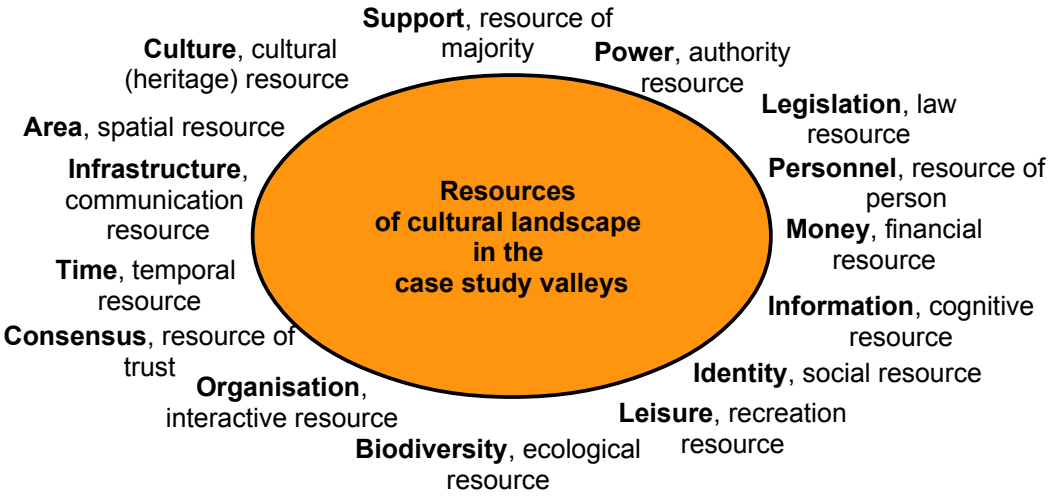


Figure 39 Various resources provided by the cultural landscapes on-site.

Out of this a substantial characteristic emerge. The performed analysis in the research at hand could not reveal substantial discourses about the application, apprehension or conceptualisation of the terminology cultural landscape in the case study valleys. Central discourses and, hence, conflicts emerge around specific resources of cultural landscape management. In order to draw a distinct picture of conflict lines around cultural landscapes, a reference is made to

KNOEPFL and GERBER (2008: 20pp), who designated conflicts about landscapes as conflicts between stakeholders who utilize grass-root resources[324] and stakeholders, who gain interests[325] out of goods and services of cultural landscapes. Figure 39 (p. 258) gives an abstract of resources, revealed b the discourse analysis in the present research that are connected to cultural landscape management. Regarding the resources of cultural landscape management, SCHENK (2008: 10) points out that it is important to make a recurs to the scale of objects that constitute cultural landscapes on-site.

Dividers	Connectors
The private good character of cultural landscapes (private property)	The common good character of cultural landscapes
Statutory imposed management requirements	Identity aspect and personal willingness
Labels/image	Cognitive apprehension in terms of a cultural landscape in mind
Individual revenue of agriculturally used areas	Economic potential of cultural landscapes
Free-rider effect	Protection of cultural landscapes by a beneficiary integrated and common use in terms of traditional land use
Prerogative of interpretation by sectoral policies and planning	Common learning process about cultural spatial qualities in a community

Table 16 Dividers and connectors of cultural landscape management efforts.

It often occurs within planning purposes that objects that have not been incorporated by a thematic inventory create conflicts among cultural landscape stakeholders in terms of development or protection of such. These objects are often charged with subjective values and frequently determine the stakeholders' action. Adhesively, biodiversity, aesthetic variety, regional identity, self-awareness and the documentation of land use traditions performed by past generations are tied to these objects. In addition to it, SCHENK (2008: 10) indicates that a public interest in preserving these objects and structures, charged with so many significances, arises. Somehow, it stays imprecise which cultural landscape has to be to managed at the main planning level. Hence, on which extent whatsoever, the local development planning process has to involve cultural landscapes (STATENS VEGVESEN 2014: 47). An example is the previously mentioned construction of the E39 connection. The Norwegian

324 Such as soil, water, air and cultural assets.
325 Land use practices and the power to make individual decisions with the private property.

Farmers Union[326] fear the deprivation of valuable soil for agricultural production by building the planned road. As outlined earlier, one major applied strategic vision of the Norwegian apprehension of trivial cultural landscapes adhering the importance of cultural landscapes for the food and fibre production. Although the municipal planning determines zone of special consideration the conflict line occurs immanent. An weighing of interests need to be applied between a convenient and economically substantial traffic route or the preservation of trivial cultural landscapes for agricultural production. Consecutively to the identified conflict lines around cultural landscape, Table 16 (p. 259) presents acquirable dividers and connectors regarding cultural landscape management, which are assumable according to the analysis. These examples of connectors and dividers can be helpful to pre-evaluate boundaries for a cultural landscape communication arena. It is remarkable that despite the relevant stakeholders were institutionally bound and regardless of formally institutionalised specifications, all experts in the show a similar ontological reduction on the physiognomy of their associative cultural landscape in mind. This fact can become assistant regarding the constitution of a communication arena on-site. Relating to the so far elaborated results, the driving factors pressure the cultural landscapes to change. Regarding the cultural landscape change, the ontological settings of the stakeholders that implement the formal institutions defaulting cultural landscape management action alter likewise because their agricultural activity modifies the cultural landscape to a great extent.

5.8 Potential cultural landscape action arenas on-site

After discussing the constituting elements concerning cultural landscape communication arenas in the case study valleys based on an intertwining joint learning and negotiation process about cultural landscape spatial qualities, on the one hand, and displaying discourses, conflicts, dilemmas and paradoxes about a future intended cultural landscape development to settle the subsumed conflict lines around the resources of cultural landscapes, on the other hand, a proposition of potential cultural landscape action arenas[327] is given next.

326 http://www.nrk.no/sognogfjordane/e39-utbygging-kan-koste-enorme-mengder-matjord-1.12632581 (Accessed: 02.11.2015).

327 Recurring to the theoretical and empirical proceedings by GAILING and RÖHRING (2008).

Physical landscape character	Jostedalsbreen and the inner Nordfjord area
Cultural landscape problem	Structural cultural landscape change (regrowing and overgrowing).
Image and identity anchors	Jostedalsbreen, summer farming landscapes, vertical gradient of land use.
Action arenas and governance structures	Jostedalsbreen National Park, nature protection and cultural landscape protection. Sectoral policies (agriculture, nature protection, cultural heritage, tourism, etc.) define the cultural landscape management agenda, persistent apprehensions of cultural landscapes on multiple levels of administration.
Boundaries of action arenas	Cultural landscapes and municipalities based boundaries. Areas comprising the inner Nordfjord in proximity to the Jostedalsbreen (here: Stryn Municipality with the adjoining case study valleys and the neighbouring municipalities bordering the Jostedalsbreen National Park).
Regional branding	Tourism and cultural label Inner Nordfjordscape Stryn (founded on Inner Fjord[328], Jostedalsbreen National Park, Stryn National Park Municipality, Destination Stryn and Nordfjord).

Table 17 Examples of cultural landscapes identity areas of activity in the case study valleys (induced by RÖHRING 2011: 8).

To suggest and promote the constitution of cultural landscape action arenas on-site, a certain institutionalisation and identity or image formation is necessary for the valleys.

In consideration of the cultural history, the present situation of the remnant cultural landscape elements and components, the drivers and pressures of cultural landscape change and the supremacy of agriculture regarding the institutional framework of cultural landscape management, it becomes salient that forms of governance and institutional arrangements prevail that develop the space of nature, culture and/or identity to a cultural landscape action arena (GAILING and RÖHRING 2008: 62). Table 17 gives a summary of the revealed cultural landscape identity arenas elements, in which already or possible action and communication can or do take place, those are more or less on the scale of the case study valleys.

328 *Indre fjord.*

Evidently, the case study valleys' identity and image formation strategies are founded on the traditional rooted historical entity of the Inner Nordfjord area below the Jostedalsbreen within Stryn Municipality, embedded in the traditional vertical distribution of farmland and the summer farming land use patterns, which includes the vertical gradient from the pristine natural landscape of the ice cap, over the semi-natural summer dairy farming pastures to the everyday and trivial cultural landscapes of present-day agriculture.

Regarding a spatial fitting, the three pursued development paths of the cultural landscape apprehension in Norway can be adapted to this identity formation widely, as it is represented in Figure 40. The displayed examination results must be seen as an initial point to propose further scientific inquiry that applies the practical implementation of the herein discussed and analysed theoretical framework and the respective results (cf. Chap. 6.3.3, p. 283).

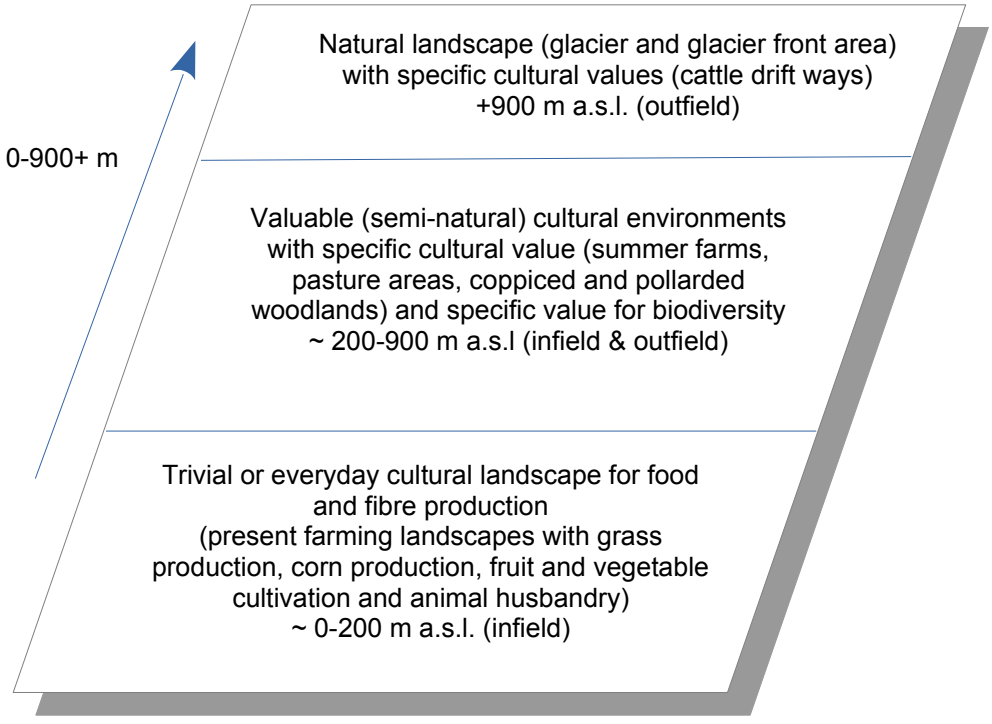


Figure 40 Schematic depiction of the existing strategic visions of cultural landscapes in Norway analogous to the characteristic vertical gradient of land use in the Fjordscape.

Subsequent section presents potential cultural landscape action arenas, in which governance frameworks can emerge according to the elaborated theoretical scaffold of the cultural landscape in a set-up of the common good

theory, the institutional theory and regarding the presented governance options. The following action arenas appear applicant for constituting cultural landscape action arenas, in which cultural landscape governance takes over cultural landscape management in the scope of the case study valleys.

- **Labelling in order to super-elevate existing toponyms such as the Inner Nordfjordscape**

A primary step to constitute cultural landscapes as action arenas can be founded on super-elevating toponymical labels. The place name Nordfjord, Inner Nordfjord, Stryn and Jostedalsbreen National Park are already labels that highlight and promote the tourist attraction founded on the distinct cultural and natural landscapes on-site. Table 18 displays the particular logos that already exists in the case study valleys.

Table 18 Logos of significant efforts regarding a labelling of cultural landscape relevant toponyms, which include the case study valleys (left: Inner Nordfjord, Fjord Norway; centre left: Destination Stryn and Nordfjord; centre right: Jostedalsbreen National Park; right: Stryn National Park Municipality).

Their current deployment takes place singly and/or in combination with the toponym of the next greater scale combined, such as Fjordnorway and Nordfjord, Inner Nordfjord, Stryn and Nordfjord, Stryn and Jostedalsbreen National Park. None of these labels emphasise the unique characteristic of the cultural landscape of the so far elaborated cultural history in combination with the natural prerequisites.

The progression of the toponym Inner Nordfjordscape (Stryn)' is conceivable. Inner Nordfjord was already propagated in 2013 when the tourist council for Western Norway (Fjordnorway) organised a photo contest.

"Through the photo contest "Best of Fjord Norway" tourists in western Norway have uploaded over 6000 photos of their best experiences. One of the most popular places were Inner Nordfjord (…)" (NORDFJORD.NO 2014).

The tourist council promoted the Inner Nordfjord on a billboard at the times square in New York. A superelevation of the toponym Inner Nordfjord and the strategic implication of it should be reasoned to promote regional and local food products[329] and the cultural landscape as a tourism product itself. Such a superelevation of the Inner Nordfjordscape could create obligations to manage the cultural landscape on a laminar scale from the ice-shield to the lower valleys comprehensively with a strong relation to a trade-off of the products and the cultural landscape. The associative cultural landscape in combination with tangible and intangible cultural and natural values beneath the natural beauty of the Jostedalsbreen substantiate the branding attempt and could comprise all existent efforts and measures with a temporary concentration on fighting the green-tunnels on a regional and local scale.

- **Regional marketing of the brand Inner Nordfjordscape Stryn**

Subsequently, a local marketing effort concerning the super-elevated brand Inner Nordfjord could be used to include a regional and local commercialism effort that comprises all the case study valleys around the Jostedalsglacier with a similar cultural landscape character. A central goal is highlighted:

"To develop mountain scenery as a brand for increased tourism, and especially work involving conservation area can facilitating smaller and environmentally adapted tourist destination within the framework of the conservation objectives" (REISELIVSPLAN 2005-2008[330]).

The Destination Stryn and Nordfjord[331] company would be an essential vehicle to progress and commerce the brand Inner Nordfjordscape as a tourist destination and occurs to be an important multiplying participant in the cultural landscape communication arena that has been created by the municipalities of

329 There are implications by the Norwegian Institute for Agricultural and Environmental Research, Bioforsk on spatially-related food products from indigenous, species-rich pastures, strongly referring to the idea of the French *produits du terroir.*

330 This approach has not been clearly expressed in the situation analysis, vision, aim and strategy paper by the steering committee for the new tourism plan (REISELIVPLANEN 2010-2025).

331 *Reisemål Destination Stryn & Nordfjord AS.*

Stryn, Hornindal, Gloppen, Eid, Vagsøy and Selje. Momentarily, key tasks of the institution are the nationwide and international marketing of the Nordfjord on fairs and workshops, public relations, the preparation of promotion material (Nordfjord TRAVEL-GUIDE), education in the field of tourism, booking service and general counselling (DESTINATION STRYN AND NORDFJORD 2014). According to the results of the institutional and discourse analysis, the central sectoral policy field of tourism[332] has not been assigned with major cultural landscape management measures. It reproduces the cultural landscape resources and gains interests out of it.

- **Creation and production of thematic locations in Briksdalen, Bødalen and Erdalen**

Concerning a cultural landscape governance approach, project related actions become more salient on the local scale. The vertical distribution of land use is rich in material and immaterial cultural heritage precipitated in the respective cultural landscape on-site. Any tourist, as well as interested local dweller, interconnects the visual state of the cultural landscape with cognitive presumptions or identity. The green-tunnels threaten this association to a great extent. At this moment, cultural landscape interpretation becomes an imperative lock-in for creating thematic locations and projects related to that. Concerning this matter, valuable suggestions were made in the interviews.

> *"Anyway, that sort of excursion of interpretation is ideal but unfortunately I think it takes too much man power, qualified man power and I would like t o experiment with electronic guiding. I don't think like tell you when you come to certain points perhaps some beeps where this or that station and you get a story. (INT I 2011: 10)".*

Particularly Erdalen emerges as an ideal thematic location representing the exemplary Inner Nordfjordscape with its vertical gradient of land use in its spatiotemporal development.

> *"And I think Erdalen going from down in the valley, Stryn valley, Folven, Greidung, you have that what of continue still and you can develop it, without developing the landscape. You can develop the enjoyment of it, the inspiration of it. And you can, it is about to use the*

332 Tourism sector will participate more actively in cultural landscape management efforts and measures with particular involvement in the grant for view clearing *(Tilskudd til utsiktsrydding)* (REGJERNINGEN 2016).

word like improvement, but whole management that we talked about is necessary (INT I 2011: p. 11)."

Homologous, Bødalen represents the nexus between cultural and natural factors, whereas Briksdalen symbolises the thematic location for glacial and natural developments below the Jostedalsbreen; it is strategically imagined as geo-tourism. The possibility to initiate festivals around immaterial cultural heritage inherited by the actual cultural landscape become pursuable (such as saga-nights or revitalising the *Nordfjord Vandrefestival*[333] with a particular focus on the case study valleys' cultural landscape). In general it is statable that all three case study valleys are producible as thematic locations.

- **Invention of new and updating existing regional traditions based on cultural landscapes**

From the vantage point of clearing the green tunnels in the case study valleys the reintroduction of past land use traditions[334] appears as an initial step. This includes traditional summer farming (with traditional livestock, such as goat farming that is the most significant trigger).

"You have to encourage and possibly, probably subsidise, active farming which is similar to the old system of Stølsbruk, operating summer dairies. Typically in the valleys, you're looking at. I really would like to see a pilot project being developed under the authority of the national park system, which doesn't exist. For instance in Erdalen. Redeveloping the old practices in close cooperation with the farmers. As a pilot project, then there I would also like to have a pilot project in connection with this interpretation (...)" (INT I 2011: 10). "Perhaps we should open, being more willing to see other kind of use in the area. Perhaps different kind of cattle. Maybe Highland cattle. It's a species that has originally nothing to do with the area. But maybe some of the landowners, perhaps they think maybe this is the way that I will develop my use of the area. They will grass on a different kind of vegetation. But I personally think that maybe there should be goat farming again in the valley" (INT IV 2011: 6).

and pollarding and coppicing.

333 http://www.nordfjord.no/Nordfjord/Brosjyrer/Nordfjord%20Vandrefestival%20prog.%202010.pdf (Accessed: 22.08.2015). The hiking festival was ceased in 2011.

334 There are already approaches to reintroduce and updating the past land use traditions. In order to upkeep specific cultural landscapes and to disseminate the knowledge about the traditional forms of land use, a book has been published in 1999: *Skjøtselsboka for kulturlandskap og gamle norske kulturmarker,* by NORDERHAUG, A., AUSTAD, I., HAUGE L. and KVAMME, M. (1999).

Immaterial cultural values are associated with the traditional land use practices. The vertical distribution of land use and the respective summer farming can be passed as a constitutional fact representing the regional idiosyncrasy. Traditions mediate the spatial particularity of the case study valleys. In Erdalen and Bødalen, for example, the nature trail booklets explain the area's cultural and natural history background. Much information in the booklets is explaining different traditions and the related stories that tell about the particularities of the vertical gradient of land use in the valleys on distinctive stops. These traditions transport a creation of meaning not only for individuals but also for communities, particularly regarding local tourism potential. Thereby, the Jostedalsglacier plays a pivotal role as a critical feature. Although summer farming is distributed over all of Norway, the land use beneath the massive glacier is distinguishable from other areas. The invention of new regional traditions, such as the compilation of immaterial cultural heritage in the case study sites, could be transpired, for instance, in sagas of Briksdalen, Bødalen or Erdalen. Nonetheless, self-affirmation and progression of the existing stock of traditions and the Inner Nordfjordscape stereography aggregate the foundation of the examined action arenas.

6. Discussion

The outlined results of the institutional and discourse analysis support the conclusion that cultural landscape and the respective management in the case study areas is multiple challenged. It is furthermore assumable, merely formal institutions that exert cultural landscape management regulations do not capture these challenges of the cultural landscape dynamics, they partly amplify cultural landscape change. The subsequent discussion of the results reflects the main findings of the study at hand regarding their contribution to:

1. The improvement of a knowledge basis for cultural landscape dynamics and change in the case study valleys, as it is perceived under contemporary formal institutional and central sectoral policy management rules.
2. The analysis of governance frameworks, based on cultural landscapes as action, communication and identity arenas to manage cultural landscape dynamics by unfolding regional development on the small scale of the three case study valleys Briksdalen, Bødalen, and Erdalen.

6.1 Need cultural landscapes a new management?

As the results of the institutional and discourse analysis revealed, the current landscape management access in the case study valleys is established on top-down directed central sectoral policies' producing formal institutions with priority impact of agriculture. Regulations are either immediately effective by legal propositions or mediately effective by funds tied up to specific cultural landscape management practices. Ipso facto discourses that provoke conflicts, dilemmas and paradoxes evolve because the factual cultural landscape management action on-site is related to informal institutions, at least on the side of the non-institutionalised stakeholders, such as the farmers. Höchtl et al. (2008: 158) imposed that: *"Target-oriented concepts for tomorrow's landscapes can only arrive through integrative and networked thinking. Development-oriented strategies that do not restrict the potential of the landscape to the servicing of only few sectoral aspects are required."*

Such target-oriented concepts for tomorrow's cultural landscapes can evolve only through intended future development formulations by communities. In particular, if cultural landscapes are apprehended as heterogeneous and multifunctional common goods. Governance frameworks in cultural landscape action, communication and identity arenas typify these stipulating integrative and networked thinking approaches that Höchtl's thought-provoking notion postulates.

The question in the heading is insofar justified, asking whether the informal institutional framework of the contemporary cultural landscape management efforts and measures are motivating stakeholders to exert active cultural landscape management that is based on past values, ontologizations and world views attached to the associative cultural landscape in mind?

Moreover, are the sectoral policies' formal institutions, in turn, capable responders to the challenges cultural landscapes have to cope concerning a fast and partly irreversible cultural landscape change? Governance frameworks offer the potential to intensify the aspects to upkeep, safeguard, valorate and apply the grown cultural landscapes actively. Within evaluating pros and contras of new cultural landscape management accesses, is not about the question of unrealistic demands on a comfort environment (HAMPICKE 2013: 28).

SELMAN (2013: 33) circumscribes cultural landscapes as areas of conflicts between production and consumption. Hence, cultural landscapes are not domains for exercising consumption exclusively. Moreover, he emphasises that cultural landscapes are not singly an object society does something with. Cultural landscapes are, considered as heterogeneous and multifunctional common goods doing something to the society in order to live well (ibid.). This approach demands an expansion and continuation of a collective learning process in the communities around the case study valleys. Hereto, a discourse about spatial qualities and provided resources of cultural landscapes, which has been initiated at the beginning of the introduction of the JBNP, is a suitable starting point of constituting a communication arena. By any means, the demand for a changing cultural landscape management derives not from individual viewpoints, it is constructed on the sectoral policies oriented

institutional system that is partly amplifying the undesired cultural landscape change because of production subsidies and other financial allocation systems in agriculture, from one point of view. Perhaps cultural landscape management is in formal institutional trap. The combined analysis methods and the resulting findings allow the connection that consequential lock-outs can be articulated in favour of a change of cultural landscape management:

- The examined formal institutional framework that governs cultural landscape management dissemble efficiency and response time to proceeding cultural landscape dynamics in the case study valleys, represented by the dispersion of the green-tunnels on-site.
- As previously expressed, discourses occur due to a compatibility intolerance between formal central sectoral institutions and the actual cultural landscape action almost exclusively performed by farmers, whose cultural landscape management disposition is driven by economic realities and informal institutions.
- An inaccuracy of fit between formal institutions and scale and intensity of applied active management measures is criticised because of the vast resources, cultural landscape management on-site refers to, as Figure 39 (p. 258) depicts.

Given the following subdivision that examines the compatibility standards of the present-day cultural landscape management regulations and the active cultural landscape management measures, two main lock-outs regarding cultural landscape management regulations and cultural landscape management action are detectable: a sectoral policy lock-out and an institutional lock-out.

- **Sectoral policy lock-out**

The sectoral policy lock-out subsumes the paradox that the agricultural sector is considered as the central caretaker and a significant driver of cultural landscape change at the same time. It displays the problems and conflicts about assigning cultural landscape management action mainly deduced from the central sectoral agriculture policy that is deriving formal institutions to regulate cultural landscape management. Those management regulations are almost entirely

imposed on farmers' actions, which are hardly compilable concerning the present state of agricultural production and the cultural landscape dynamics. The other formal institutions by the sectoral policy fields of nature conservation, cultural heritage, spatial planning and tourism exert cultural landscape management measures on the primary sector, either by cross-compliances or agri-environmental goals.

- **Institutional lock-out**

The institutional lock-out describes the top-down directed cultural landscape management regulations and the informal institutional guided action patterns, based on values, ontologizations and world views, regarding cultural landscape management operators on-site, by which various conflict lines evolve. Those operators are almost entirely comprised of the group of farmers[335].

Relevant and identified cultural landscapes need to be constructed to an own organisational field with a potential income generation function for individuals and communities. Cultural landscapes as an external effect of the primary sector are massively over formed by structural changes in the agriculture. They cannot produce heterogeneous and multifunctional common goods and services any longer and become a reflection of the current production pattern instead transforming into a resource for tourism, nature conservation, outdoor recreation, regional identity and potential economic development. Agriculture is an important sector among others that demand management to upkeep the heterogeneity and multi-functionality of cultural landscapes. It is equally apparent that the regional and particularly the local level is accredited a central role towards cultural landscape management with specific natural and cultural landscape values, for instance. As so far discussed, the central apprehensions of the terminology in Norway and the respective derivative development paths of cultural landscape management in Norway are strongly related to the primary sector. A potential double burden of workload appears according to the ascribed responsibility of taking care and upkeeping cultural landscapes according to the conformity of cultural landscape

335 Exceptions are the land owners, who rented out their land to tenant farmers according to the statutory regulations.

management regulations by the farmers on the one hand, and running a productive and economic sound enterprise in modern agricultural production on the contrary. Cultural landscape management turns out to be a cross-sectional task that relies on compliances concerning a future intended cultural landscape. Although there is a broad recognition among the stakeholders to that apprehension, the formal institutional framework of the present cultural landscape management efforts needs to grasp this apprehension in their formulation.

As the results of the analysis of the informal institutions guiding cultural landscape management efforts and measures has shown, it is less about a contradiction between statutory legislation defined by cultural landscape management regulations and the worldview and connected values that motivate non-institutionalised stakeholders to implement the management measures. The difference is based on requirements regarding:

- Property rights
- Economic demands
- Prerogative of interpretation

Further, an institutive action disparity between formal institutional statutory management regulations and informal institutions driven cultural landscape action by non-administrative stakeholders can be assessed.

A slight corrective action against this situation was undertaken by the Sogn og Fjordane County Governor, who conducted inspections targeted at grazing and found many discrepancies in 2013.

Subsequently, the hierarchy reevaluates the situation regarding some cultural landscape management actions motivated by different subsidies for grazing animals in the outfield, particularly on the ground of a nature protected entity. To discuss and design new management approaches it has to be considered: A governance affiliated cultural landscape management relies on the constructive partnership between all stakeholders (tourism, economy, agriculture, administration, population) and not on the predominance of one sector (agriculture) or stakeholder group, as cultural landscape spatial qualities are results of negotiations and corporate learning processes among the

stakeholders. The results of the institutional analysis display, cultural landscape in a institutional theory and theory of goods setting are imminently top-down directed or supervised by laws and statutory regulations. Active cultural landscape management implications are mostly a product of informal institutions directed by values, ontolgizations and world views. Nonetheless, the question, which cultural landscapes are required by the different logics of action and which are promising concerning an intended future development approach?

6.2 Transition in management - a necessary adoption

On the small scale of the case study valleys, it can be considered that top down directed management based on central sectoral policies react indolently to pending driving factors and pressures of change on cultural landscapes. According to the theoretical remarks and due to the elaborated results, it occurs that cultural landscape governance, in terms of management applications, evolve as a classical choice option regarding an intended future development of cultural landscapes. As delineated in Figure 41 (p. 274), management efforts in cultural landscape governance frameworks follow problem-solution processional strings. Induction describes the initial situation of a common problem perception in a community triggered by discourses. An assessment of which governance arrangements establish and stabilise cultural landscape action arenas on-site is followed. Subsequently a selection of a local regulation system prepares accomplishing governance arrangements.

Within a premise-effect consideration, the path progression assess the institutional framework and functions as a conflict control. The termination of the cultural landscape governance reevaluates the selected governance form and reinstates the induction, if necessary. A common learning process is initiated. Regarding the institutional theory, the creation of an institutional framework that formalises a selected governance form specifically introduced for the constitution of cultural landscape action arenas confirm or restructure informal institutions in the area. All social stakeholders interested in cultural landscapes exert influence and direct change, they are aware of the opportunities as well as the restrictions and limitations of directing change because of daily application of cultural landscape management measures.

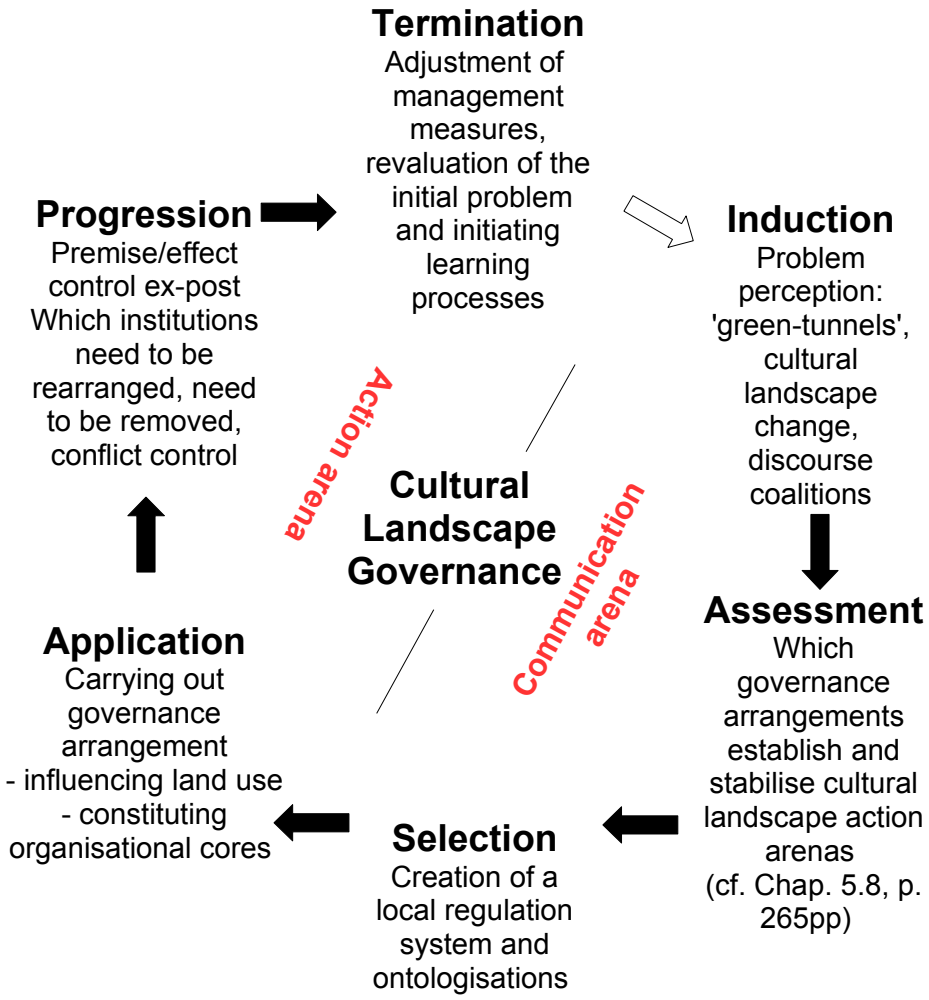


Figure 41 Cultural landscape governance (inspired by PRITTWITZ 2007).

Top down planning and market dynamics only account for parts of the societal change. Finally, cultural landscapes as action arenas represent ontological cultural landscapes, in which governance attempts can be developed ensure internally a certain capability to act instead of being powerless to react to cultural landscape change, on the one hand. Externally, they guarantee the articulation of regional interests (GAILING 2002: 140). LOORBACH (2010: 161 p) described that the top-down implementation of policies has decreased in Western European nations and the development of interaction between a diversity of social stakeholders began. Interactions between all sorts of social actors can create a temporary societal consensus. Various of examples can be

applied to assess the access towards new cultural landscape management measures.

6.3 Limitations of the research

This paragraph considers the comprehensive implications of the major findings of the present examination particularly within the context of the case study valleys. Limitations of the research design and the data analysis are previously discussed in the reliabilities and validity (Chap. 3.5, p. 82). Approval for future research with cultural landscape governance are mentioned in the final section of this subchapter. Herby, general implications of the proposed governance frameworks and specific concerns on the case study valleys are considered.

6.3.1 Limitations of governance frameworks

By analysing the different cultural landscape governance frameworks, various issues need to get noticed and discussed. An efficient and fruitful cultural landscape management governance aims at the strategic design of interplay-relations with the purpose to create interest coalitions for the intention of management-political and tactical interactions between users and preservers of cultural landscapes (GAILING and RÖHRING 2006: 57). In this respect, cultural landscape governance formulations are exposed to differing problems. Subsequent sections present the most striking complications that need to be considered and discussed in the current investigation according to the applied theoretical formulations of incorporating a cultural landscape governance in the case study areas. These are:

- Problems of fit
- Problems of scale
- Problems of interplay
- Problems of path dependency

6.3.1.1 Problems of fit

The discussion about the problems of fit is thematising the design principles regarding formal and informal institutions and their impact on the features of a cultural landscape system. Berge (2003:2) argues to that extent that cultural

landscapes be a *"culturally and socially delimited area."* They emerge out of the natural area, social construction and political constitution processes (YOUNG 2002: 20). Ensuing section, discusses the four broad categories of the problems of fit (GAILING and RÖHRING 2008: 58):

1. Problems of fit between sectoral institutional systems that are centralised, top-down dominated and the respective local and/or regional requirements for a cultural landscape action arena on-site. Contradictions between experts of agriculture, cultural heritage or nature conservation represented by the sectoral policies that produce cultural landscape management regulations collide with the core interests of farmers, such as the right of self-determination and management with their property[336]".

2. Problems of fit between territorial-administrative areas and cultural landscape areas. The inner Fjordscape of the Jostedalsbreen is dissected between several municipal borders. Inter-municipal cooperation with a particular focus on the formal institutions of the JBNP exists, but it halts at the boundaries of such protected entities. Adjoining areas lack an overall cultural landscape management approach. A central inventory of cultural landscape elements and components of a common Inner Nordfjordscape, as well as an intended cultural landscape development plan on a local level would imply a closer networking across the municipal borders and prevent that cultural landscapes are more intensively managed and valued inside national parks and by sectoral policies.

3. Problems of fit between institutional systems of sectoral policies. The differing systems take only selectively effect on the cultural landscape entity. They can be complementary, but often they are rather overlapping or even competing (GAILING and RÖHRING 2008: 59). Examples can be the effort of the county administration to intensify the agricultural production in the area, which would create more trivial cultural landscapes and less cultural landscapes that need to be preserved and maintained because of specific natural and

336 In a conference speech (CheriScape Conference Oslo, 18-20 May 2015), RØNNINGEN (2015) presented such an example, describing the contradiction regarding 'us and them'. 'Us' comprises the experts opinion on the fields of cultural heritage and nature protection relating to the assessment of formal institutions of protection, and 'them' describes farmers, who apply informal institutions, such as their ontologisations on that topic.

cultural values, for instance. These areas are more affected by the vulnerability of overgrowing

4. Problems of fit between constructions of place and established cultural landscape action arenas. The informal construction of cultural landscape as a place is not solely affiliated to the formal establishment of the JBNP.

The communal image, the pattern of perception, cultural-historic heritage, discourses and other informal institutions enfold different spatial references the established JBNP, for instance. Spatial, as well as institutional problems of fit, emerge due to an inaccuracy of formal and informal institutions on-site. Entirely, the discussion about the problems of fit incorporates the institutional and spatial adaptability; a congruency between the cultural landscape system and the formal institutional directive arrangements is needed.

The blurred boundaries of cultural landscape action arenas might collide with the sharp borders of formal institutions regulating cultural landscape management measures by legal propositions, for instance. On the example of the case study sites, explicit regulations of formal institutions are not taking full effects, neither inside nor outside the JBNP.

Conducted land use on the cultural landscapes of the summer farming pastures adjusted to the formal institutions, such as a higher subsidy for cows than for goats, for instance. Territorial administrative areas and cultural landscape action arenas are partly incongruently. Sectoral policy actions regarding cultural landscape management develop own action arenas and refer only selectively to the respective cultural landscape area. Best example is the agricultural sector that dominates the cultural landscape management. An informal constructions of space does not follow the boundaries of the respective formal institutionalised cultural landscape area.

6.3.1.2 Problems of scale

Discussing the problems of scale tackles the fact that national, regional and local cultural landscape management approaches show discrepancies. These discrepancies of scale are entering mainly in the connection at the local level, where the social constitution process of cultural landscapes is dominating, and

on the regional scale, where cultural landscape efforts and measures are embedded in a multi-level system. In the current examination, the local scale is the relevant action arena with the reference to the informal institutions. The regional scale, represented by the county governor and the county council, is momentous for policy approaches with cultural landscape management relevance. In this connection, the assigned fields of policy, such as agriculture, cultural heritage and nature conservation impacting cultural landscape management are distributed by the county governor and the county council. It is remarkable that agriculture and nature conservation are the concerns of the direct representative of the king and the government, namely the county governor (cf. **Glossary** App.). A hierarchical gradient regarding the scale of the sectoral policies is identifiable. The already discussed conflicts, dilemmas and paradoxes (cf. Chap. 5.5, p. 236 and Tab. 15, p. 253) around cultural landscape management evolve between the regulation and the effective level of exercising cultural landscape management. As presented in the study at hand, the cultural landscape management directing efforts and measures often not meet correspondence with the cultural landscape relevant management actions. Hence, cultural landscape management rules are for their successful implementation on-site dependent on the local action. Esteem for formative cultural elements and components is often missing on the local scale, mainly on the side of the municipality or the farmers due to use restrictions or higher costs (PETERS and POHLS 2003: 8). Within a multi-level governance system that is centralised, incongruence between the institutional control system and the impact level differ in the case study valleys to some magnitude. The local level becomes focal by promoting governance approaches. Public good oriented individual actions can be grasped, as long as the action leading institutions are sufficiently strong enough (GAILING and RÖHRING 2008: 62). Moreover, it is questionable whether the cultural landscape management leading institutions emerge sufficiently strong enough. Moreover, the question arises whether the insights of phenomena on a local unit are transferable to the national level and vice versa? Regarding cultural landscape governance, the region is the relevant scale. On the example of the case study valleys, the Inner Nordfjord is the

reference region. The regional level is important because it is the frame of informal institutions (such as images and identities) and regional political approaches with an innuendo to cultural landscapes that are taking place on-site. An incongruence between the level of impact and the regulation level of cultural landscape management efforts and measures are detectable.

6.3.1.3 Problems of interplay

Respecting the presented regulation density about cultural landscapes, a multilayer linkage of institutional systems appear and challenges of interplay evolve (GAILING and RÖHRING 2008: 54). Regarding the question, which institutional design and management on-site prevails, interdependencies of institutions and institutional systems become visible in the cultural landscapes, mostly represented by the overgrowing of the outfield areas and former summer farming cultural landscapes as it is the case in the examined valleys. Regarding the conferred and elaborated institutional interplay in the current examination, main problems are seen in the interaction between formal, informal, central and decentralised institutions. Socio-economical or physical coherences effecting cultural landscapes introducing or intensifying the drivers and pressures of cultural landscapes on-site. They interact objectively without the declared and intended will of the involved stakeholders. To some extent, they are attributable to the heterogeneity and multifunctionally character of the common good cultural landscape, which vice versa are constitutive for cultural landscape action arenas. Such a functional linkage (YOUNG 1999: 48pp) and dependence influence the professional behaviour of the stakeholders to a certain extent, also because the portfolio of spatial qualities is not commonly negotiated among the respective stakeholders. Sectoral policies define the frame of action and a top-down alignment restricts extraordinary solutions pertaining to cultural landscape management aside the chosen development paths. Vertical integration is owing to the participation of different sectoral political and administrative levels that formulate and control formal institutions. Functional interconnections with cultural landscape effects may occur, such as dilemmas regarding the transformation of cultural landscapes by formal institutions tin the primary sector

that are introduced to somehow upkeep and safeguard cultural landscapes (GAILING and RÖHRING 2008: 54). Instead, they are amplifying cultural landscape change to some extent, by transforming the traditional grown cultural landscape. On the example of the case study sites, cultural landscape transformation sets in because high subsidies are paid for milk production. Alternatively, the grazing pressure by goat and sheep should be increased. Moreover, the case study valleys could be intentionally redeveloped to goat valleys. Incentives to do so could be higher subsidy payments for goats and assistance in marketing of the products. Horizontal integration is consistently for cultural landscapes in consequence of their heterogeneity and multi-functionality (ibid.). Cultural landscape development is dependent on the institutional interaction of the sectoral policies. Based on central institutions the large protection unit of the JBNP was initiated, integrating regional and local sectoral actions. Vertical, horizontal, functional and tactical interactions are mutually dependent on each other.

Central and regional institutions are intertwined. The main problem in the case study valleys is that central institutions, often unintentional, affecting other sectoral institutional systems provoking cultural landscape change. This is is the case with the subsidy payments for agriculture and the national park and the nature conservation or cultural heritage. Regional and local institutions are thereby impaired. NASSAUER stated (1995: 230 cited in GAILING and RÖHRING 2008: 57): *"Human landscape perception, cognition, and values affect the landscape and are affected by the landscape."* Once more it is foregrounding to realise the common good characters of the cultural landscape of which qualities, the respective stakeholders can profit from.

6.3.1.4 Problems of path dependency

Dynamic change is an essential feature of cultural landscapes as they are no static entities (GAILING and RÖHRING 2008: 63). The central thesis of the path concept implies that random events and their constellations are leading to the emergence of a development path (ibid.). Referred to cultural landscape path development, those are coined by physical-spatial as well as by institutional

dependencies (GAILING and RÖHRIG 2008: 65). Cultural landscape path developments can have a positive influence on regional development. On the other hand, they can prevent the realisation of new development paths due to their perseverance. Path dependency is positive due to image and identity building relating to the historical embedding of cultural landscapes. The once embarked way is stabilising by positive feedback. Thus resulting path dependencies are difficult to change. Nevertheless, existing paths inherent new scopes of action, which is worth discovering and using by stakeholders. Regional stakeholders that leave the traditional structures and procedures can become promoters to overcome the taken path of cultural landscapes (GAILING and RÖHRING 2008: 65p).

6.3.2 From stakeholders to shareholders of cultural landscapes

By questioning the compatibility of formal institutions ruling contemporary cultural landscape management and the current dynamics, it appears indispensable to rethink the influence of market and solidarity stakeholders and their acquaintances of the multifunctional and heterogeneous common good cultural landscape. A change of perspective regarding the attempt to implement cultural landscape management measures is worthy to discuss. The interview partners mainly uttered serious concerns regarding the present and future development of the cultural landscapes in the case study sites and presented in the discourse analysis results section. Concerning this, the broad distinctness of the applied terminology and the recognition of stakeholders who are sharing the quality of private goods of the multifunctional and heterogeneous common good cultural landscape comes about pivotal while talking about alternative stakeholder constellations and attitudes aside the pursued path progression of cultural landscape management in Norway. Vast parts of the aesthetic appeal and the identity-related element of cultural landscapes for locals, local communities and outsiders (tourists) is based on the interaction of private and common goods while creating this image of a unique cultural landscape pattern. By changing the perspective of the related cultural landscape management stakeholders a change in the application of their core nexuses is conceivable

and detaches from central sectoral policy requirements. Instead of 'having something at stake', a common economic share considering cultural landscape action arenas and the economic potential for future intended development evolve. Stakeholders transform to shareholders of cultural landscapes. Individual property rights might recede in favour of community economic development potential. Free goods transform into responsible goods, and place-making processes eventuate by encompassing all logics of action.

Figure 42 Left: promotion picture by Moods of Norway (source WWW.MOODSOFNOR-WAY.COM 2009); right: cooperation between Moods of Norway and the dairy factory Tine (source WWW.TINE.NO 2015).

Market shareholders exceed their private share of the multifunctional common and heterogeneous good cultural landscape by constant and increasing tourism. Hierarchy has the opportunity to save costs as the financial efforts mainly transfer to time-expenditure for the solidarity stakeholders. Former-free riders participate in the expenses. The solidarity benefits from the consecutive cultural landscape spatial qualities. A classical win-win situation is created. Simultaneously, the responsible good is anchored as a common identity distributor. An equal system of expenditures and benefits would set in among the shareholders. By profiling such arrangements, it is first and foremost important to interrogate, how much dynamic headroom is available within the corset of the tight cultural landscape management regulations imposed by central sectoral policies to constitute such interdependent networks. An example portraying such sharing stakes of regional images or identities is the cooperation between Moods of Norway®, a local fashion label from Stryn that intentionally captures the image, label and identity[337] of the cultural landscape in

337 Represented by the element and component fjord horse (cf. Fig. 42, p. 282 left).

the case study valleys in their designed modern fashion, and the Norwegian dairy factory TINE® that is producing the traditional brown cheese, Figure 42 (p. 282) depicts the promotion picture. By labelling and super-elevating the toponym *Gudbrandals*[338]*(ost)*, intensified by the brand Moods of Norway, the existing regional tradition of brown cheese is thematically created and reproduced. Such shareholder projects seize the economic potential of the associative cultural landscapes and could be well imaginable on the local scale of the study valleys to generate resource management, participation and the will to contain the green-tunnels actively based on governance arrangements instead of centralised formal institutions imposing management efforts and measures. Alternatively, simply to intentionally develop a trade-off from cultural landscapes.

6.3.3 Recommendation for future research

Future recommendations are abundant within the field of cultural landscape governance research. Two main categories for further investigations are accentuated by the present findings of the inquiry. The first examination category comprises the practical scientific review of the theoretically analysed results concerning the proposition and application of potential governance frameworks in the case study valleys (Chap. 5.8, p. 260pp). Concerning an implementation of the cultural landscape communication arenas, a discussion and negotiation process regarding a portfolio of the cultural landscape spatial qualities on-site with interested dwellers from the case study valleys by applying incumbent subject-didactic methods occurs appropriate. From here on, the constitution action arenas based on grass-root organisational cores of cultural landscapes that are identified in the present research by motivated individuals, who already take responsibility for cultural landscapes in the case study valleys emerge on the level of small-scale projects. Some interview partners already made proposals regarding possible projects, such as the digital elaboration and implementation of tools concerning the cultural landscape interpretation. A scientific review relating to the success of such projects would follow ex-post.

338 Gudbrandsdalen is Norway's longest valley stretching from south east to north-west throughout the Oppland fylke.

On the scale of Stryn Municipality, the advancement of super-elevating a toponymical label to portray the identity arena with an intended valorisation effort towards the application of cultural landscapes for regional development could be examined, as the scope of the brand and labelling potential discussed in the current research is broad and appears unadapted to the spatial qualities provided by the multifunctional and heterogeneous common good cultural landscape. The second category building up future research within cultural landscape governance is comprised by several research questions out of the herein examined action, communication and identity arenas of the Inner Nordfjordscape Stryn, such as:

- The quantitative examination of the successive overgrowing in the case study areas by applying methods of remote sensing (Chap. 5.3, p. 179).
- The investigation and importance of a central national classification and inventory of cultural landscapes (cf. Chap. 5.1, 134).
- The interrogation, whether a strong spatial quality portfolio of the local communities shifts the power structures respecting the management from central sectoral policies top-down directed decision-making processes to a local bottom-up approach (cf. Chap. 5.7, p. 249p).
- The question, whether the identity and the self-awareness of the younger generation is as strongly attached to the associative cultural landscape as the by the present generations A central discourse about cultural landscape management reflected the anxiety of the future cultural landscape appearance in the area by the middle-aged and the older generation (cf. Chap. 5.6, p. 247).
- The option to bring contemporary agricultural interests together with specific cultural landscape values by producing *produits du terroir*[339] in the case study valleys.

339 The term has been presented related to a conference contribution at the CheriScape Conference III Landscape and Communities, 18-20 May 2015: *"Local food identity and quality - landscape and ecosystem services from Norwegian semi-natural grassland and rangelands"* by HANNE SICKEL et al. (2015).

7. Conclusions

The inquiry's main objective stated in the research title has been realised, namely to examine, whether cultural landscape governance offer an alternative path and instruments that empowers civic stewardship instead of cultural landscape management efforts and measures, with the direction:

- To contain the mutually perceived cultural landscape change in the case study valleys.
- To evolve an intended future development of cultural landscapes in the case study valleys.

There is evidence that requirements of constituting cultural landscapes as action, communication and identity arenas, in which governance frameworks can take place, are existent. Towards the cultural landscape alteration, the green-tunnels transport the distinguished, visible and mutually percept problem exhibiting the fundamental dynamics that are taking place in the case study valleys within the last 60 years. To some degree, they evidence the tipping point of partly irreversible processes related to the proceeding landscape dynamics and cultural landscape change. *Gjengroing* signifies diverse social, economic and natural driving factors that pressure the so highly appreciated historical grown summer farming cultural landscapes. Affected communities, at least, the ones the examination was conducted in, demonstrate that the notion of an associative cultural landscape in mind is detaching progressively from the cultural landscape realities on-site. It turns out that this associative cultural landscape is a fundamental anchor for identity, self-awareness, traditions and values.

The present research argued out that contemporary cultural landscape management is not resourceful of succeeding the cultural landscape dynamics. Several measures even amplify the cultural landscape change animated by formal institutions of sectoral policies.

However, the study at hand also clearly identified that two established management directions by the state are inevitable:

- *“To protect a selection of historical grown cultural landscapes and environments and to preserve them as important sources of the Norwegian history (STATENS VEGVESEN 2014: p.33)”*.
- To designate the capital obligation for cultural landscape direction in the hand of the agriculture.

These processional strings conclude clearly from the fact that not all cultural landscapes of the Inner Nordfjordscape can be managed likewise:

> *“Yes first of all we are living in a part of the world, which are naturally covered by forests. So forests will eventually get back what humans have once cleared away, I think all meadows and pastures so regain from forests if we don't keep it open by the maintenance. It's quite basic, and then I think we'll see it in various ways. How in large herbivores grazing on formerly cut meadows and trees get back in on that. I would not say it's bad always. Some places I think you have to accept it but we have to be very clear on what kind of cultural landscape and which localities are important to keep open” (INT II 2011: 7).*

Despite persistent management effects on trivial cultural landscapes that are under consideration for food and fibre production, there is a niche that can be established for cultural landscape governance regarding the examined cultural landscapes with specific cultural and natural values. As long as they are not essential for the food production, or better essential for generating direct income for the farmers by subsidy payments.

According to the collected data and supported by the metadata a positive potential for the constitution of cultural landscapes as action, communication and identity arenas is abundantly available in the case study valleys Briksdalen, Bødalen and Erdalen. Two primary paths to constitute that kind of arenas in the identity environment Inner Nordfjordscape are identifiable:

1. The present discourses, conflict lines, dilemmas and paradoxes around cultural landscapes nominate the boundaries of a possible communication arena. The closing of a potential institutional gap between top-down rules and bottom-up management implementation, by:

a) Bringing together the various stakeholders and

b) Applying the fundamental power base of a network.

This network assists in trading, negotiating, arguing and publicising about spatial qualities of the immediate and historical grown cultural landscape. Once

a portfolio of spatial qualities is settled, the power structures regarding cultural landscape management can shift from top-down directed hierarchically decision-making process by sectoral policies to a governance network. The assignment of cultural landscape facilitators in the communication process can be helpful to moderate in a thoroughly contested environment of cultural landscape development. The analysis discovered that there are multiple alleged cultural landscape mediators among the interviewed persons, who are already deploying voluntary work for the management of the heterogeneous and multifunctional common good cultural landscape without the demand to be directly compensated. Alternatively, this voluntary time is consumed by the application for formal institutional regulations to perform financially allocated cultural landscape management action among the ascribed cultural landscape managers the farmers.

2. The second path describes the formation of an action arena based on the engaged measures in the tourism sector and described promising intentions in agricultural production. Those are fundamental constraints according to the development and constitution of cultural landscapes as action arenas in the case study valleys. Historical grown cultural landscapes in the area become a critical mass regarding economic valorisation processes, predominantly in agriculture and tourism. Cultural landscape as a marketable product might gain momentum, and the elaboration of it might constrain an action arena for intended cultural landscape planning, beyond an agricultural approach as it is the case in the study sites. As a result of this, the revitalisation of past land use tradition plays a pivotal role, particularly the reintroduction of summer dairy farming in the case study valleys. The results of the present study also show that the cultural landscape on-site is already branded and conveys a decided image to the inside and the outside. As it becomes convenient to deploy cultural landscape action arenas. Regarding the enquiry and according to the performed analysis, it is striking that the contemporary lifestyle in Norway threatens the persistence of cultural landscape patterns. Additionally, the industrialised country forces climate change that vice-versa accelerates the disintegration of traditional cultural landscapes on-site. In the past, the traditional landscape

changed according to the improvement of type and intensity of land use. Concurrently, new cultural landscape patterns were created superimposing the layers of the past land use palimpsest. On the example of the case study valleys, it re-emerged that social, economical and climate change reconvert the familiar and identity-based cultural landscape in its more or less original natural state. If it succeeds to generate a high monetary value based on the traditional summer farming cultural landscapes, it will assist to boost local and regional development of the area. In the selected scientific approach to the current investigation, it is endeavoured to analyse the constitution of cultural landscapes as action and communication arenas to transmit tangible and intangible cultural landscape values on a management meta-level. Such a socially constructed cultural landscape improves the generation of material and economic values, which need to be governed. It should be exemplified that cultural landscapes provide not only a predicate of protection in which diverse cultural landscapes display the history of Norway as in a museum. Perpetually, cultural landscapes should be assessed as the main generator of spatial qualities including economic growth, which are currently threatened by overgrowing. Respecting the results of the central study objective to constituting cultural landscapes as action and communication arenas, in which cultural landscape governance turns out to be an accessible path for future cultural landscape management, the prerequisites are created in a form of a diverse action framework on-site. Following main aspects regarding the performed analysis should be regarded towards an intended future development of a cultural landscape based on governance approaches in the case study valleys. The human-cultural-landscape-environment conjunction needs to be revitalised and reconnected beyond the normative appreciation of cultural landscapes. Particularly, the younger age groups should get an opportunity to reconnect with the land use that created cultural landscapes, beneficial to facilitate regional potential and economic growth. Regrading cultural landscape interpretation, modern and digital tools could be more and more assistant.

Contemporary spatial qualities of the respective cultural landscapes in Briksdalen, Bødalen and Erdalen, are a result of the previous human-landscape

interaction of the inner Fjordscape system in Stryn. Nevertheless, they are representing a foundation for economic valorisation in a coincidence between tourism and agricultural production on-site. To meet the demands of the present spatial qualities provided by cultural landscapes in a community, they need to be maintained by adaption strategies beyond the social changes that succeeding generations go through. Additionally, a possibility to cope the present cultural landscape dynamics in the case study sites lies in the reconstruction of the top-down oriented cultural landscape management approach in Norway. It becomes of particular importance to avoid that the formal institutional framework of the administration-run cultural landscape management efforts exaggerates the cultural landscape change and the conflicts about cultural landscapes among stakeholders. It would be worth reconsidering the institutional setting of the present management regarding a reconstruction to a regional and local governance involving the participation of informal institutions, such as the ontological perception and the canon of values of the stakeholders. All governance frameworks regarding the constitution of cultural landscapes as action arenas inherent to some extent an economic potential to rethink the stakeholder position and transform the individual self-awareness approach to a shareholder of cultural landscapes. Foregrounded the change of having something at stake to have a share of economic development with the community. Lastly, a rethinking about knowledge creation regarding cultural landscape management in the case study valleys is vital. Firstly, various examples in the field of cultural management research have examined that either there is a lack of correspondence between administrative action and scientific research regarding the intended development of cultural landscapes, on the one hand. Alternatively, some stakeholders complain about too much scientific input and attitude instead of more practical approaches, on the contrary. A best-practice approach to complying with future cultural landscape change is knowledge creation based on revitalising past land use practices. Their social control should be founded on economic values created by cultural landscapes for individuals and communities. A sound economic development should support actions that rely on past land use traditions. The entire society

should consider the financial allocation system as a counter-finance for the spatial qualities provided by cultural landscapes instead of subsidising specific branches of economies. The present research highlights the approach to managing cultural landscapes by governance concepts in cultural landscapes applied as action and communication arenas in the case study valleys. Cultural landscape governance as an accessible management path inherits solutions that comprise the containment of the green-tunnels, at least to some degree extent, and the regional development potential by an intended future cultural landscape development simultaneously. This potential is widely based on cultural landscape qualities. As a first step, the definition of the spatial qualities of the community via a collective communication and learning process about cultural landscapes on-site is imaginable. The interpretation prerogative of the top-down directed cultural landscape management by formal institutions and the connected sectoral policies, dominated by the agricultural sector becomes more and more obsolete.

Cultural landscapes are not externalised any longer; a mutual management approach internalises them. Cultural landscapes transfer to a multifunctional and heterogeneous common good that renders a financial gain by valorisation and regional development processes, on the one hand, and the costs of managing them are reduced and more just dispersed among the hierarchy, market and society stakeholders, on the other side.

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8.3 Maps and aerial photos

Aerial photo Bødalen (STATENS KARTVERK 2014)
Aerial photo Briksdalen (STATENS KARTVERK 2014)
Aerial photo Erdalen (STATENS KARTVERK 2014)
Cultural landscape features in Bødalen (basic map STATENS KARTVERK 2014)
Cultural landscape features in Briksdalen (basic map STATENS KARTVERK 2014)
Cultural landscape features in Erdalen (basic map STATENS KARTVERK 2014)
General elevation map Stryn Municipality (STRYN MUNICIPALITY 2011)
Geological map of West Norway (BRYHNI et al. 1981)
Innvikfjord with the borders of Stryn Municipality (STATENS KARTEVERK 2014)
Longitudinal profile Bødalen (STATENS KARTVERK 2014)
Longitudinal profile Briksdalen (STATENS KARTVERK 2014)
Longitudinal profile Erdalen (STATENS KARTVERK 2014)
Map Bødalen ((STATENS KARTVERK 2014)
Map Briksdalen (STATENS KARTVERK 2014)
Map Erdalen (STATENS KARTVERK 2014)
Map of Stryn Municipality (STATENS KARTVERK 2014).
Map of the Jostedalsbreen National Park MILJIØDIREKTORATET 2009)
Map of the Nordfjord (VISIT STRYN&NORDFJORD 2012)
Map of the Mt. Ramnefjell disasters in 1905 and 1936 (NESDAL 1984: 114pp)
Registered cultural heritage sites in the case study valleys (KULTURMINNESØK 2015)
Soil map section Nordfjord, map sheet 2.3.1 (NATIONAL ATLAS OF NORWAY 1983)
Stryn in the Sogn og Fjordane County (STATENS KARTVERK 2014)

8.4 Statistics

Accumulative length of the Briskdalsbreen 1900-2015 (NVE 2016)
Agricultural area in Stryn Municipality 2005-2015 (SSB 2016)
Agricultural holdings in Stryn 1979-2015 (SSB 2015)
Annual precipitation in Stryn Municipality 2015 (EKLIMA 2016)
Annual temperature in Stryn Municipality 2015 (EKLIMA 2016)
Arable land (fragmentation) in Stryn Municipality 2008-2014 (SSB 2015)
Cultural landscape subsidies in Stryn Municipality 2008-2015 (SLF 2015)
Demographic numbers by age groups and sex in Stryn Municipality (SSB 2015)
Employees in agriculture, forestry and fishing by settled working hours (SSB 2015)
Employees in agriculture, forestry and fishing in Stryn (SSB 2015)
Grazing goats in Stryn Municipality 2008-2015 (SLF 2015)
Grazing cattle in Stryn Municipality 2008-2015(SLF 2015)
Grazing sheep in Stryn Municipality 2008-2015 (SLF 2015)
Mass balance of the Nigardsbreen 1962 to 2015 (NVE 2016)
Occupational distribution in workplaces in Stryn Municipality 2014 (SSB 2014)
Passenger numbers for Olden quay 2007-2015 (STEINER 2014; NORDFJORD.NO 2015)
Population development S&F County (SOGN OF FJORDANE FYLKESKOMMUNE 2015)
Population development Stryn Municipality (SOGN OF FJORDANE FYLKESKOMMUNE 2015)
Population numbers 2015 Erdalen (SOGN OF FJORDANE FYLKESKOMMUNE 2015)
Population numbers 2015 Lovatnet (SOGN OF FJORDANE FYLKESKOMMUNE 2015)
Population numbers 2015 Oldedalen (SOGN OF FJORDANE FYLKESKOMMUNE 2015)
Temperature derivation from normal in West Norway 2009-2014 (MET.NO 2015)
Traffic on RV 15 in/out of Nordfjord (STATENS VEGVESEN 2015)

8.5 Newspaper articles

AFTENPOSTEN (23.04.2013): *Jordbruksoppgjor for dummies*
(http://www.aftenposten.no/meninger/kommentarer/Jordbruksoppgjor-for-dummies-7181223.html; accessed 20.02.2016).

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(http://www.fjordingen.no/nyhende/article391054.ece; accessed 15.10.2015).

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8.6 Photos & illustrations

Bødalsbreen (cf. CHART 14 (4); LOPEZ 2013)
Bødalssetra (cf. Fig. 16 & CHART 31; LOPEZ 2013)
Braided-Sandur-System (cf. CHART 17 (2); LOPEZ 2013)
Bridge in Briksdalen (cf. CHART 30 (5); LOPEZ 2013)
Bridge on Bødalssetra (cf. CHART 31 (5); LOPEZ 2013)
Briksdalen pasture (cf. Fig. 14; LOPEZ 2011)
Briksdalsbreen (cf. CHART 11 (3); LOPEZ 2013)
Briksdalsbreen 1890 (cf. CHART 20; KNUTSEN 1890)
Briksdalsbreen 1952 (cf. CHART 20; UNKNOWN 1952)
Briksdalsbreen 1980 (cf. CHART 20; ROLAND 1980)
Briksdalsbreen 2000 (cf. CHART 20; WINKLER 2000)
Briksdalsbreen 2013 (cf. CHART 20; LOPEZ 2013)
Briksdalsglacier front (cf. Fig. 15; LOPEZ 2013)
Bus park Briksdalsbree Fjellstove (cf. CHART 11 (1); UNKOWN)
Cattle driftway over the Jostedalsbreen (cf. CHART 26; NRK FYLKESLEKSIKON UNKOWN)
Comparison of domestic cattle breeds (cf. Fig. 32; BUSKAP OG AVDRÅTT 1959)
Erdalsbreen 2013 (cf. CHART 17 (3); LOPEZ 2011)
Field on Bøaøyna (cf. CHART 31 (1); LOPEZ 2013)
Glacierfront in Bødalen (cf. Fig. 18; LOPEZ 2013)
Hikingpath to the Bødalsbreen (cf. CHART 31 (4); LOPEZ 2013)
Hikingpath to the Briksdalsbreen (cf. CHART 30 (6); LOPEZ 2013)
Horse carriages in Briksdalen (cf. CHART 30 (1); OLDEDALEN-SKYSSLAG 1910)
Huldrefossen waterfall in Bødalen (cf. Fig. 17; LOPEZ 2013)
Illustration of Lovatn and Oldevatn area (cf. CHART 23; LEIF LUNDGREN 1984)
Kleivavegen (cf. CHART 30 (4), LOPEZ 2013)
Lower Erdalen (cf. Chart 26, LOPEZ 2013)
Moods of Norway (cf. Fig 42 (left); MOODS OF NORWAY 2009)
Old Briksdalsbree Fjellstove (cf. CHART 30 (3); OLDEDALEN-SKYSSLAG 1910)
Reset (cf. CHART 26; LOPEZ 2013)
Road to Bødalen (cf. CHART 14 (1); LOPEZ 2013)
Spruce wood on the road to Bødalssetra (cf. CHART 14 (2); LOPEZ 2013)
Storesetra in Erdalen (cf. Fig. 19 & CHART 26; LOPEZ 2013)
TINE (cf. Fig. 42 (right); TINE.NO 2015)
Troll car road (cf. CHART 11 (2); LOPEZ 2013)
Troll cars in Briksdalen (cf. CHART 30 (2); LOPEZ 2013)
Upper Bødalen (cf. CHART 14 (3); LOPEZ 2013)
Vetledalsetra in Erdalen (cf. Fig. 20 & CHART 26, LOPEZ 2013)

8.7 Analysed documents

No.	Name	Year	Origin of the document	Lang.	Type
1	088/3 Strynevassdraget	1993	Norges Vassdrag og Energidirektirat	NOR	Plan
2	3Q Biologisk mangfold i jordbrukslandskap	2008	Skog- og landskap	NOR	Report
3	Act Relating to Forestry	2005	Norwegian Ministry of Agriculture and Food	E	Act
4	Act Relating to Wildlife and Wildlife habitats (the Wildlife Act)	1981	Norwegian Ministry of the Environment	NOR	Act
5	Biologisk mangfold i Stryn kommune	2002	Stryn Kommune	NOR	Report
6	Bondelaget statement Stryn Påskeaksjon	2013	Bjørn Rørtveit Stryn Bondelaget, Gry Agjeld Olden Bondelag	NOR	Statement
7	Bygningsmiljoer i jordbrukslandskapet	2012	Skogoglandskap	NOR	Article
8	Climate Change and Cultural Heritage in the Nordic Countries	2010	Nordic Council of Ministers	E	Report
9	Cultour – et forskningsprosjekt om reisliv, kulturminner og gjengroing	2013	Skogoglandskap	NOR	Final report
10	Cultural Heritage Act	2010	Norwegian Ministry of Local Government and Regional Development	E	Act
11	Driveplikke etter Jordlova- Rundskriv	2011	Norwegian Ministry of Agriculture and Food	NOR	Circular
12	Eksempelsamling – Bestemmelser til arealplaner	2014	Directorate for Cultural Heritage	NOR	Report
13	Endring i jordbruksareal i drift fordelt på jordbruksregioner	2012	Skogoglandskap	NOR	Article
14	Environmental Action Plan for the housing and construction sector 2005-2008	2005	Norwegian Ministry of Local Government and Regional Development	E	Action Plan
15	Evaluering av satsingen Utvalgte kulturlandskap i jordbruket	2013	Norwegian Agriculture Agency	NOR	Report
16	Evaluering av satsingen Utvalgte kulturlandskap i jordbruket	2013	Østlandsforskning	NOR	Report
17	Flashback – Norwegian Landscapes in Retrospect	2006	Skog- og landskap	E	Brochure
18	Flykesplanen 2005-2008 Frå plan til handling på satsingsområdet Småskala næringar, lokalsamfunn og bruk/vern	2005	Fylkesmannen i Sogn og Fjordane	NOR	Report
19	Forskrift om midler til investering og bedriftsutvikling i landbruket	2014	Norwegian Ministry of Agriculture and Food	NOR	Regulation
20	Forskrift om produksjonstilskudd og avløsertilskudd i jordbruket	2014	Norwegian Ministry of Agriculture and Food	NOR	Regulation
21	Forskrift om tilskot til miljøtiltak for landbruket i Sogn og Fjordane (Regionalt Miljøprogram) med kommentarar, 2013	2013	Fylkesmannen i Sogn og Fjordane	NOR	Circular
22	Forskrift om tilskot til regionale miljøtiltak i jordbruket, Sogn og Fjordane	2015	Fylkesmannen i Sogn og Fjordane	NOR	Regulation
23	Forskrift om vedtekter for Norsk kulturminnefond	2003	Norwegian Ministry of Climate and Environment	NOR	Regulation
24	Forskrift om vern av Jostedalsbreen nasjonalpark, Luster, Sogndal, Balestrand, Førde, Jølster, Gloppen og Stryn kommuner, Sogn Luster, Sogndal, Balestrand, Førde, Jølster, Gloppen og Stryn kommuner, Sogn og Fjordane.	1998	Directorate for Nature Management/Directorate for Cultural Heritage	NOR	Regulation
25	Fovrvaltningsplan for Jostedalsbreen Nasjonalpark	1994	Fylkesmannen i Sogn og Fjordane	NOR	Plan
26	Fylkesdelplan for arealbruk	2001	Sogn og Fjordane Fylkeskommune	NOR	Plan
27	Fylkesdelplan for landbruk	2002	Sogn og Fjordane Fylkeskommune/Sogn og Fjordane Fylkesmannen	NOR	Plan
28	Gamle hager: Undersøkelse og restaurering	2005	Directorate for Cultural Heritage	NOR	Report
29	Håndbok for lokal registrering	2013	Directorate for Cultural Heritage	NOR	Instructions
30	Handlingsplan for slåttemark	2009	Directorate for Nature Management	NOR	Plan
31	Inventory of Norwegian Glaciers	2012	Norwegian Water Resources and Energy Directorate	E	Report JBNP
32	Jostedalsbreen	2008	Norwegian Glacier Museum	E	Brochure

76	Regionalplan for vindkraft (windpower, climate and environmental plan)	2010	Sogn og Fjordane Fylkeskommune	NOR Plan
77	Regionalt Bygdeutviklingsprogram for Sogn og Fjordane 2013-16 Handlingsplan 2014	2013	Fylkesmannen i Sogn og Fjordane	NOR Plan
78	Regionalt Bygdeutviklingsprogram for Sogn og Fjordane 2013-2016	2012	Fylkesmannen i Sogn og Fjordane	NOR Program
79	Regionalt programm for Sogn og Fjordane 2014	2014	Fylkesmannen i Sogn og Fjordane	NOR Instructions
80	Registrering av kulturhistorisk verdifulle landbruksbygninger Veileder til bruk i pilotstudien	2010	unknown	NOR Instructions
81	Reiselivet i Sogn og Fjordane-oversikt, kommentarar og strategiske problemstillingar	2007	Sogn og Fjordane Fylkeskommune / Fylkesmannen i Sogn og	NOR Report
82	Reiselivsplan Sogn og Fjordane 2010-2025	2010	Fylkesmannen i Sogn og Fjordane	NOR Strategy paper
83	Restaurering av fem gamle ferdslevegar i Jostedalsbreen nasjonalpark	2012	Jostedalsbreen National Park Steering Comittee	NOR Report
84	Selected Agricultural Landscapes	2009	Directorate for Nature Management/Norwegian Agricultural Aut	E Brochure
85	Skjøtselsboka for kulturlandskap og gamle norske kulturmarker	1999	Miljødirectoratet (Directorate for Nature Management)	NOR Management plan
86	Skjøtselsplan for Bødalen, Erdalen og Sunndalen i Jostedalsbreen nasjonalpark	2001	Fylkesmannen i Sogn og Fjordane	NOR Report JBNP
87	Søknad om produksjonstilskudd i jordbruket og tilskudd til avløsning ved ferie og fritid (NOR)	2013	Norwegian Agriculture Agency	NOR Operational instruction
88	St. meld. nr.12 Om dyrehold og dyrevelferd – about husbandry and animal welfare	2002	Norwegian Ministry of Agriculture and Food	NOR White paper
89	Statements on cultural landscape	2014	Directorate for Nature Management	NOR Articles (homepage)
90	Strategi for arbeid med landskap	2007	Directorate for Cultural Heritage/Directorate for Cultural Heritag	NOR Strategy paper
91	Stryn Kommuneplan (Langtidsprogram og Handlingsprogram)	2006	Stryn Kommune	NOR Plan
92	Summary of Proposition No. 52 (2008-2009) to the Storting concerning the Nature Diversity Act	2010	Norwegian Ministry of Climate and Environment	E Proposition
93	Supplerande kartlegging av biologisk mangfald i jordbrukets kulturlandskap, inn- og utmark, i Sogn og Fjordane	2008	Directorate for Nature Management	NOR Supplementary mappir
94	The Government's Environmental Policy and the State of the Environment in Norway	2004	Norwegian Ministry of Climate and Environment	E White paper
95	The Land Act	2013	Norwegian Ministry of Climate and Environment	E Act
96	The Norwegian Forest and Landscape Institute. Annual report 2012	2012	Skog- og landskap	E Report
97	The Planning and Building Act	2008	Norwegian Ministry of Local Government and Regional Develo	E Act
98	The Rural and Regional Policy of the Norwegian Government	2006	Norwegian Ministry of Local Government and Regional Develo	E White paper
99	The West Norwegian Fjords	2009	Directorate for Cultural Heritage	E Brochure
100	Tiltaksstrategi for spesielle miljøtiltak i jordbruket og nærings- og miljøtiltak i skogbruket (SMIL) Stryn kommune	2008	Stryn Kommune	NOR Strategy paper
101	Tiltaksstrategi for spesielle miljøtiltak i jordbruket Stryn kommune 2013-2016 (SMIL)	2012	Stryn Kommune	NOR Strategy paper
102	Utvalgte kulturlandskap	2008	Norwegian Agriculture Agency / Directorate for Nature Manage	NOR Brochure
103	Utvalgte kulturlandskap i jordbruket Sjekklister for arbeid med forvaltningsplan og skjøtsels- og vedlikeholdsplaner	2008	Norwegian Agriculture Agency /Directorate for Nature Manage	NOR Check List
104	Utvalgte kulturlandskap i jordbruket Tilråding til Landbruks- og matdepartementet og Miljøverndepartementet	2008	Directorate for Nature Management/Norwegian Agricultural Aut	NOR Report
105	Utvalgte kulturlandskap i jordbruket Utarbeidet av Statens landbruksforvaltning	2007	Norwegian Agriculture Agency /Directorate for Nature Manage	NOR Final report
106	Vedtekter for nasjonalparkstyret for Jostedalsbreen nasjonalpark i Sogn og Fjordane fylke	2012	Fylkesmannen i Sogn og Fjordane	NOR Regulation
107	Vegen vidare for Sogn og Fjordane	2002	Sogn og Fjordane Fylkeskommune	NOR Plan
108	Verdiar i Oldenvassdraget, Stryn kommune i Sogn og Fjordane	1993	Directorate for Nature Management	NOR Report
109	Verdifulle kulturlandskap i Norge	1994	Directorate for Nature Management	NOR Report
110	Verneplan Bygdøy - Kongelig resolusjon	2012	Directorate for Nature Management	NOR Royal decree

34	Jostedalsbreen nasjonalpark - Årsrapport 2013 frå SNO	2013	Jostedalsbreen National Park Steering Comittee	NOR Report
35	Jostedalsbreen nasjonalpark - Årsrapport 2014 frå SNO	2014	Jostedalsbreen National Park Steering Comittee	NOR Report
36	Jostedalsbreen Nasjonalpark – Kongelig resolusjon	1991	Directorate for Nature Management	NOR Royal decree
37	Jostedalsbreen Nasjonalpark Årsmelding 2004	2004	Fylkesmannen i Sogn og Fjordane/Statens Naturoppsyn	NOR Report
38	Kartlegging og verdsetting av friluftslivsområder	2013	Directorate for Nature Management	NOR Instructions
39	Kjerneområde Landbruk Stryn kommune Registrering	2006	Stryn Kommune	NOR Report
40	Kommunal planstrategi Stryn 2012-2015	2012	Stryn Kommune	NOR Strategy paper
41	Kommuneplanen sin samfunnsdel October 2013	2013	Stryn Kommune	NOR Plan
42	Kommuneplanens arealdel, konsekvensutredning og Strandsone	2013	Stryn Kommune	NOR Plan
43	Kulturlandkap i Sogn og Fjordane STRATEGI- OG HANDLINGSPLAN 2003-2006	2002	Kulturlandskapsgruppa I Sogn og Fjordane	NOR Plan
44	Kulturlandskap – for “kropp og sjel”	2006	Directorate for Nature Management	NOR Brochure
45	Kulturmark M93-2013 Tilstand og overvåkning	2013	Directorate for Nature Management	NOR Report
46	Kulturmark og klima – en kunnskapsoversikt	2013	Directorate for Nature Management	NOR Report
47	Kulturminner i kommuneplanens samfunnsdel – en kort veiledning	2014	Directorate for Cultural Heritage	NOR Instructions
48	Land Consolidation Act	1985	Norwegian Ministry of Agriculture and Food	E Act
49	Land Subdivision Act	1983	Norwegian Ministry of Climate and Environment	E Act
50	Landbruk og planlegging etter plan- og bygningsloven	2012	Norwegian Agriculture Agency	NOR Plan
51	Landbruks- og matpolitikken	2011	Norwegian Ministry of Agriculture and Food	NOR White paper
52	Landbruksbygg og kulturlandskap	2013	Norwegian Agricultural Agency	NOR Final report
53	Living with our Cultural Heritage	2005	Norwegian Ministry of Climate and Environment	E Report
54	Lov om motorferdsel i utmark og vassdrag (motorferdselloven)	1978	Norwegian Ministry of Climate and Environment	NOR Act
55	Miljøstrategier i jord- och skogsbruk (MJS)	2009	Nordic Council of Ministers	S Report
56	Næringsmessig potensiale for kvalitetsturisme En utredning for Miljøverndepartementet belyst med analyser fra Sogn og Fjordane	2003	Ministry of Climate and Environment /Vestlandsforskning	NOR Report
57	Naeringsnytt	2011	Stryn Kommune	NOR Article
58	Nasjonalparkar og næring - hand i hand?	2000	Fylkesmannen i Sogn og Fjordane	NOR Report
59	Nasjonalt miljøprogram 2012	2012	Norwegian Agriculture Agency	NOR Report
60	Natural benefits – on the values of ecosystem services	2013	Norwegian Ministry of Climate and Environment	E Report
61	Natural environment, cultural environment and landscape	2013	Norwegian Ministry of Climate and Environment	E Articles (homepage)
62	Natural environment, cultural environment and landscape	2013	Norwegian Ministry of Climate and Environment	E Article (internet)
63	Nature Diversity Act	2009	Norwegian Ministry of Agriculture and Food	E Act
64	Norway's Environmental Targets	2012	Norwegian Ministry of Climate and Environment	E Report
65	Norwegian biodiversity policy and action plan – cross sectoral responsibilities and coordination	2002	Norwegian Ministry of Climate and Environment	NOR White paper
66	Ny landsplan for nasjonalparker	1986	Norwegian Ministry of Climate and Environment	NOR Plan
67	On rural and regional policy	2013	Norwegian Ministry of Local Government and Regional Develc	E White paper
68	Outdoor Recreation Act	1996	Norwegian Ministry of Climate and Environment	E Act
69	Plan- og bygningsloven og Landbruk Pluss	2005	Norwegian Ministry of Agriculture and Food	NOR Report Supervision
70	Plan- og Bygningsloven og Landbruk Pluss	2005	Ministry of Climate and Environment /Ministry of Agriculture	NOR Instructions
71	Planomtale for Kommunedeplan for Olden	2015	Stryn Kommune	NOR Plan
72	Planprogram for Kommunedelplan Langeset-Stryn-Gjørven	2013	Stryn Kommune	NOR Plan
73	Prosjekt opne landskap	2008	Fylkesmannen i Sogn og Fjordane	NOR Final report
74	Prosjektplan revideringa av forvaltningsplanen for Jostedalsbreen nasjonalpark	2013	Nasjonalparkstyret	NOR Report
75	Rapport Kulturlandskap og kulturmarkstypar i Stryn kommune Kulturlandskap i Sogn og Fjordane	1994	Samarbeidsgruppa i Sogn og Fjordane	NOR Report

APPENDIX (Material Collection)

Index

Glossary

Glossary	
Askeladden	**Askeladden** is a compiled database on cultural heritage (protected by the Cultural Heritage Act, the Planning and Building Act, or heritage that is considered protection-worthy by law). Since 12.10.2014, the database is only accessible to administrative bodies or selected scientific institutions in Norway (RIKSANTIKVAREN 2015).
Bioforsk Since the 1st of July 2015, Bioforsk, NILF and Skog og Landskap merged to the Norsk institutt for bioøkonomi (NIBIO)	The **Norwegian Institute for Agricultural and Environmental Research** conducts applied research in agriculture and rural development, plant sciences, environmental protection and natural resource management. The main objective is to provide industries, governments and consumers with new knowledge, services and solutions related to the scientific fields (BIOFORSK 2015).
Brosjyer	**Brochures** give an overview of the Government's policies and practice and are written with the general public in mind (REGJERINGEN 2014).
Bygdeforskning	The **Centre for Rural Research** is an independent research institute. It conducts social research and development projects for the national research council, as well as for the public and private sectors (BYGDEFORSKNING 2015).
Bygdeutviklingsmidlar (BU-midlar)	**Central Rural Development Funds** comprise schemes to contribute to private sector development in agriculture. They include both the development of traditional agriculture and rural industries. In 2015, 5.5 million NOK are allocated (MINISTRY OF AGRICULTURE 2015).
Cultour Et forskningsprosjekt om reiseliv, kulturminner og gjengroing	**Cultural Landscapes of Tourism and Hospitality** (CULTOUR) was a research project lead by the Norwegian Forest and Landscape Institute and the Norwegian Centre for Rural Research between 2009-2012. The project examined the nexus between successive overgrowing, cultural heritage and tourism in Norway (CULTOUR 2012).
Den Norske Touristforening (DNT)	The **Norwegian Trekking Association (DNT)** is Norway's largest outdoor life organization, with more than 240.000 members. DNT aims to promote straightforward, active, versatile and environmentally-friendly outdoor activities and to preserve the outdoors and the cultural landscape (DNT 2015).
Erdalen Beitelag	**Erdalen Grazing Group** is an association of farmers in Erdalen. They organise the grazing of the livestock in the upper valleys of Erdalen and Grasdalen. The basis is the agreement between the Ministry of Agriculture and the Norwegian Sheep and Goat association in the 1970s. The aim is to get as many farmers organised in an outfield grazing group to collaborate on supervision, bridges, fences, and other investments. These groups are also entitled to specific grants (NSG 2015).
Fjordingen	**Fjordingen** is the local newspaper in Stryn.
Fjord Norway AS	**Fjord Norway** is regional company for the four West Norwegian counties Rogaland, Hordaland, Sogn og Fjordane and Møre og Rumsdal. In close cooperation with destination businesses and industry, they organise the international marketing efforts of the Fjord Norway region (FJORDNORWAY 2015).
Framtidsfylket	**Future County** is an academic job and recruitment portal provided by the county Sogn og Fjordane. Main aims are to offer employment opportunities and to organise county career fairs. The goal of Future County is to mediate opportunities for anyone interested in an academic job in the county Sogn og Fjordane (FRAMTIDSFYLKET.NO 2015).
Fylkeskommune Sogn og Fjordane (FKSF)	The **Sogn og Fjordane County Council** is an elected body by the county inhabitants and is responsible for county policies within the fields of secondary education, cultural affairs (implying cultural heritage), communications, dental health, economic development and regional planning and the development of the road system (SOGN OG FJORDANE FYLKESKOMMUNE 2015).
Fylkesmannen i Sogn	The **County Governor of Sogn og Fjordane** is appointed by and represents

og Fjordane (FMSF)	the central government in the county. The responsibilities are following up the resolutions, goals and guidelines enacted by the parliament and the government. He handles assignments related to health and social welfare, local government, civil and environmental protection, children and family, education, agriculture (FYLKESMANNEN SOGN OG FJORDANE 2015).
Fylkesmannen i Sogn og Fjordane, Landbruksavdelinga (FM-LA)	The **County Governor's Agricultural Department** is responsible for providing assistance and advice to the municipalities in agricultural matters. It contributes to the implementation of the national agricultural policy using information, management of policy instruments and financial measures (FYLKESMANNEN I SOGN OG FJORDANE 2015).
Fylkesmannen i Sogn og Fjordane, Miljøvernavdelinga (FM-MA)	The **County Governor's Department of Environmental Affairs** is responsible for the implementation of the national environmental and land policies on the regional and local level. The municipalities occupy a central role in environmental work. Supervision and monitoring of municipalities are therefore an important task for the Department of Environmental Affairs at the County Governor. (FYLKESMANNEN I SOGN OG FJORDANE 2015).
Høgskulen i Sogn og Fjordane (HISF)	The **Sogn og Fjordane University College** is a medium size institution of higher education in Norway, with approximately 3000 students and 300 employees. HISF is one of 26 state-run Colleges in Norway (HISF 2015).
Høyringar	**Consultations** are suggestions from the Ministry, which are sent to affected parties (public and private institutions, organisations, and other ministries). The purpose is to assess economically and administrative consequences of public measures (REGJERINGEN 2014).
Innovasjon Norge	**Innovation Norway** is a governmental institution. It serves as a fund for commercial promotion and regional development. Innovation Norway supports companies by developing competitive advantages with the aim to enhance innovation. Norwegian enterprises have access to a broad business support system as well as financial means. Innovation Norway provides competence, advisory services, promotional services and network services. In 2004, the tourist destination marketing of Norway was assigned to Innovation Norway (INNOVATION NORWAY 2015).
Jordbruksoppgjøret (Hovedavtalen for jordbruket)	The **Agricultural Settlement** are annual negotiations between the government and the Norwegian Farmers' Union and the Norwegian Farmers and the Smallholders Union. The negotiations are conducted by the Basic Agreement for Agriculture *(Hovedavtalen for jordbruket)*. The first major agreement on agriculture was signed in 1950. Basic Agreement marks the governing processes in the agricultural negotiations. The direct negotiations between the government and the agricultural sector are on prices of agricultural commodities and other regulations for the industry (REGJERINGEN 2014).
Jostedalsbreen Nasjonalparkstyre	The **Jostedalsbreen National Park Board** is an inter-municipal board (Luster, Stryn, Sogndal, Balestrand, Førde, Jølster, Gloppen Municipality) that represents the National Park Authority since 2009. The aim of the board is a holistic management of large scale conservation areas across administrative borders within the relevant statutory regulations (Jostedalsbreen National Park Board 2012).
Kongelig Resolusjon	**Royal decree** is a legal decision made by the king and the state council (REGJERINGEN 2014).
Konsesjoner	The Ministries yield **concessions** and give private market operators the licence to exploit a resource owned by the state or the state has the sovereignty over (REGJERINGEN 2014).
Kulturminnesøk	**Cultural Heritage Search** is a database providing an overview of the cultural heritage in Norway. The information system was launched by the Directorate of Cultural Heritage in December 2009. Kulturminnesøk shows information about over 150.000 monuments registered in Askeladden database and offers additional information and images from several other sources and the public (KULTURMINNESØK 2015).

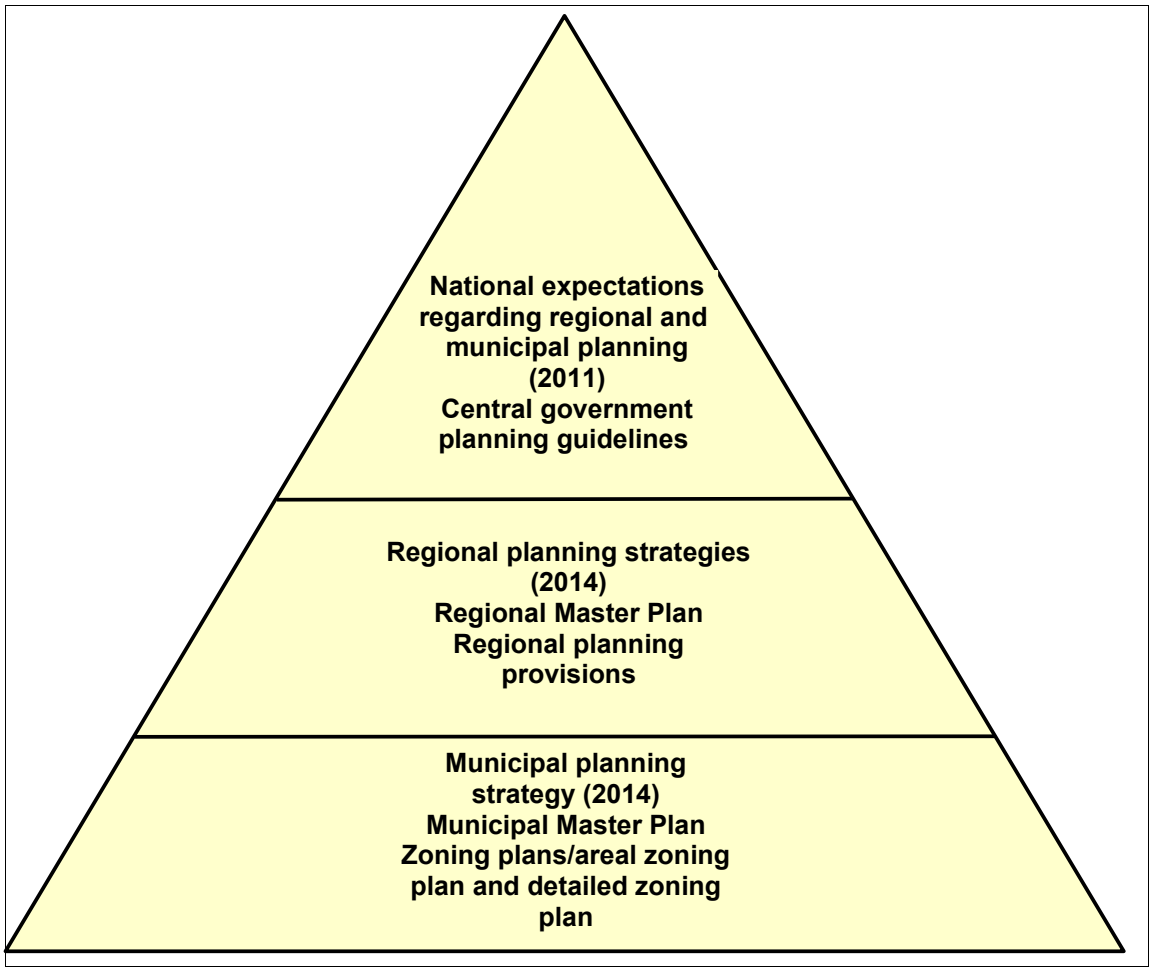
Kuregistert	The **cow register** is a database for traditional Norwegian cow breeds that are regarded protection-worthy. Pursuing breeds shall be recorded in the register: Dølafe, Sidet trønderfe, Nordlandsfe, Telemarkfe, Vestlandsk Fjordfe, Vestlandsk Raudkolle and Østlandsk Rødkolle (NIBIO 2015).
Lodalen Dampbåtlag	**Lodalen Steamboat Group** is an association initiated by the farmers in Loedalen, who mutually bought steamboats to operate the tourist traffic on Lake Loen. The group was established in the late 19th century with the growing tourist traffic in the valley (NESDAL 1983: 68).
Lovet (Forskrift)	**Acts** encompass laws, regulations and guidelines, for instance, which are related to the Ministry's fields of responsibility (REGJERINGEN 2014).
Meldninger til Stortinget (Meld. St.)	**White papers** are rendered when the Government presents matters to the Storting that do not require a decision. White papers impel as a report on the work carried out in a particular field and future policy. These documents, and the subsequent discussion of them, often form the basis of a draft resolution or emerge as a law (REGJERINGEN 2014).
Mesta	**Mesta** was established as a separate company on 1st January 2003, as a separated production division of the Norwegian Public Roads Administration. The aims are to establish and maintain infrastructure (MESTA 2015).
Miljødirektoratet (MD)	The **Norwegian Environment Agency** was established on 1st July 2013, as a result of the amalgamation of the Norwegian Climate and Pollution Agency and the Norwegian Directorate for Nature Management (SNO). The Norwegian Environment Agency is the largest agency under the Ministry of Climate and Environment and is responsible for nature management and pollution issues (MILJØDIREKTORATET 2015).
Miljøstatus	**State of Environment Norway** aims to provide the latest information about the state and development of the environment in Norway. The Ministry of the Environment has assigned the production of State of the Environment Norway to the environmental authorities. The Norwegian Environment Agency has the overall editorial responsibility. The content has been produced, and quality checked by the respective environmental agencies. The Directorate for Cultural Heritage is responsible for the topic "The Cultural Heritage". The Norwegian Polar Institute is responsible for "Polar regions", and The Norwegian Radiation Protection Authority is responsible for "Radiation". The Norwegian Environment Agency is responsible for "Freshwater", "Marine Areas", "Hazardous chemicals", "Climate", "Noise", "Air pollution", "Waste", "Biological diversity" and "Outdoor recreation". Statistics Norway, the Norwegian Institute for Water Research, the Norwegian Institute for Air Research, the Norwegian Institute for Nature Research and the Norwegian Institute for Cultural Heritage Research supply the website with data (MILJIØSTAUS 2015).
Nasjonal Miljøprogram (NM)	T h e **National Environmental programme** was introduced in 2004 to strengthen environmental work in agriculture, and to highlight agriculture's environmental performance. Besides national goals and measures the programme indicates framework for the regional environmental programmes (REGJERINGEN 2012).
Naturbase	**Naturbase** imparts valuable knowledge in the form of maps, data and software for those who work with land management, environmental impact assessment and individual case management. Municipal planners, project owners, consultants and decision-makers are the key audiences. Naturbase provides information on protected areas, critical habitats and species of national management. Data are continuously updated (NATURBASE 2015).
Norges Bondelag (NB)	The **Norwegian Farmers' Union** works to improve the conditions for agriculture and to advocate the importance of farming in Norway. It is the leading organisation for agricultural businesses and politics and delivers a broad range of services to their members (NORGES BONDELAGET 2015).
Norsk Bonde- og Småbrukarlag (NBS)	The **Norwegian Farmers and Smallholders Union** is politically independent and works to improve agriculture's economic and social framework. Increased

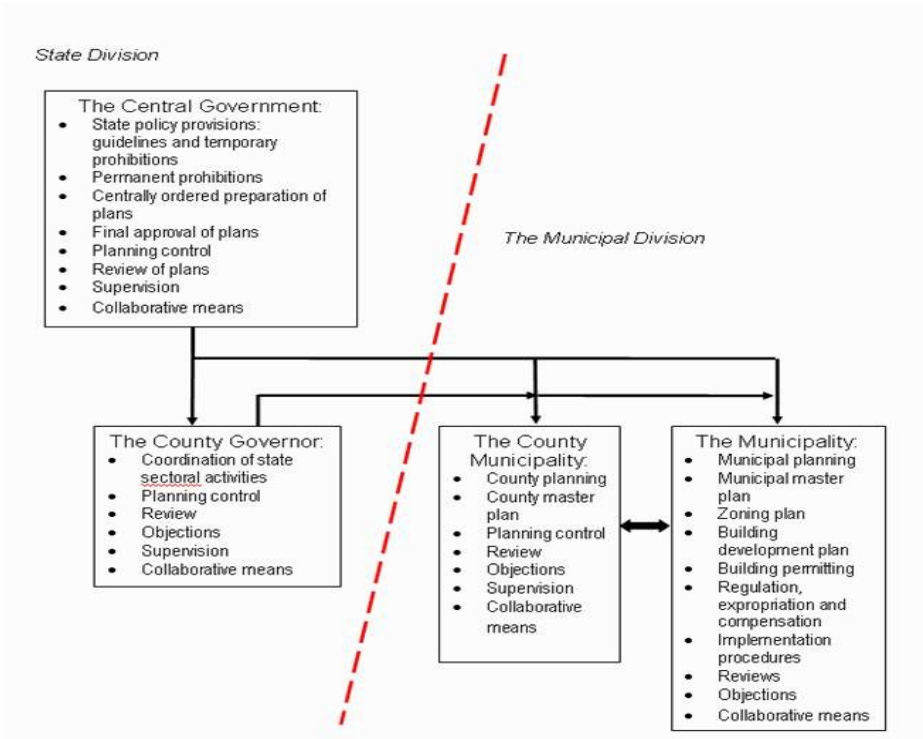
	food production, economic development, local processing, animal welfare and vital cultural landscapes are important issues for the organization (NBS 2015).
Norsk Genressurssenter	The **Norwegian Genetic Resource Centre** shall ensure efficiently and sustainable management of national genetic resources of livestock, plants, and forest trees. It follow up and coordinate activities and priority measures and conveys knowledge of genetic resources and how they can be preserved for the use and special conservation measures. The centre follow-up work in Nordic and international bodies and coordinates the national and Nordic genetic resources (NIBIO 2015).
Norges Geologiske Undersøkelse (NGU)	The **Geological Survey of Norway** (NGU) is the national institution for the study of bedrock, mineral resources, surficial deposits and groundwater. NGU actively contributes to the goal of using geological knowledge towards achieving an efficient and sustainable management of Norway's natural resources and its environment (NGU 2015).
Norsk Institutt for Landbruksøkonomisk Forskning (NILF) Since the 1st of July 2015, Bioforsk, NILF and Skog og Landskap merged to the Norsk institutt for bioøkonomi (NIBIO)	The **Norwegian Agricultural Economics Research Institute** is an independent research institute under the Ministry of Agriculture. NILF provides background material for general agricultural economics decisions, economic development and decisions on farms and rural development (NILF 2015).
Norsk Institutt for Skog og Landskap (Skog- og Landskap) Since the 1st of July 2015, Bioforsk, NILF and Skog og Landskap merged to the Norsk institutt for bioøkonomi (NIBIO)	The **Norwegian Forest and Landscape Institute** is a Norwegian scientific institutions, subordinate to the Ministry of Agriculture and Food, regarding the use of forest resources, forest ecology, and the environment. The institute is also responsible for a range of national mapping programmes and resource inventories related to land cover, forestry, agriculture, landscape and the environment (SKOG OG LANDSKAP 2015).
Norsk Kulturarv (NK)	**Norwegian Heritage** is a charitable foundation and an independent institution. The main goal is to help secure the Norwegian heritage for future generations. Norwegian Heritage shall safeguard the interests of owners and users of protected cultural heritage (NORSK KULTURARV 2015).
Norsk Kulturminnefond	**Norwegian Cultural Heritage Fund** shall strengthen efforts to preserve conservation and protected monuments and contribute to a diversity of cultural heritage that can be used as a basis for future experience, knowledge, development and wealth creation.
Norsk Offentlig Utredning (NOU)	Committees and working groups constituted by the Ministries official produce official **Norwegian Reports**. They often form the basis of a bill or white paper (REGJERINGEN 2014).
Norsk Rikskringkasting (NRK) Fylkes Leksikon Sogn og Fjordane	The **Norwegian Broadcast Corporation (NRK) County Lexicon** Sogn og Fjordane is an editorial curated local lexicon for the Sogn og Fjordane county produced by the NRK district office Sogn og Fjordane. The lexicon has a significant focus on local descriptive stories in the county. Editor of the local lexicon is Ottar Starheim (NRK 2015).
Norsk Sau og Geit (NSG)	**Norwegian Sheep and Goat** is an organised association for sheep and goat owners in Norway. Their focus is on economics and marketing, production issues, professional challenges, political contacts and information provisioning around sheep and goat husbandry in Norway (NORSK SAU GO GEIT 2015).
Norsk Seterkultur	**Norwegian Summer Farming Organisation** was established in 1999 as a result of the project "Norwegian Centre for summer farming culture". The organisation represents the interests of active summer farming farmer in Norway. Membership money partially funds husbandry. The organisation issues the magazine *Seterbrukaren* (NORSK SETERKULTUR 2015).
Norsk Vassdrags- og Energidirektorat (NVE)	**Norwegian Water and Energy Directorate**'s mandate is to ensure an integrated and environmentally sound management of the country's water resources, promote efficient energy markets and cost-effective energy systems and contribute to efficient energy use. The directorate plays a central role in

	the national flood contingency planning and bears overall responsibility for maintaining national power supplies. From 2009 NVE is assigned greater responsibility for the prevention of damage caused by landslides. NVE is involved in research and development in its fields and is the national centre of expertise for hydrology in Norway (NVE 2016).
Olden Dampbåtlag	**Olden Steamboat Group** is a company that resulted out of a merger between the Upper Olden Steamboat Group. In 1893, D/B 'Brixdal', D/B 'Victoria' and D/B 'Alda' were bought by the local farmers. In 1981, the boat operation stopped (NRK FYLKESLEKSIOKON 2015).
Olden Skysslag	**Olden Transportation Group** was established by local farmers around Lake Olden in the 1890s, after the tourist road to the Briksdalsbreen was constructed. It is solely the right of the Olden Transportation Group to bring the tourist from Rustøen to the glacier by horse carriages and since 2003 by Troll Cars' (OLDEN SKYSSLAG 2015).
Østlandsforskning	**Eastern Norway Research Institute** was established in 1984 as a private autonomous non-profit foundation. The Institute has three main areas of expertise: Regional development, wilderness and mountain regions and welfare. It emphasises on tourism, cultural, experience-based and natural resources based industries, development in mountain communities, core-periphery issues, rural development, and regional analysis (ØSTLANDSFORSKNING 2015).
Planer	External researchers or committees produce **plans** and encompass reports, analyses and documentation presented to the ministries (REGJERINGEN 2014).
Proposisjoner til Stortinget (Prop. St.)	**Bills** form the basis for the Storting's consideration of proposed resolutions, new legislation or amendments to legislation, the budget, or subjects that require a decision by the parliament. Draft resolutions are documents presented by the Government to the Storting. Draft resolutions form the basis for the Storting's consideration of proposed resolutions, new legislation or amendments to legislation, the budget, or other such matters that require a decision by the Storting (REGJERINGEN 2014).
Prosjekt Opne Landskap	The **Open Landscape Project** was initiated and applied by the county governor of Sogn og Fjordane in 2005 and lasted until 2008. Main aims of the projects were common measures to limit the successive overgrowing in the county by including several actors. National, regional roads, old cattle drift ways as well as hiking roads should be cleared during the project period (NORDHEIM KUSSLID 2008: 7).
Rapporter	External researchers or committees encompass **reports**, analyses, and documentation presented to the ministries (REGJERINGEN 2014).
Regionale Miljøprogram (RMP)	**Regional Environmental Schemes** are financial subsidies distributed by the County Sogn og Fjordane. They cover: Funding for mountain farming with dairying, funding for the operation of steep land, funding for organized grazing, funding for management of nurse goat and yeanling, funding for management of coastal heath, funding for conservation of old livestock breeds, funding for grazers in conservation areas, funding for management of valuable elements in cultural landscape, and funding for management of the valuable hay meadows and pastures (RMP 2013).
Regler	**Regulations** encompass laws, regulations, guidelines, and so on that are related to the Ministry's fields of responsibility (REGJERINGEN 2014).
Reisemål Stryn & Nordfjord	**Destination Stryn and Nordfjord** is a company owned by the municipalities Stryn, Hornindal, Gloppen, Eid, Vågsøy, and Selje. The main task is marketing and product development of Nordfjord as a tourist destination (NORDFJORD.NO 2015).
Riksantikvaren (RA)	The **Directorate for Cultural Heritage** is liable for the management of all archaeological sites, architectural monuments and cultural environments by relevant legislation (RIKSANTIKVAREN 2014).

Rundskriv	**Circulars** are information from the Ministries to affected parties about interpretations of laws and regulations (REGJERINGEN 2014).
SEkretariatet For Registrering Av faste Kulturminne i Noreg (SEFRAK)	The **Secretariat of Registration of Fixed Cultural Heritage in Norway (SEFRAK)** is an index of older buildings and other cultural heritage. SEFRAK registrations were conducted as fieldwork in the years 1975-1995. It registers buildings built before 1900. There are about 515.000 registered entities on the SEFRAK index (RIKSANTIKVAREN 2015).
Spesielle Miljøtiltalk i Jordbruket (SMIL)	**Special Environmental Measures in Agriculture** (SMIL) are financial schemes with the purpose to protect the natural and cultural heritage values of agricultural cultural landscapes. Further, the object is to reduce pollution from agriculture, beyond what is expected through casual agricultural operations. An important objective of the scheme is to achieve a more targeted effort by local needs, challenges, and goals (LANDBRUKSDIREKTORATET 2015).
Statens Landbrukdirektoratet (SLF)	The **Norwegian Agriculture Authority** is established in the Ministry of Agriculture and Food and is central to protecting natural resource diversity, and for generating value growth in agriculture and forestry. It also administrates schemes of trade related to the food section. Agricultural schemes and regulations targeted at agribusiness ensure profitable operations, sustainable rural communities and the preservation of the cultural landscape (LANDBRUKSDIREKTORATET 2015).
Statens Naturskadefond Naturskade Pool	**The Norwegian National Fund for Natural Damage Assistance** was established with the aim to compensate damage caused by natural perils and to contribute to protective measures against such perils by the Act on Natural Damage of June 9th 1961. The money is distributed by the Norwegian Natural Perils Pool (STATENS NATURSKADEFOND 2016).
Statens Naturoppsyn (SNO)	The **Norwegian Nature Inspectorate** is an important institution for the control and enforcement of environmental legal issues. It is a subunit of the Ministry of Environment (STATENS NATUROPPSYN 2015).
Statens Vegvesen	The **Norwegian Public Roads Administration** handles the planning, construction, and operation of the national and county road networks in Norway (STATENS VEGVESEN 2015).
Storting	**Storting** is the name of the Norwegian Parliament in Oslo.
Utmarksressurs AS.	**Utmarksressurs AS** is a consultancy company providing services related to wildlife, fishery and nature management. It is located in Stryn and Hardanger (UTMARKSRESSURS AS. 2015).
Utvalgte Kulturlandskap (UKL)	**Selected Cultural Landscapes** is a joint project between the agricultural and environmental authorities in Norway. These varied and specially labelled landscapes illustrate the relationship between people's use of the land and nature's harvest through generations and the valuable environmental features that have developed as a consequence. Regional administrators and councils cooperate with the landowners by managing and maintaining the natural- and cultural treasures in the areas. The two administrative bodies have contributed financially and earmarked funding for this purpose, based on voluntary agreements between the landowners/interested parties and the Government (SELECTED AGRICULTURAL LANDSCAPES 2009).
Veiledninger	**Handbooks** give an overview of the Government's policies and practice and are written with the general public in mind (REGJERINGEN 2014).
Visit Norway	**Visitnorway** is responsible for the development and maintenance of the official travel guide to Norway: www.visitnorway.com. The site includes several means and itineraries of trip planning to Norway. Providing a search engine, with thousands of different travel possibilities and an interactive map of Norway (VISITNORWAY 2015).
Visit Stryn&Nordfjord	**Visit Stryn&Nordfjord** is the regional branch of Visit Norway in Stryn Municipality and comprising the tourist marketing on the regional and local scale for the whole the Nordfjord (VISITNORWAY 2015).

CHART 1: **Norwegian planning system**





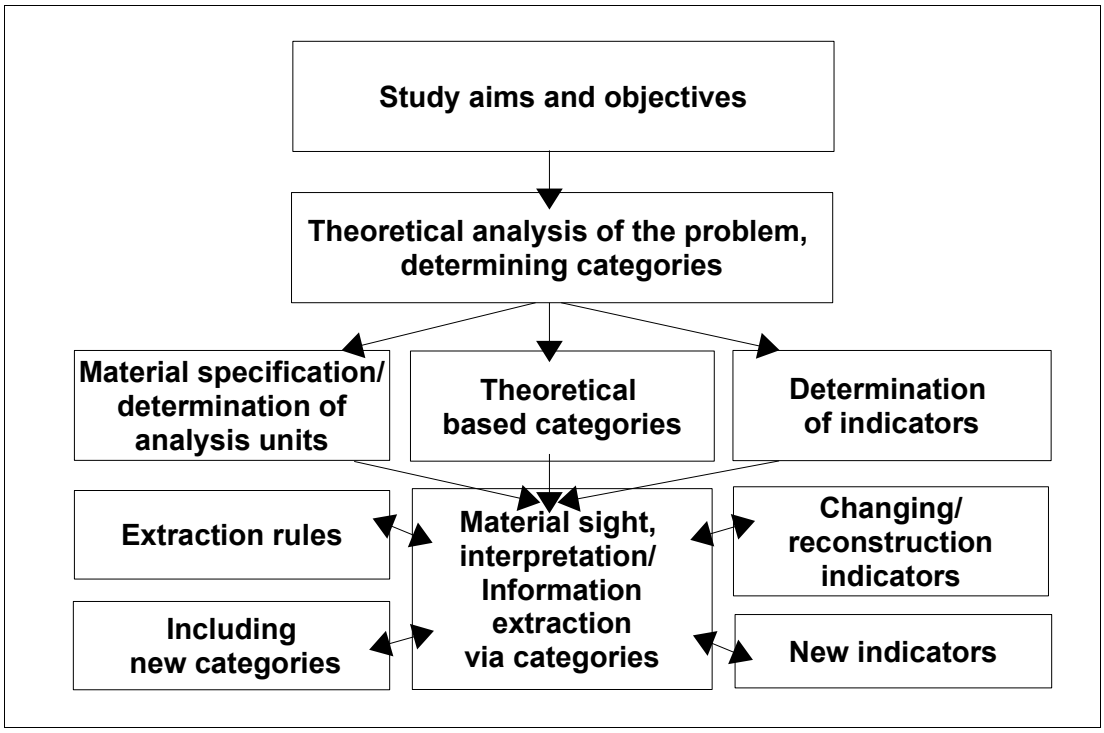
Divisions of government and planning levels with main categories of statutory instruments according to the Planning and Building Act (source ARL 2015; http://www.arl-net.de/commin/norway/planning-system).

CHART 2: **Document list** (computerised extract)

Nr.	Origin of the document	Name	Langua	Type	Year
0	Directorate for Nature Management/Norwegian Agricultural Authority/Directorate for Cultur	Utvalgte kulturlandskap i jordbruket Tilråding til Landbruks- og matdepartementet og Miljøverndeparte	NOR	Report	2008
1	Miljødirectoratet (Directorate for Nature Management)	Final report on the assessment and policy "Verdifulle kulturlandskap i Norge"	NOR	Report	1994
2	Directorate for Nature Management/Norwegian Agricultural Authority/Directorate for Cultur	Selected Agricultural Landscapes	E	Brochure	2009
6	Stryn Kommune	Kjerneområde Landbruk Stryn kommune Registrering	NOR	Report	2006
7	Stryn kommune	Kommuneplanen sin samfunnsdel October 2013	NOR	Plan	2013
8	Ministry of Agriculture and Food	Driveplikte etter Jordlova- Rundskriv	NOR	Circular (Rundbrief)	2011
9	Kulturlandskapsgruppa i Sogn og Fjordane	Kulturlandkap i Sogn og Fjordane STRATEGI- OG HANDLINGSPLAN 2003-2006	NOR	Plan	2002
10	Stryn kommune	Biologisk mangfold i Stryn kommune	NOR	Report	2002
11	Samarbeidsgruppa i Sogn og Fjordane	Rapport Kulturlandskap og kulturmarkstypar i Stryn kommune Kulturlandskap i Sogn og Fjordane	NOR	Report	1992
12	Ministry of Agriculture and Food	St. meld. nr.12 Om dyrehold og dyrevelferd – about husbandry and animal welfare	NOR →	White paper	2002
13	Norwegian Ministry of the Environment	The Government's Environmental Policy and the State of the Environment in Norway	E	White paper	2004
14	Miljødirectoratet (Directorate for Nature Management)	Supplerande kartlegging av biologisk mangfald i jordbrukets kulturlandskap, Inn- og utmark, i Sogn o	NOR (E Ab)		2008
15	Norwegian Ministry of the Environment	Act relating to wildlife and wildlife habitats (the Wildlife Act)	NOR →	Act	1981
16	Miljødirectoratet (Directorate for Nature Management)	Verdiar i Oldenvassdraget, Stryn kommune i Sogn og Fjordane	NOR	Report	1993
17	Directorate for Cultural Heritage	The West Norwegian Fjords	E	Brochure	2009
18	Norwegian Agriculture Agency	Søknad om produksjonstilskudd i jordbruket og tilskudd til avløsning ved ferie og fritid (NOR)	NOR	Operational instructions	2013
19	Fylkesmannen i Sogn og Fjordane	Vedtekter for nasjonalparkstyret for Jostedalsbreen nasjonalpark i Sogn og Fjordane fylke	NOR	Regulation	2012
20	Norwegian Agriculture Agency / Directorate for Nature Management /	Utvalgte kulturlandskap	NOR	Brochure	2008
21	Stryn Kommune	Tiltaksstrategi for spesielle miljøtiltak i jordbruket Stryn kommune 2013-2016 (SMIL)	NOR	Strategy paper	2012
22	Stryn Kommune	Tiltaksstrategi for spesielle miljøtiltak i jordbruket og Nærings- og miljøtiltak i skogbruket Stryn kommu	NOR	Strategy paper	2008
23	Norwegian Ministry of Local Government and Regional Development	The Rural and Regional Policy of the Norwegian Government	E	White paper	2006
24	Norwegian Ministry of the Environment	The Land Act	E	Act	2013
25	Norwegian Ministry of Climate and Environment	Norway's Environmental Targets	E	Report	2012
26	Norwegian Agriculture Agency /Directorate for Nature Management / Directorate for Cultur	Utvalgte kulturlandskap i jordbruket Sjekklister for arbeid med forvaltningsplan og skjøtsels- og vedl	NOR	Check List	2008
27	Fylkesmannen i Sogn og Fjordane	Forvaltningsplan for Jostedalsbreen Nasjonalpark	NOR	Plan	1994
28	Fylkesmannen i Sogn og Fjordane	Nasjonalparkar og næring - hand i hand?	NOR	Report	2000
29	Norwegian Agriculture Agency /Directorate for Nature Management / Directorate for Cultur	Utvalgte kulturlandskap i jordbruket Utarbeidet av Statens landbruksforvaltning, Direktoratet for natur	NOR	Final report	2007
30	Norwegian Ministry of Local Government and Regional Development	Environmental Action Plan for the housing and construction sector 2005-2008	E	Action Plan	2005
31	Ministry of Agriculture and Food	Plan- og bygningsloven og Landbruk Pluss	NOR	Report Supervision	2005
32	Ministry of Climate and Environment	Act Relating to Outdoor Recreation	E	Act	1996
33	Ministry of Climate and Environment /Ministry of Agriculture	PLAN- OG BYGNINGSLOVEN og Landbruk Pluss	NOR	Operational instructions	2005
34	Fylkesmannen i Sogn og Fjordane /Statens Naturoppsyn	JOSTEDALSBREEN NASJONALPARK ÅRSMELDING 2004	NOR	Report	2004
35	Ministry of Climate and Environment	Living with our Cultural Heritage	E	Report	2005
36	Norwegian Ministry of Local Government and Regional Development	Cultural Heritage Act	E	Act	2010
37	Norwegian Ministry of Local Government and Regional Development	The Planning and Building Act	E	Act	2008
38	Norwegian Glacier Museum	Jostedalsbreen	E	Brochure	2008
40	Fylkesmannen i Sogn og Fjordane	Regionalt programm for Sogn og Fjordane 2014	NOR	Operational instructions	2014
41	Fylkesmannen i Sogn og Fjordane	Relonalt Bygdeutviklingsprogram for Sogn og Fjordane 2013-16 Handlingsplan 2014	NOR	Plan	2013
42	Fylkesmannen i Sogn og Fjordane	Prosjekt opne landskap	NOR	Final report	2008
43	Landbruksbygninger og Kulturlandskap	Registrering av kulturhistorisk verdifulle landbruksbygninger Veileder til bruk i pilotstudien	NOR	Operational instructions	2010
44	Skogoglandskap	Cultour – et forskningsprosjekt om relsliv, kulturminner og gjengroing	NOR	Final report	2013
45	Norwegian Agricultural Agency	Landbruksbygg og kulturlandskap	NOR	Final report	2013
46	Skogoglandskap	Bygningsmiljoer i jordbrukslandskapet	NOR	Article	2012
47	Skogoglandskap	Endring i jordbruksareal i drift fordelt på jordbruksregioner	NOR	Article	2012
48	Ministry of Agriculture and Food	Act relating to forestry	E	Act	2005
49	Directorate for Nature Management and Directorate for Cultural Heritage	Forskrift om vern av Jostedalsbreen nasjonalpark, Luster, Sogndal, Balestrand, Førde, Jølster, Gio	NOR	Regulation JBNP	1991
51	Miljødirectoratet (Directorate for Nature Management)	Jostedalsbreen	E	Brochure	2007
52	Norwegian Agriculture Agency	Landbruk og planlegging etter plan- og bygningsloven	NOR	Plan	2012
53	Nordic Council of Ministers	Climate Change and Cultural Heritage in the Nordic Countries	E	Report	2010
54	Ministry of Agriculture and Food	Land Consolidation Act	E	Act	1985
55	Ministry of Climate and Environment	Land Subdivision Act	E	Act	1983
56	Ministry of Agriculture and Food	Landbruks- og matpolitikken	NOR	White paper	2011
58	Ministry of Agriculture and Food	Environmental Strategy 2008-2015	E	Report	2009
59	Nordic Council of Ministers	Miljöstrategier i jord- och skogsbruk (MJS)	S	Report	2009
60	Stryn kommune	Naeringsnytt	NOR	Article	2011
61	Norwegian Agriculture Agency	Nasjonalt miljöprogram 2012	NOR	Report	2012
62	Ministry of Climate and Environment	Natural environment, cultural environment and landscape	E	Article (internet)	2013
63	Ministry of Agriculture and Food	Nature Diversity Act	E	Act	2009
64	Norwegian Ministry of Local Government and Regional Development	On rural and regional policy	E	White paper	2013
65	Ministry of Climate and Environment	Natural benefits – on the values of ecosystem services	E	Report from an expert commiss	2013
66	Ministry of Climate and Environment	Summary of Proposition No. 52 (2008-2009) to the Storting concerning an Act relating to the manager	E	Proposition to the parliament	2010
67	Fylkesmannen i Sogn og Fjordane	Fylkesplanen 2005-2008 Frå plan til handling på satsingsområdet Småskala Næringar, lokalsamfunn o	NOR	Report task force	2005
68	Fylkesmannen i Sogn og Fjordane	Skjøtselsplan for Bødalen, Erdalen og Sunndalen i Jostedalsbreen nasjonalpark	NOR	Report JBNP	2001
69	Ministry of Climate and Environment /Vestlandsforskning	Næringsmessig potensiale for kvalitetsturisme En utredning for Miljøverndepartementet belyst med ar	NOR	Report	2003
70	Sogn og Fjordane Fylkeskommune / Fylkesmannen i Sogn og Fjordane / Innovasjon Norge	Reiselivet i Sogn og Fjordane – oversikt, kommentarar og strategiske problemstillingar	NOR	Report	2007
71	Norwegian Water Resources and Energy Directorate	Inventory of Norwegian Glaciers	E	Report JBNP	2012
72	Fylkesmannen i Sogn og Fjordane	Regionalt Bygdeutviklingsprogram for Sogn og Fjordane 2013 - 2016	NOR	Program	2012
73	Ministry of Climate and Environment	Norwegian biodiversity policy and action plan – cross sectoral responsibilities and coordination	NOR	White paper	2002
74	Fylkesmannen i Sogn og Fjordane	Reiselivsplan Sogn og Fjordane 2010-2025	NOR	Strategy paper	2010
76	Stryn kommune	Kommuneplanens arealdel, konsekvensutredning og Strandsone	NOR	Plan	2013
77	Norwegian Agriculture Agency	Evaluering av satsingen Utvalgte kulturlandskap i jordbruket	NOR	Report	2013
78	Miljødirectoratet (Directorate for Nature Management)	Kartlegging og verdsetting av friluftslivsområder	NOR	Operational instructions	2013
79	Miljødirectoratet (Directorate for Nature Management)	Kulturlandskap – for "kropp og sjel"	NOR	Brochure	2006
80	Miljødirectoratet (Directorate for Nature Management)	Kulturmark M93-2013 Tilstand og overvåkning	NOR	Report	2013
81	Miljødirectoratet (Directorate for Nature Management)	Skjøtselsboka for kulturlandskap og gamle norske kulturmarker	NOR	Management plan	1999
82	Miljødirectoratet (Directorate for Nature Management)	Statements on cultural landscape	NOR →	Articles (homepage)	2014
83	Miljødirectoratet (Directorate for Nature Management)	Kulturmark og klima – en kunnskapsoversikt	NOR	Report	2013
84	Ministry of Climate and Environment	Natural environment, cultural environment and landscape	E	Articles (homepage)	2013
85	Directorate for Cultural Heritage	Håndbok for lokal registrering	NOR	Operational instructions	2013
86	Directorate for Cultural Heritage	Eksempelsamling – Bestemmelser til arealplaner	NOR	Report	2014
87	Directorate for Cultural Heritage	Kulturminner i kommuneplanens samfunnsdel – en kort veiledning	NOR	Operational instructions	2014
88	Directorate for Cultural Heritage / Directorate for Cultural Heritage	Strategi for arbeid med landskap	NOR	Strategy paper	2007
89	Skog- og landskap	The Norwegian Forest and Landscape Institute. Annual report 2012	E	Report	2012
90	Skog- og landskap	Flashback – Norwegian Landscapes in Retrospect	E	Brochure	2006
91	Skog- og landskap	3Q Biologisk mangfold i jordbrukslandskap	NOR	Report	2008
92	Miljødirectoratet (Directorate for Nature Management)	Handlingsplan for slåttemark	NOR	Plan	2009
93	Miljødirectoratet (Directorate for Nature Management)	Supplerande kartlegging av biologisk mangfald i jordbrukets kulturlandskap, Inn- og utmark, i Sogn o	NOR	Supplementary mapping	2008
94	Directorate for Cultural Heritage	Gamle hager: Undersøkelse og restaurering	NOR	Report	2005
95	Jostedalsbreen National Park Steering Comittee	Jostedalsbreen nasjonalpark - Årsrapport 2014 frå SNO	NOR	Report	2014
96	Jostedalsbreen National Park Steering Comittee	Restaurering av fem gamle ferdslevegar i Jostedalsbreen nasjonalpark	NOR	Report	2012
97	Jostedalsbreen National Park Steering Comittee	Jostedalsbreen nasjonalpark - Årsrapport 2013 frå SNO	NOR	Report	2013
98	østlandsforskning	Evaluering av satsingen Utvalgte kulturlandskap i jordbruket	NOR	Report	2013
99	Fylkesmannen i Sogn og Fjordane	Forskrift om tiskot til miljøtiltak for landbruket i Sogn og Fjordane (Regionalt Miljøprogram) med kom	NOR	Circular	2013
100	Sogn og Fjordane Fylkeskommune	Vegen vidare for Sogn og Fjordane	NOR	Plan	2002
101	Sogn og Fjordane Fylkeskommune	Regionalplan for vindkraft (windpower, climate and environmental plan)	NOR	Plan	2010
102	Sogn og Fjordane Fylkeskommune	Fylkesdelplan for arealbruk	NOR	Plan	2001
103	Ministry of Climate and Environment	Lov om motorferdsel i utmark og vassdrag (motorferdselloven)	NOR	Act	1978
104	Fylkesmannen i Sogn og Fjordane				

* FM – Fylkesmannen; FK – Fylkeskommune; HSF – Sogn og Fjordane university college

CHART 3: **Category development and analysis procedure**
(induced by MEUSER and NAGEL 2009: 203)



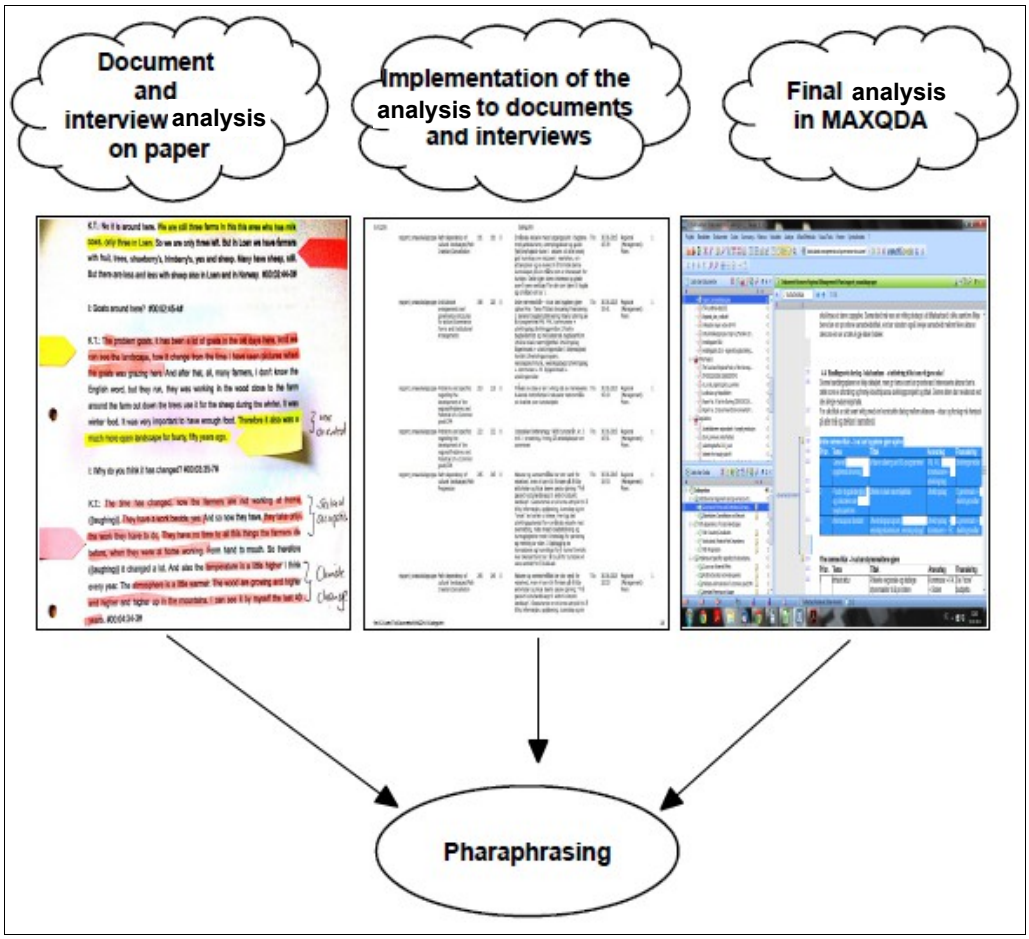


CHART 4a: **Meta questions related to the topics and the developed categories for the coding in the analysis process** (induced by PRITTWITZ 1994: 239p; GAILING and RÖHRING 2008)

Meta questions	Topic	Category	
1. Who are the key actors? 2. How are they incorporated and interconnected? 3. How are the conditions for governance-frameworks?	Stakeholders Constellation and Network	Institutional arrangements and governance-structures for action\Stakeholders Constellation and Network	**IA**
1. Which management approaches for constituting cultural landscapes as action arenas exist? 2. Do regional institutional arrangements tie in with cultural landscape related traditions and identities? 3. Are there overall concepts for cultural landscape development? 4. Which measures convey a specific image (outside and inside)? 5. Are projects defined that protect, use or valorise cultural landscapes - are they applied to solving problems/conflicts?	Governance Forms and Institutional Arrangements	Institutional arrangements and governance-structures for action\Governance Forms and Institutional Arrangements	**GA**
1. Which critical junctures (stabilising and destabilising) exist?	Path Progression	Path dependency of cultural landscapes\Path Progression	**GA**
1. To what extent are mechanisms of path development accepted and applied by the regional actors?	Path Creation/Cancellation	Path dependency of cultural landscapes\Path Creation/Cancellation	**GA**
1. Which material and institutional path dependencies respectively persistences with cultural landscaping effects exist? 2. Which future dependencies and scopes are implied?	Institutional/ Material Path Dependency	Path dependency of cultural landscapes\Institutional/ Material Path Dependency	**GA**
1. Is the cultural landscape established as an action arena? 2. How are the cultural landscapes delimited in terms of cultural space, natural space and space of identity?	Problems of Scale	Effects of institutions and institutional problems\Problems of Scale	**IA**
1. Which problems exist between central rules and requirements of cultural landscape action arenas? 2. Which problems exists between territorial-administrative arenas, sectoral action arenas and informal and cultural landscape action arenas?	Problems of Fit	Effects of institutions and institutional problems\Problems of Fit	**IA**

1. What are the problems between sectoral institutional systems and informal institutional systems? 2. How is the interplay regarding cultural landscapes between formal and informal institutions?	Problems of Interplay	Effects of institutions and institutional problems\Problems of Interplay	**IA**
1. How homogeneous or heterogeneous, how mono or multifunctional is the cultural landscape?	Multifunctionality and Heterogeneity	Problems and specifics regarding the development of the regional\Multifunctionality and Heterogeneity	**GA**
1. What are the qualities and the deficits of the cultural landscape?	Problems and Potential of a Common good/CPR	Problems and specifics regarding the development of the regional\Problems and Potential of a Common good\CPR	**GA**
1. Which are the external effects that influence the cultural landscape and which institutional systems dominate?	CuLa as an External Effect	Problems and specifics regarding the development of the regional\CuLa as an External Effect	**GA**
1. Are there initiatives to develop and use cultural landscapes as a common good?	Intended Planning and Usage	Problems and specifics regarding the development of the regional\Intended Planning and Usage	**GA**
1. Which is the distinct cultural landscape comprehension? 2. What is the basis for the regional identity? 3. Which cultural landscape related traditions exists, which are revitalised and which are lost? 4. Which image shall be represented to the outside?	Informal Institution	Effects of institutions and institutional problems\Informal Institution	**IA**
1. How do affect use oriented and protection-oriented institutions cultural landscapes and which dominate?	Protection Oriented Institutions/Use Oriented Institutions	Effects of institutions and institutional problems\Protection Oriented Institutions/Use Oriented Institutions	**IA**
1. How are the effects of spatial-planning on cultural landscapes estimated (compensation of use and protection oriented institutions)?	Integrating Institutions	Effects of institutions and institutional problems\Integrating Institutions	**IA**
1. Which non-institutional factors have influenced the development of the cultural landscapes and the respective institutional systems?	Non-institutional Factors	Effects of institutions and institutional problems\Non-institutional Factors	**IA**

IA = Institutional Analysis, **GA** = Governance-Arrangements

CHART 4b: **Meta questions and the developed categories for the coding in the discourse analysis process** (induced by KELLER 2012: 52p)

What is the situation and relation of statement producers and recipients?	
National Admin	
Regional Admin	
Local Admin	
Association	
Scientific	
What are the institutional settings and rules?	
Institutional setting/rule	
What is the occasion of the produced statement?	
Natural occasion	
Constructed occasion	
In which media context (books, newspaper or journals) are the statements reproduced?	
Book	
Report	
Newspaper	
Journal	
Plan	
What is the social context (economical, social, scientific context) of the produced statements?	
Economical	
Social	
Scientific	
Tourism	
Recreation	
Which power constellations can be identified?	

CHART 5: **Interview guideline**

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PhD Study:
Changing Cultural Landscape in Western Norway
Effects, challenges, and potential of an integrated (social) and sustainable (ecological) landscape management in the Nordfjord region (Stryn municipality)

Interview guideline

1. What are your institution's main tasks referring to cultural landscape and/or (cultural) landscape management in Western Norway?

2. How does your institution apply cultural landscape and landscape management?

3. How important is the application of cultural landscape for your institution? How important is cultural landscape for the study area?

4. What are the main aims and goals of your institution/section regarding cultural landscape especially in Western Norway?

5. How does your institution manage (cultural) landscape in and around Stryn area/Jostedalsbreen National Park [for example: workforce (park rangers), subsidy payments (approx. sum), management plans, cooperation with kommune etc.]?

6. How does your institution deal with areas providing a vast structure of cultural landscape (such as Erdalen in Nordfjord) for example in landscape planning or land use organisation?

7. Does your institution/the section of your institution label landscape as cultural landscape? If yes, which kind of cultural landscape?

8. Are there legal restrictions concerning areas/buildings/structures of cultural landscape?

9. What can cultural landscape in Western Norway contribute to the development of the region?

10. What is **your** personal perception of cultural landscape in Western Norway? What do you consider as cultural landscape in Western Norway?

CHART 6: **Innvikfjord with the borders of Stryn Municipality** (source STATENS KARTVERK 2014)

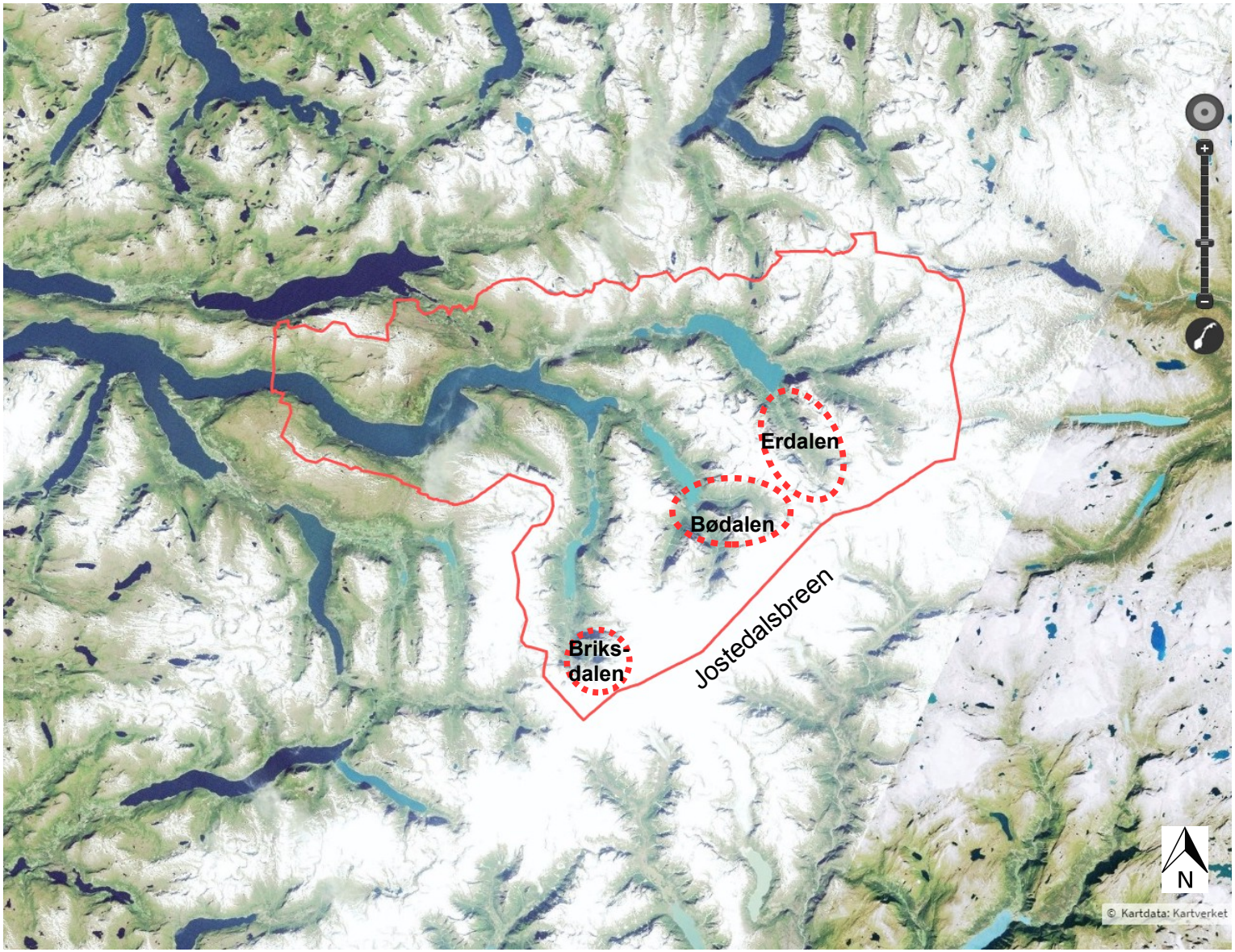


CHART 7: **Stryn in the Sogn og Fjordane County** (source left Norway_Counties_SognogFjordane_Position.svg: Marmeladerivative work: AjaxSmack(talk) 2009; source right STATENS KARTVERK 2015).

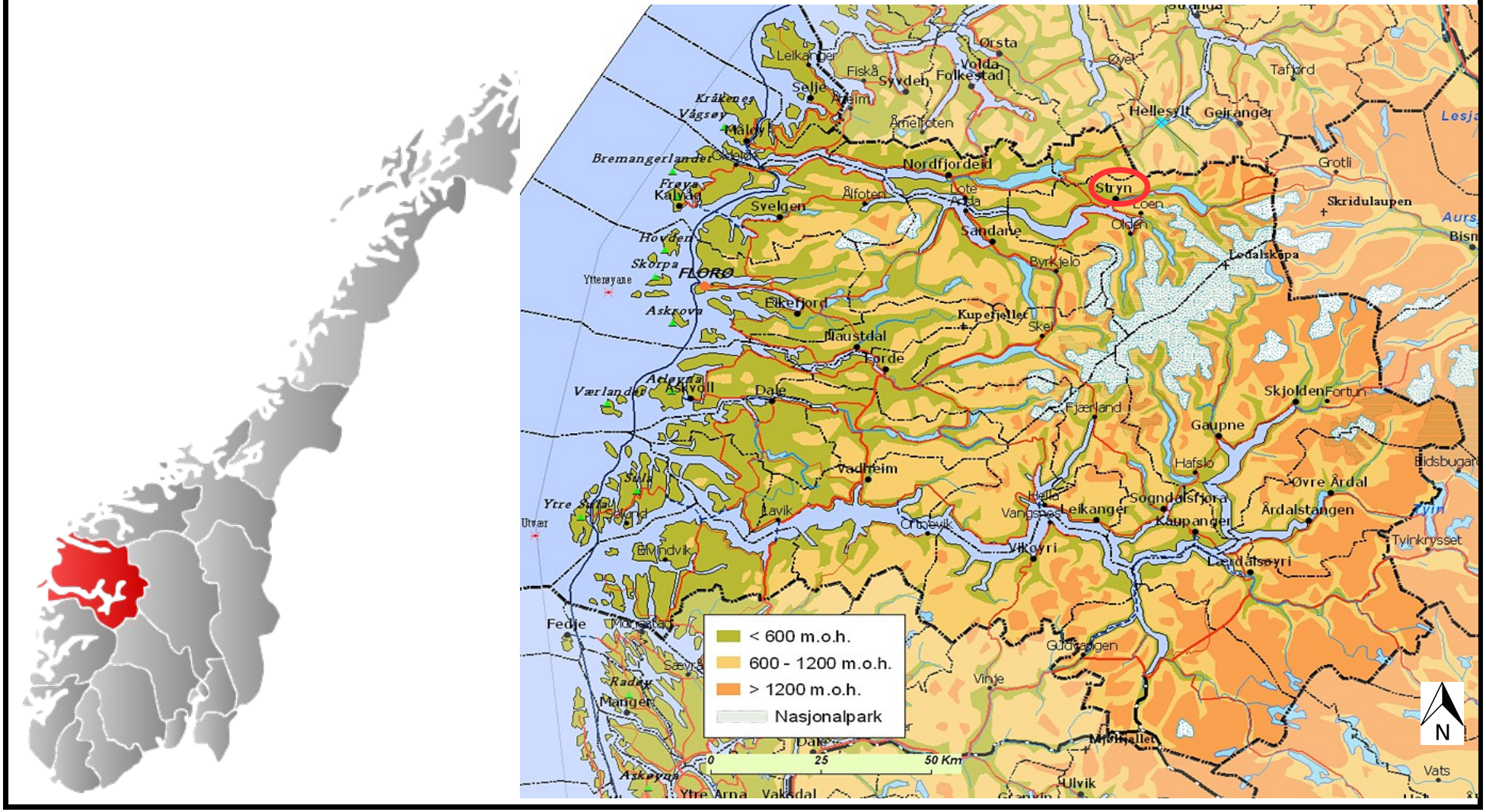


CHART 8: **General elevation map Stryn Municipality** (source STRYN MUNICIPALITY 2011)

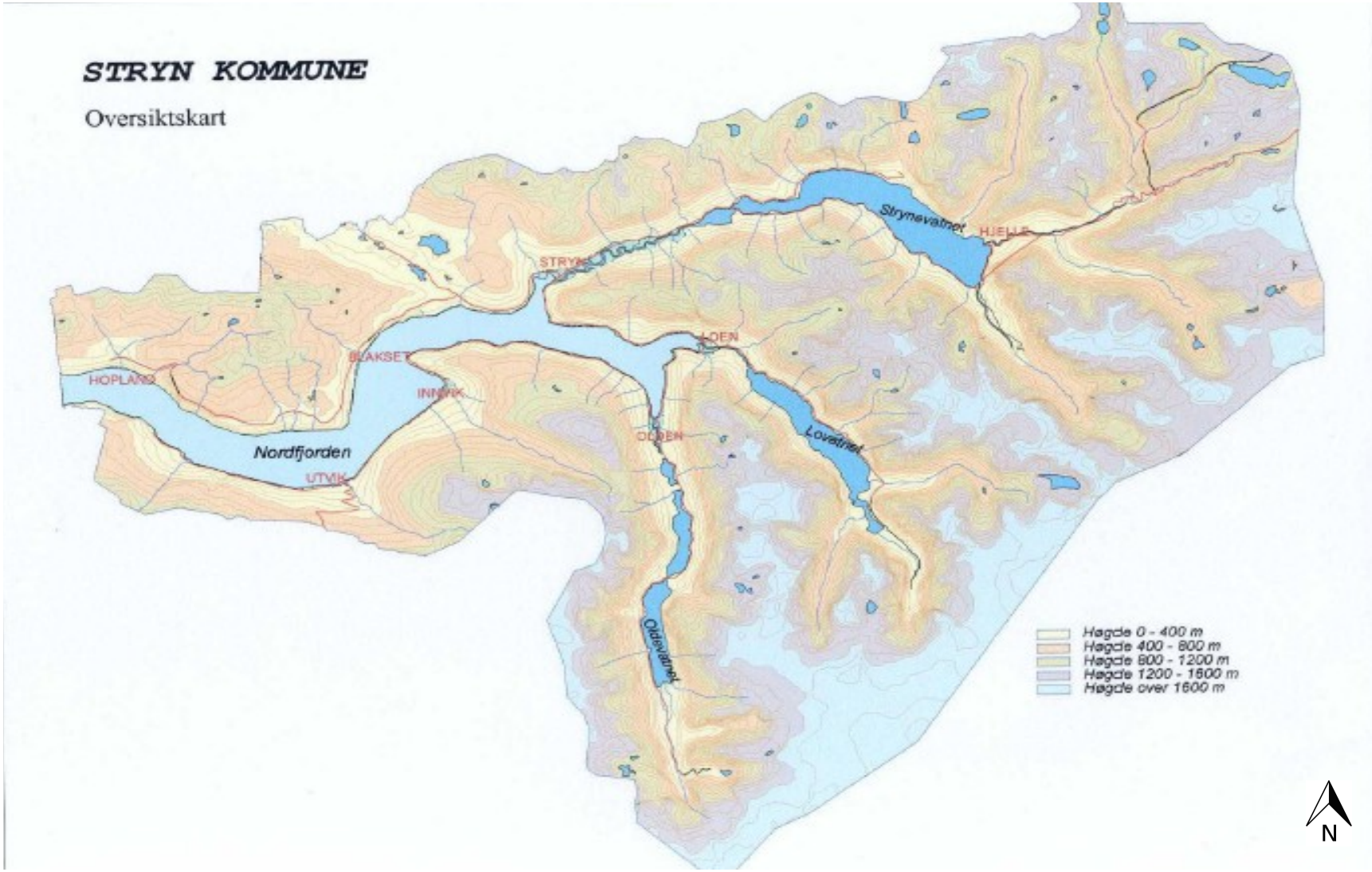


CHART 9: **Aerial photo Briksdalen** (source STATENS KARTVERK 2014)

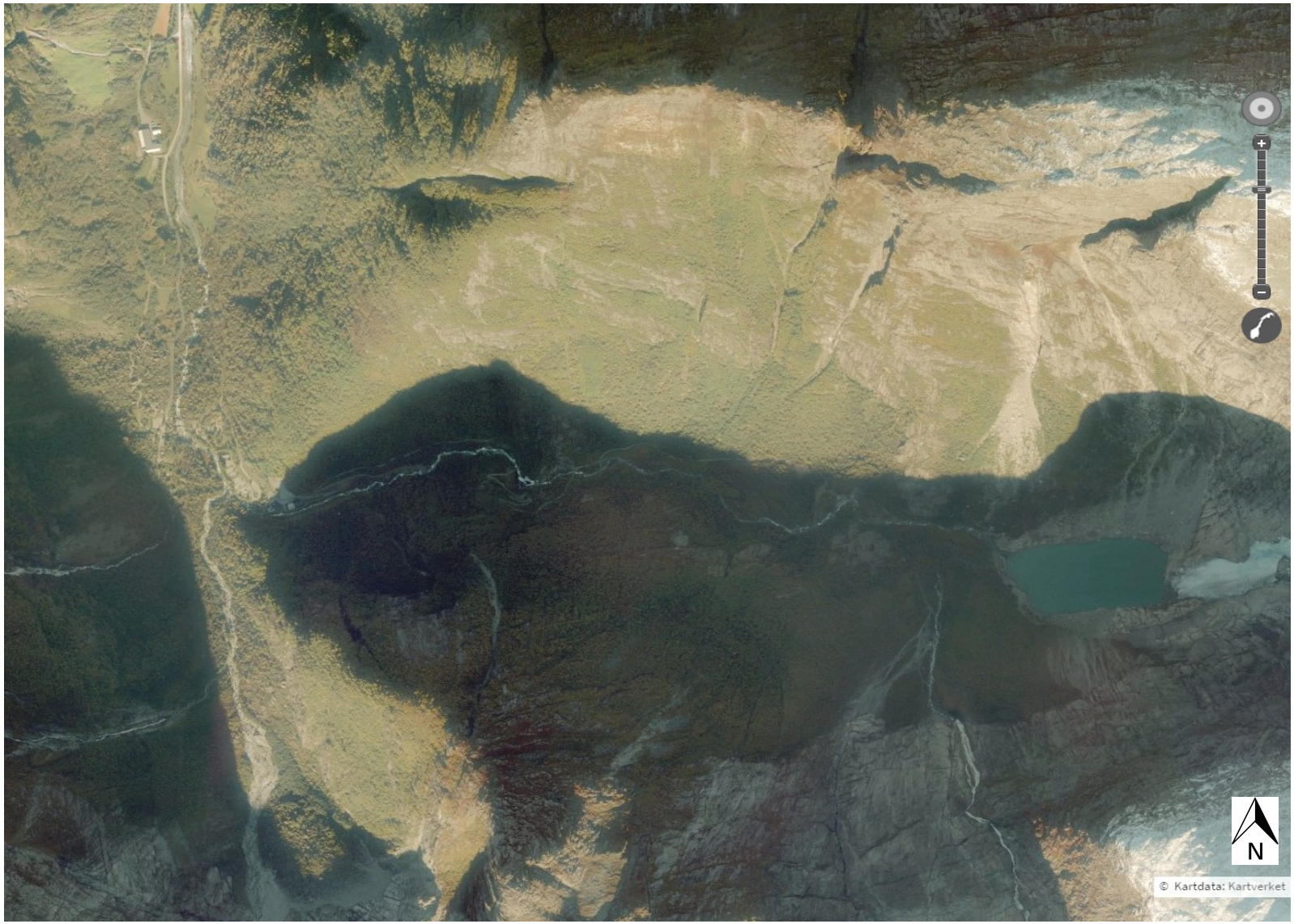


CHART 10: **Map Briksdalen** (source STATENS KARTVERK 2014)

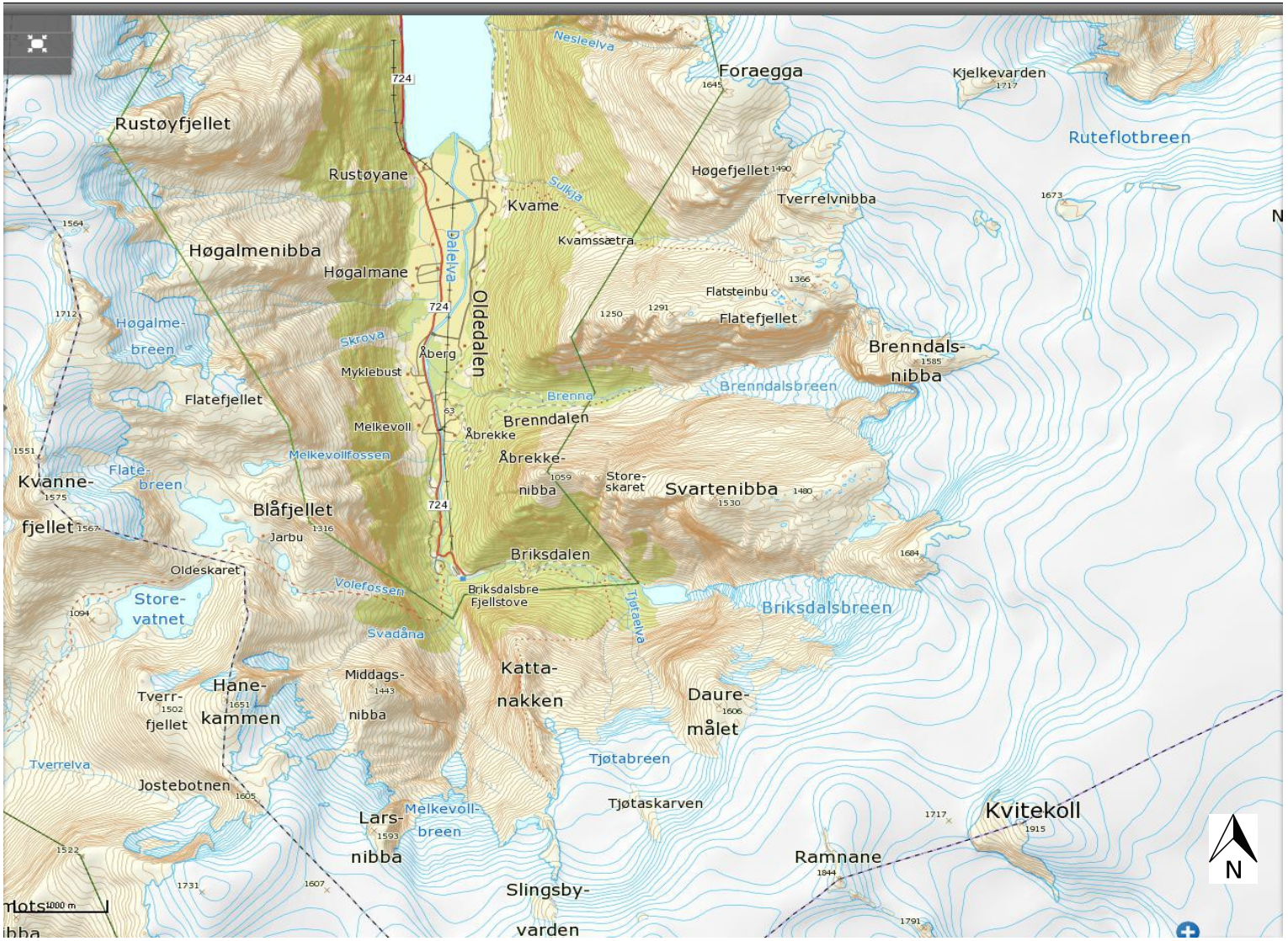
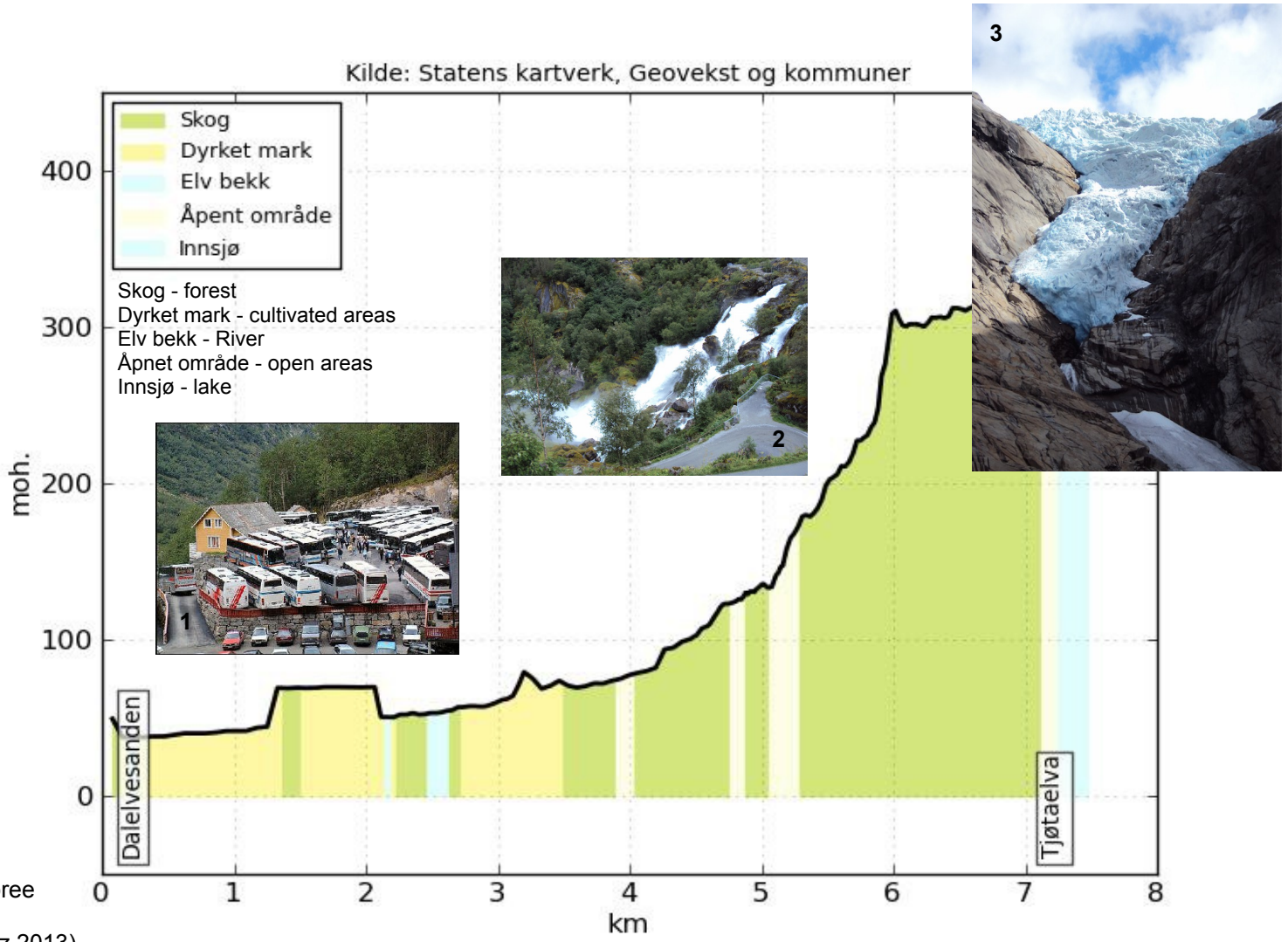


CHART 11: **Longitudinal profile Briksdalen** (source STATENS KARTVERK 2014, LOPEZ 2013)



Photos (sources)
1 Bus park Briskdalsbree Fjellstove (unknown)
2 Troll car road (Lopez 2013)
3 Briksdalsbreen (Lopez 2013)

CHART 12: **Aerial photo Bødalen** (source STATENS KARTVERK 2014)

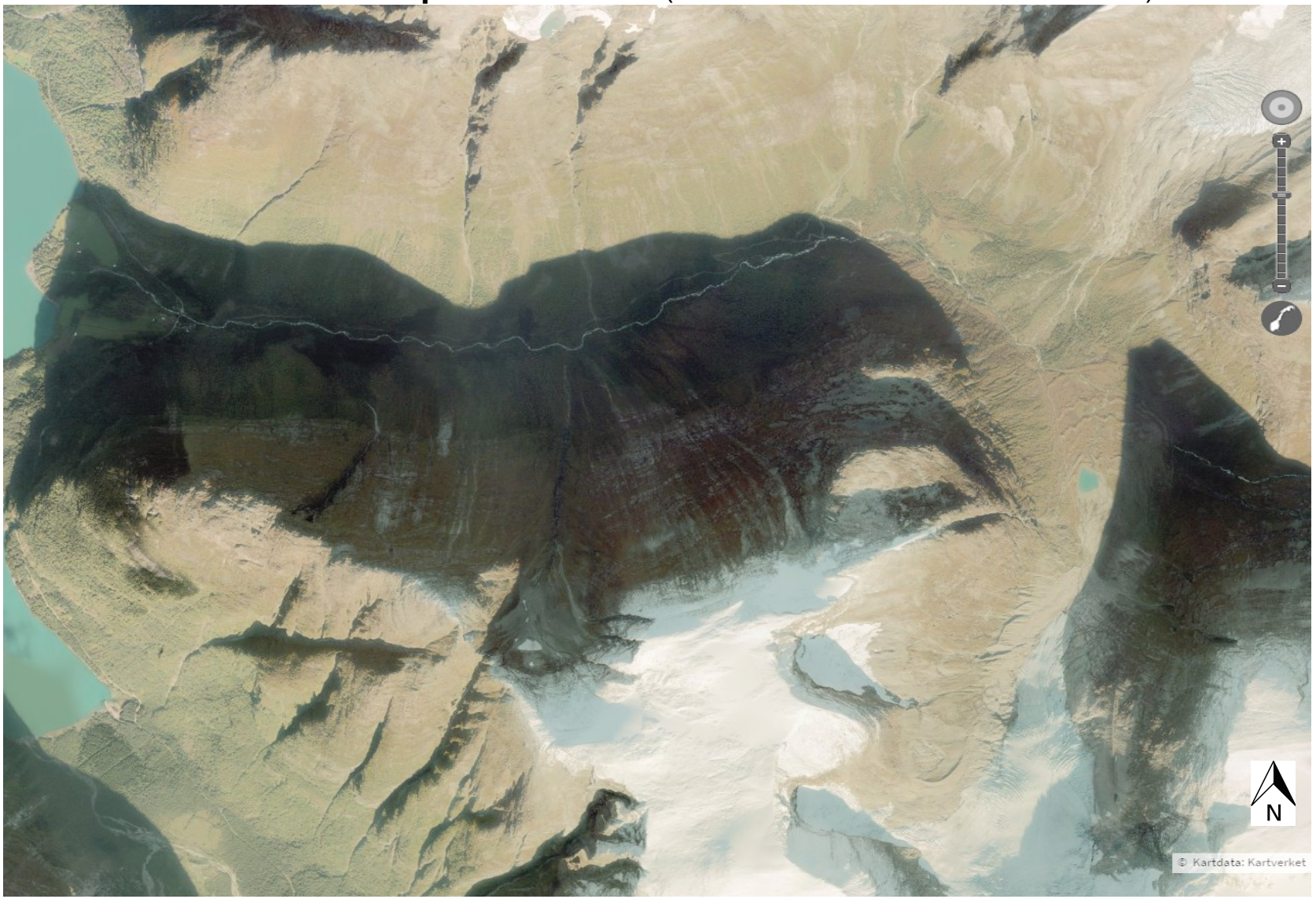


CHART 13: **Map Bødalen** (source STATENS KARTVERK 2014)

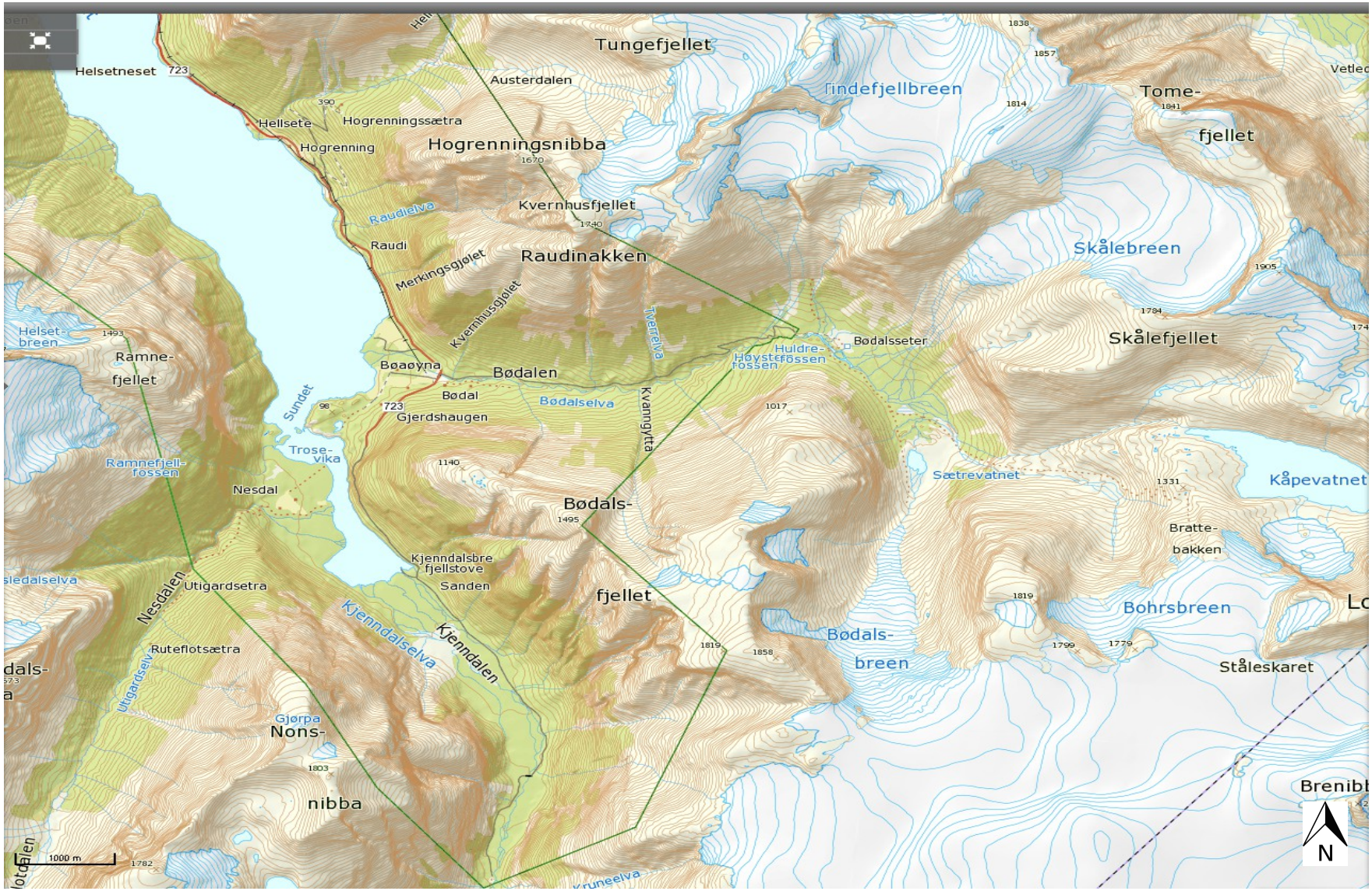
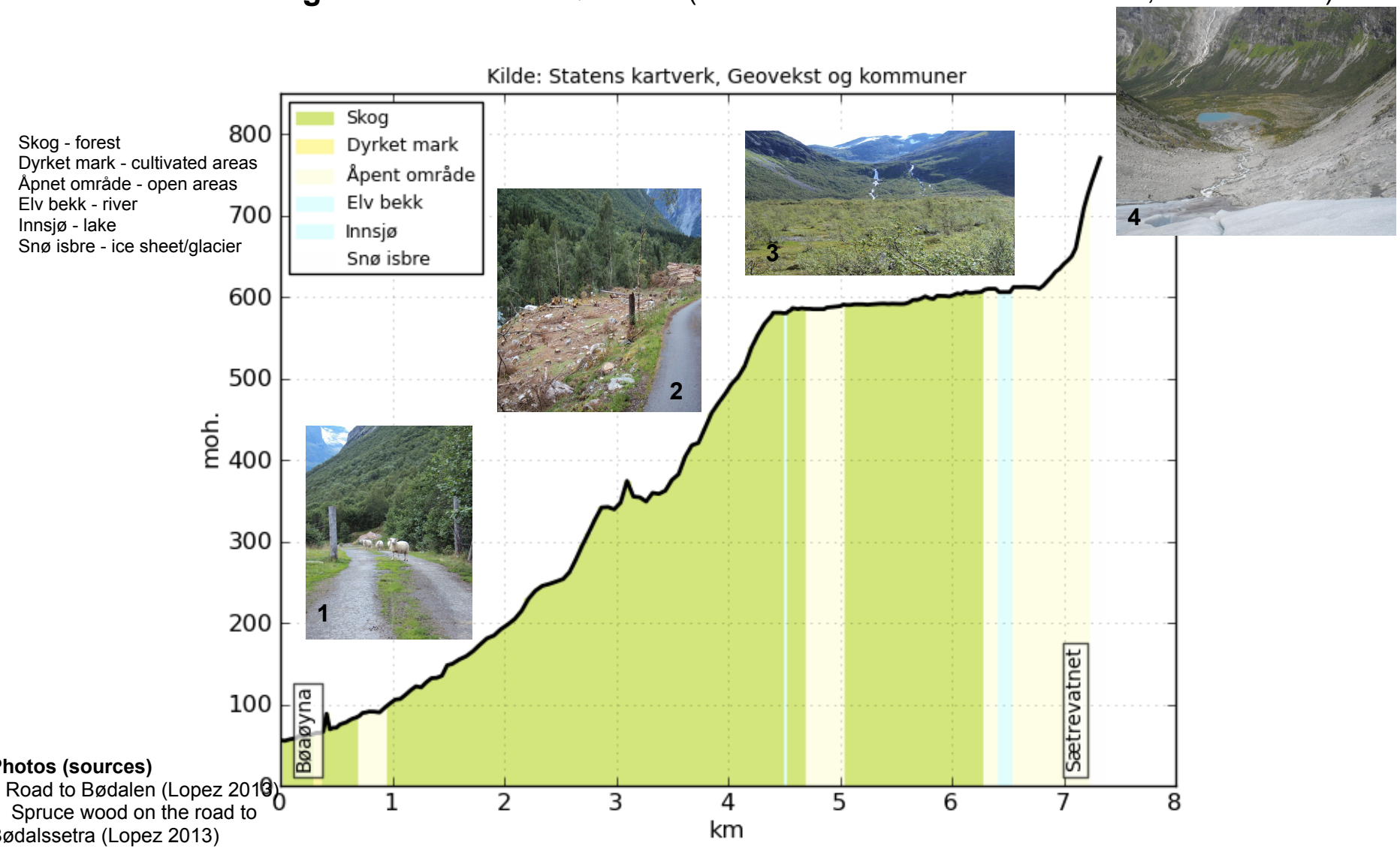


CHART 14: **Longitudinal Profile Bødalen** (source STATENS KARTVERK 2014; LOPEZ 2013)



Skog - forest
Dyrket mark - cultivated areas
Åpnet område - open areas
Elv bekk - river
Innsjø - lake
Snø isbre - ice sheet/glacier

Photos (sources)
1 Road to Bødalen (Lopez 2013)
2 Spruce wood on the road to Bødalssetra (Lopez 2013)
3 Upper Bødalen (Lopez 2013)
4 Bødalsbreen (Lopez 2013)

CHART 15: **Aerial photo Erdalen** (source STATENS KARTVERK 2014)

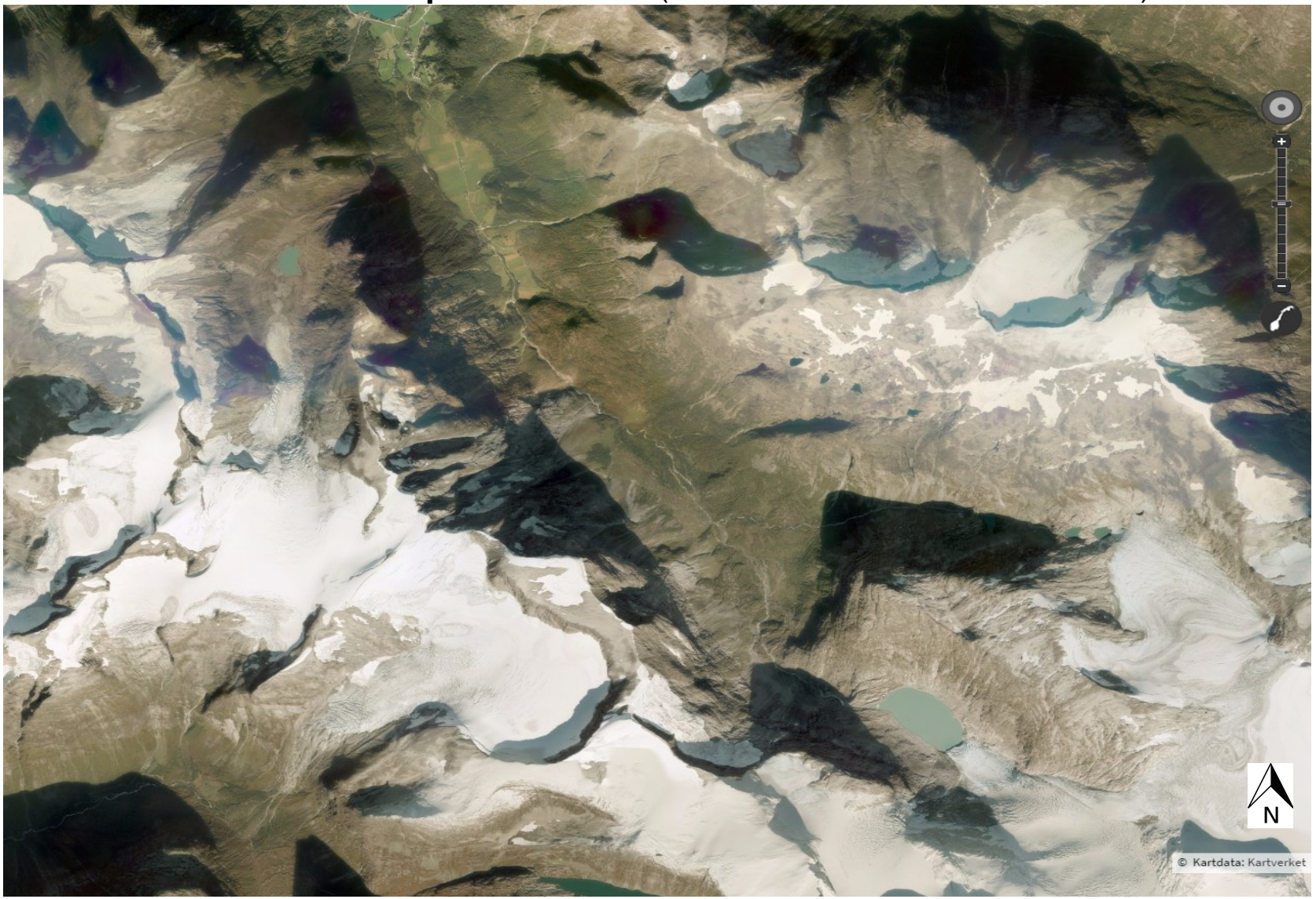
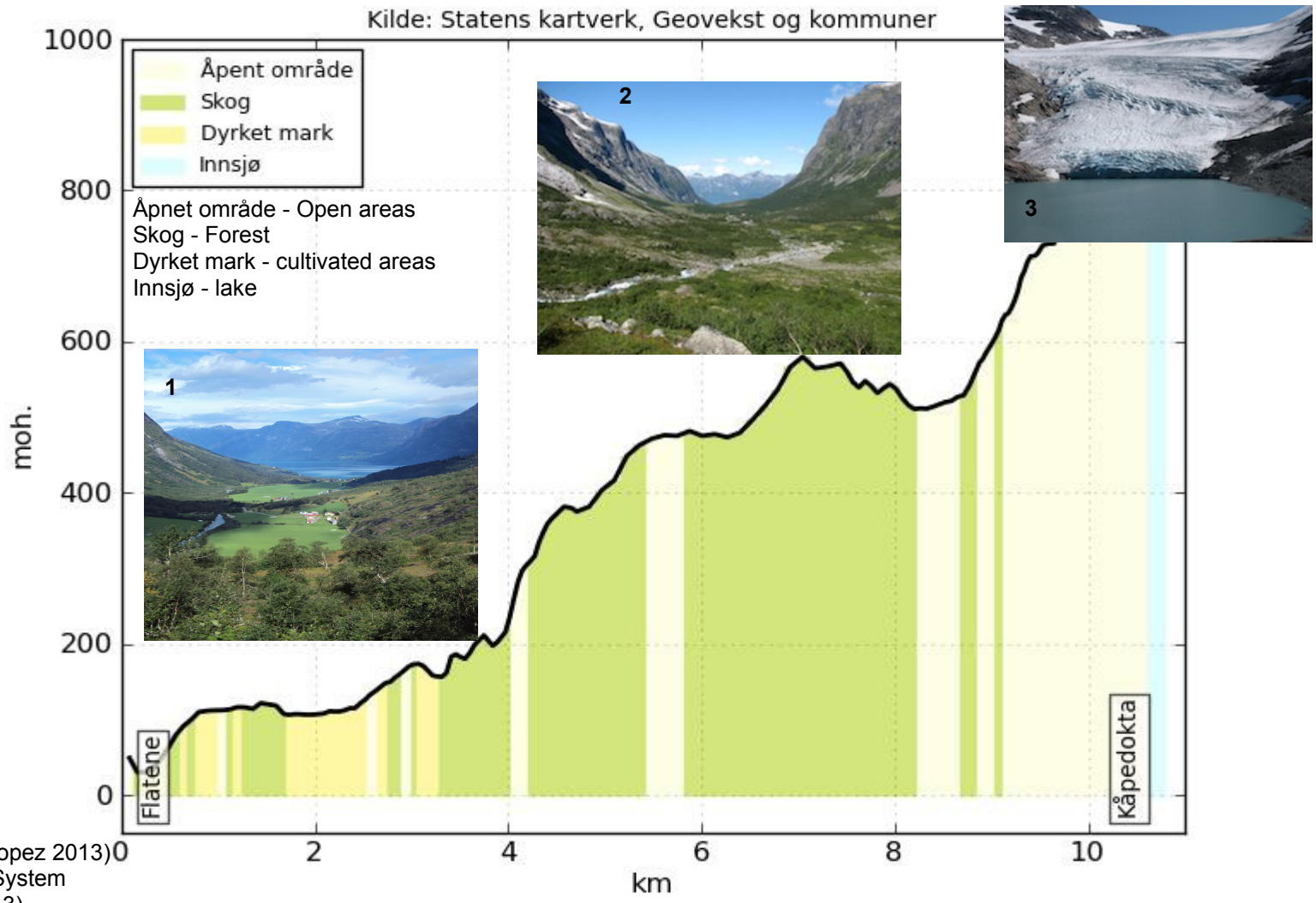


CHART 16: **Map Erdalen** (source STATENS KARTVERK 2014)

CHART 17: **Longitudinal Profile Erdalen** (source STATENS KARTVERK 2014, LOPEZ 2013)



Photos (sources)
1 Lower Erdalen (Lopez 2013)
2 Braided-Sandur-System Erdalen) Lopez 2013)
3 Erdalsbreen (Lopez 2013)

CHART 18: **Temperature profiles during the research period** (source NORWEGIAN METEOROLOGICAL INSTITUTE 2014)

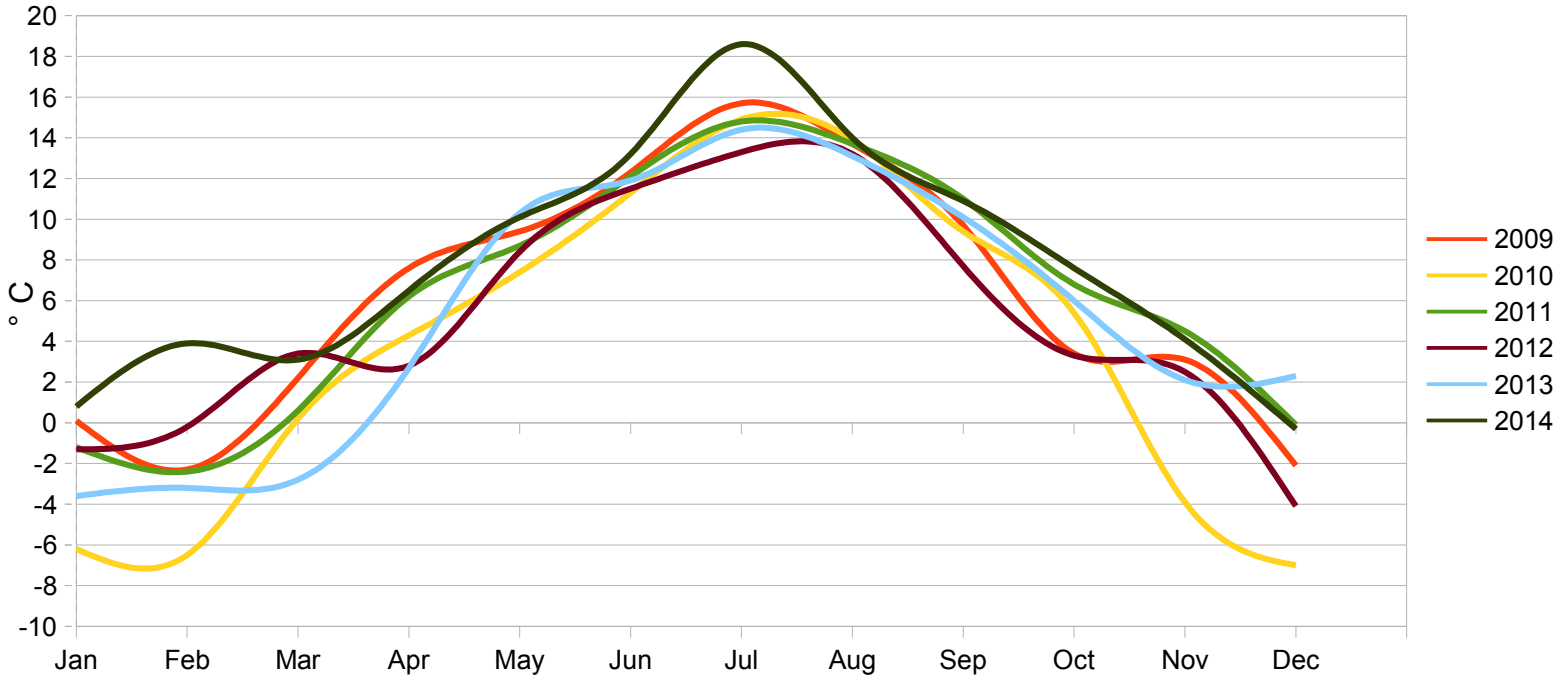


Figure 4.7: Temperature profiles of the mean monthly temperature during 2009-2014 at the meteorological station Stryn-Kroken (NORWEGIAN METEOROLOGICAL INSTITUTE 2014).

CHART 19: **Variations in the Briksdalsbreen ice-front between 1900 and 2002** (source RAMBERG 2008: 552)

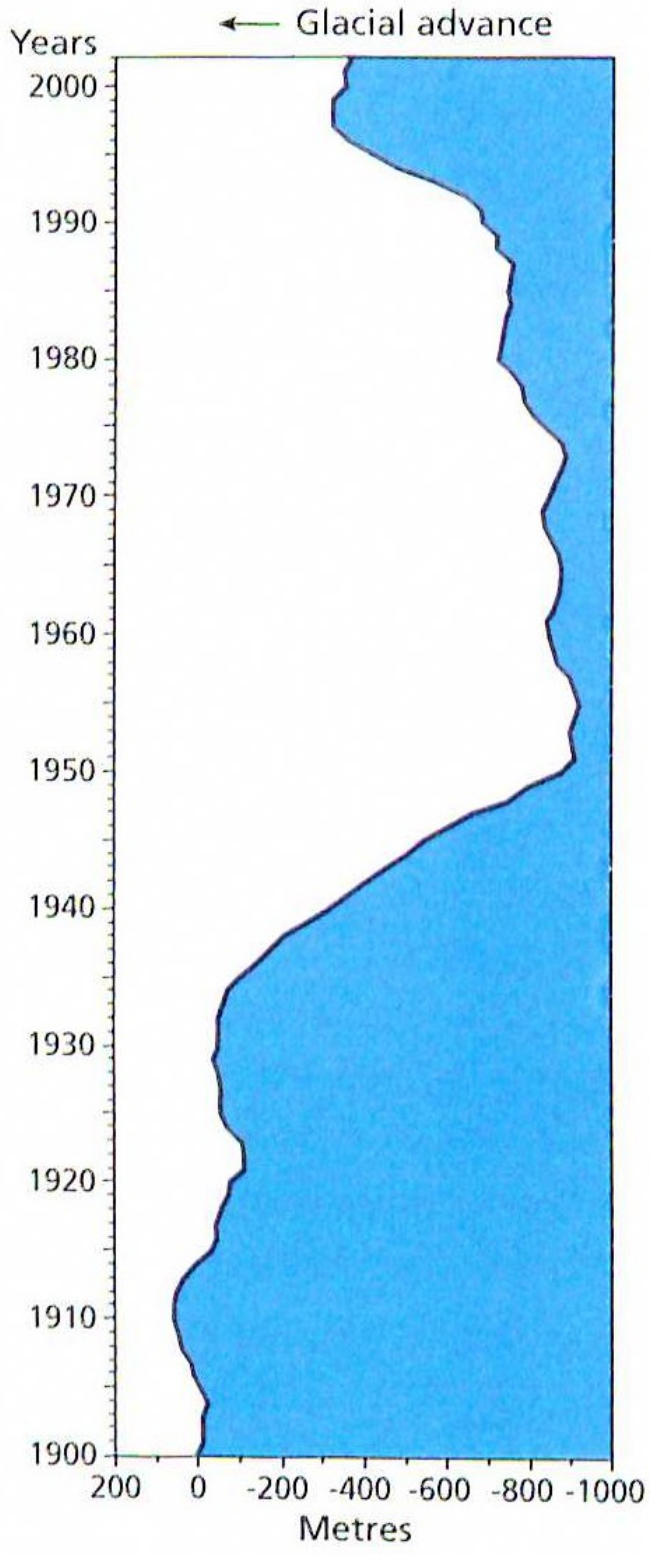
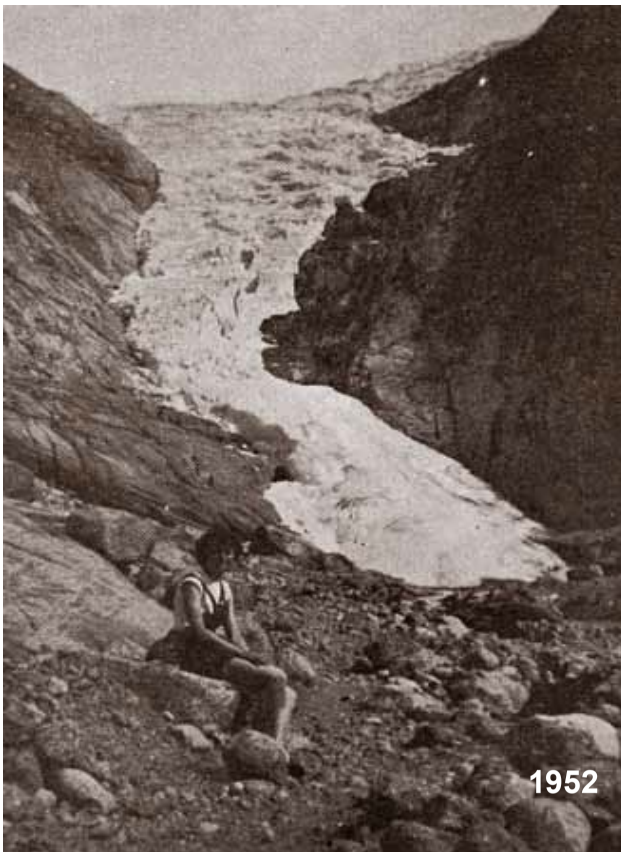
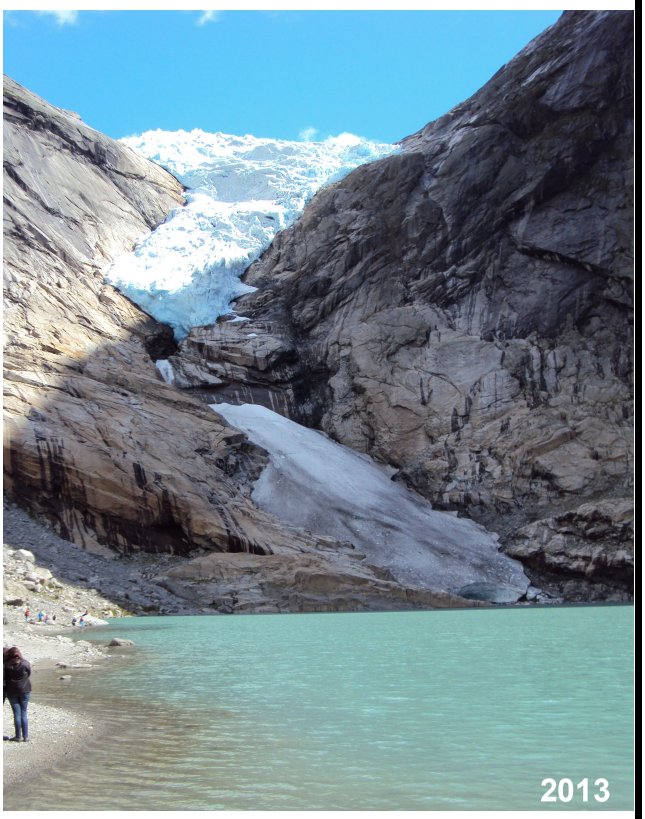


Chart 20: **Variations of the Briksdalsbreen** (source ANDREASSEN and WINSVOLD 2012: 26)



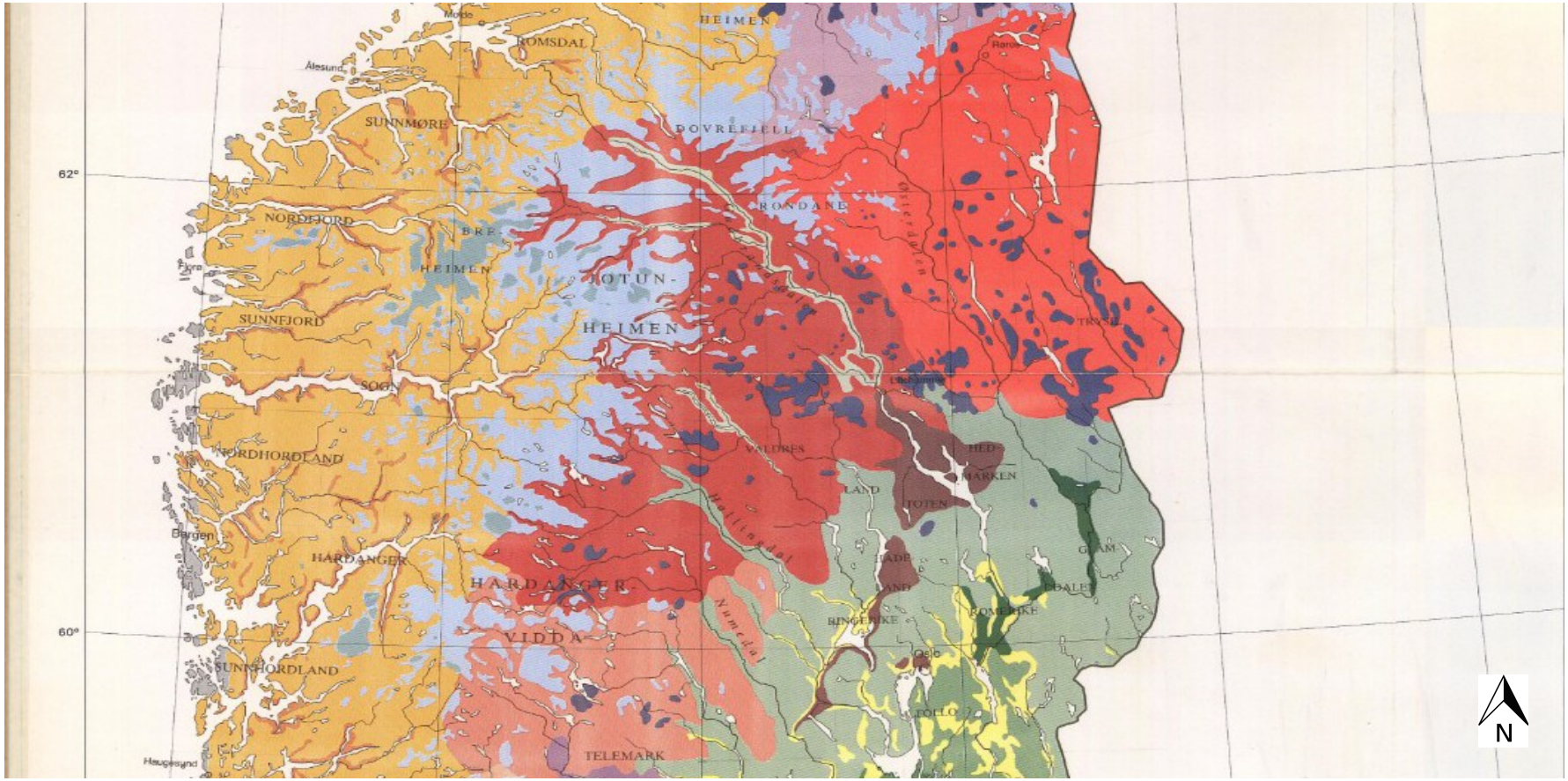


Photos (sources)
1890 K. Knutsen
1952 Unkonwn
1980 E. Roland
2000 S. Winkler
2013 T. Lopez

Chart 21: **Predominant plant species in the case study valleys**

Latin	English	Norwegian	German
Achillea millefolium	Yarrow	Ryllik	Gemeine Schafgabe
Aconitum septentrionale	Monkshood	Julestjerne Euphorbia	Wolfs-Eisenhut
Alchemilla alpina	Lady's mantle	Fjellmarikape	Alpen-Frauenmantel
Alchemilla speciosa	Lady's mantle	Marikåpe	Frauenmantel
Alnus incana	Grey-aller	Gråor	Grauerle
Anemone nemorosa	Wood anmones	Hvitveis	Buschwindröschen
Anthoxanthum odovatum	Sweet vernal grass	Gulaks	Gewöhnliches Rauchgras
Anthyllis vulneraia	Kidney vetch	Rundbelg	echter Wundklee
Aradopsis lyrata	Lyre-laved rock cress	Auskrinne blom	Felsen-Schaumkressen
Astragalus alpinus	Alpine milk vetch	Setermjelt	Alpen-Tragant
Betula pendula	Silver birch	Hengebjørk	Hänge Birke
Betula pubescens	Moor birch	Bjørk	Moorbirke
Blechnum spicant	Hard fern	Bjørnekam	Rippenfarn
Calluna vulgaris	Heather	Røsslyng	Gemeine Heide
Campanula rotundifolia	Sweet vernal grass	Blåklokke	Gewöhnliches Rauchgras
Carex norrgia	Norway sedge	Fjellstavv	Norwegische Segge
Carex remota	Remote sedge	Slakkstarr	Winkel-Segge
Carum carvi	Caraway	Karve	Echter Kümmel
Cerastrium arcticum	Artic mouseear	Snøarve	Arktisches Hornkraut
Corylus avellana	Hazel	Hassel	Gemeine Hasel
Dactylis glomerata	Orchad grass	Hundregras	Gewöhnliches Knäuelgras
Deschampsia cespitosa	Dutch clover	Sørbunke	Rasen-Schmiele
Deschampsia flexuosa	Wayvy hair-grass	Smyle	Drahtschmiele
Digitalis purpurea	Foxglove	Revebjelle	Roter Fingerhut
Dryas octopetala	Mountain avens	Reinrose	Weißer Silberwurz
Empetrum nigrum	Crowberry	Krekling	Schwarze Krähenbeere
Epilobium lactiflorum	Milky-flowered willowherb	Hvitmjølke	Milchweißblühendes Weidenröschen
Flavocertaria nivalis	Snow lichen	Kvitkrull	Schneeflechte
Fragaria vesca	Woodland strawberry	Markjordbær	Walderdbeere
Fraximus excelsior	Ash	Askeslekta	Esche
Geranium sylvaticum	Mayflower	Skoggstorkenebb	Waldstorchschnabel
Gymnadenia conopsea	Fragrant orchid	Brudespore	Mücken-Händelwurz
Holcus mollus	Creeping soft-grass	Krattlodnegras	Weiches Honiggras
Hyperium maculatum	Spotted St. John's-wort	Frikantperikum	Geflecktes Johanniskraut
Juncus biglumis	Twoflower rush	Tvillingsiv	Zweiblättrige Binse
Juniperus communis	Juniper	Einer	Wacholder
Luzula sylvatica	Greater woodrush	Storffrytle	Wald-Hainsimse
Melampyrum pratense	Common cow-wheat	Stormarimjelle	Wiesen-Wachtelweizen
Myosotis decumbens Host	Forget-Me-Not	Fjellminneblom	Niederligendes Vergissmeinnicht
Orignaum vulgare	Oregano	Bergmynte	Oregano
Phyllodoce caerulea	Blue heather	Blålyng	Moosheide
Potentilla erecta	Tormentil	Tepperot	Blutwurz
Pseudorchis albida	Newfoundland orchid	Hvitkurle	Weißes Höswurz
Ranunculus acris	Meadow buttercup	Engsoleie	Scharfer Hahnenfuß
Ranunculus auricosum	Goldilocks	Nyresoleie	Gold-Hahnenfuß
Ranunculus glacialis	Glacier buttercup	Issoleie	Gletscher-Hahnenfuß
Rhytidiadelphus triquetrus	Shaggy moss	Storkransemose	Großes Kranzmoos
Rubis idaens	Raspberry	Bringbær	Himbeere
Rubus saxatilis	Stone bramble	Teiebær	Steinbeere
Rumex acetosa	Sheep's sorrell	Engsyre	Wiesensauerampfer
Sagina intermedia	Lesser alpine pearlwort	Jøkelarve	Arktisches Mastkraut
Sagina nivalis	Snow pearlwort	Jøkelarve	Schnee-Mastkraut
Salix caprea	Goat willow	Selje	Sal-Weide
Salix glauca	Bluish willow	Sølvvier	Seidenhaarige Weide
Salix reticulata	Snow willow	Rynkevier	Netz-Weide
Satureja vulgaris	Wild basil	Krydder	Wirbeldost
Saussurea alpina	Common saw-wort	Fjelltistel	Alpenscharte
Saxifraga aizoides	Yellow mountain saxifrage	Gulsidre	Fetthennen Steinbrech
Saxifraga cernua	Nodding saxifrage	Knappsildre	Nickender Steinbrech
Saxifraga opositifolia	Purple mountain saxifrage	Rødsildre	Gegenblättriger Steinbrech
Stellares graminea	Common stichwort	Grasssterjnblom	Gras-Stern-Miere
Stellaria nemorum	Wood stichword	Skogstjerneblom	Hain-Sternmiere
Taraxacum speciosa	Dandelion	Løvetann	Löwenzahn
Thelypteris limbosperma	Mountain fern	Smørtelg	Bergfarn
Trifolium repens	White clover	Kvitkløver	Weißklee
Tussilago farfara	coltsfoot	Hestehov	Huflattich
Ulmus glabra	Wych Elm	Alm	Bergulme
Urtica dioica	Common nettle	Storneste	Große Brennnessel
Vaccinium uliginosum	Bog whortleberry	Blokkebær	Rauschbeere
Valeriana sambucifolia	Baldrian	Vendelrot	Holunderblättriger Baldrian
Verbascum nigrum	Dark mullein	Mørkkongslys	Schwarze Königskerze
Veronica chamaedrys	Germander speedwell	Tvestkjegg-Veronika	Gamander-Ehrenpreis

CHART 22: **Soil map section Nordfjord** (source NATIONAL ATLAS OF NORWAY, map sheet 2.3.1 1983)



gleyic cambisols (L), brown earths (L).

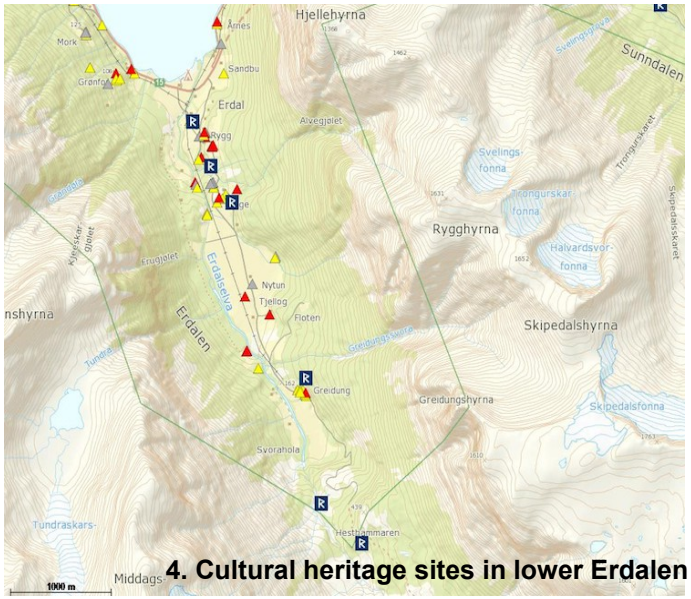
17 Podsol, særlig humus- og jernhumuspodsol (M), lithosol (GM), brunjord (N), sumpjordsmonn (N), rankerlignende jordsmonn (L).
Podzols, especially humus and ferric humus podzols (M), lithosols (GM), brown earths (N), swamp soils (N), rankerlike soils (L).

CHART 23: **Registered cultural heritage sites in the case study valleys** (KULTURMINNESØK 2015)

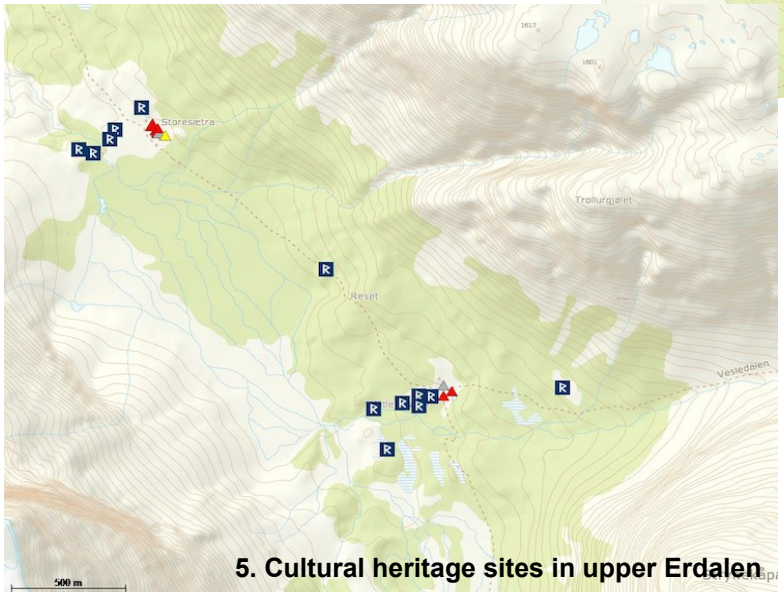
1. Cultural heritage sites in Briksdalen

2. Cultural heritage sites in lower Bødalen

3. Cultural heritage sites in upper Bødalen



4. Cultural heritage sites in lower Erdalen



5. Cultural heritage sites in upper Erdalen

Signs and symbols

Red triangle:	Notifiable Construction
Yellow triangle:	Non-notifiable construction
Grey triangle:	Building is re-moved

Archaeological site

N

CHART 24: **Illustration of Lovatn and Oldevatn area** (by Leif Lundgren 1984)

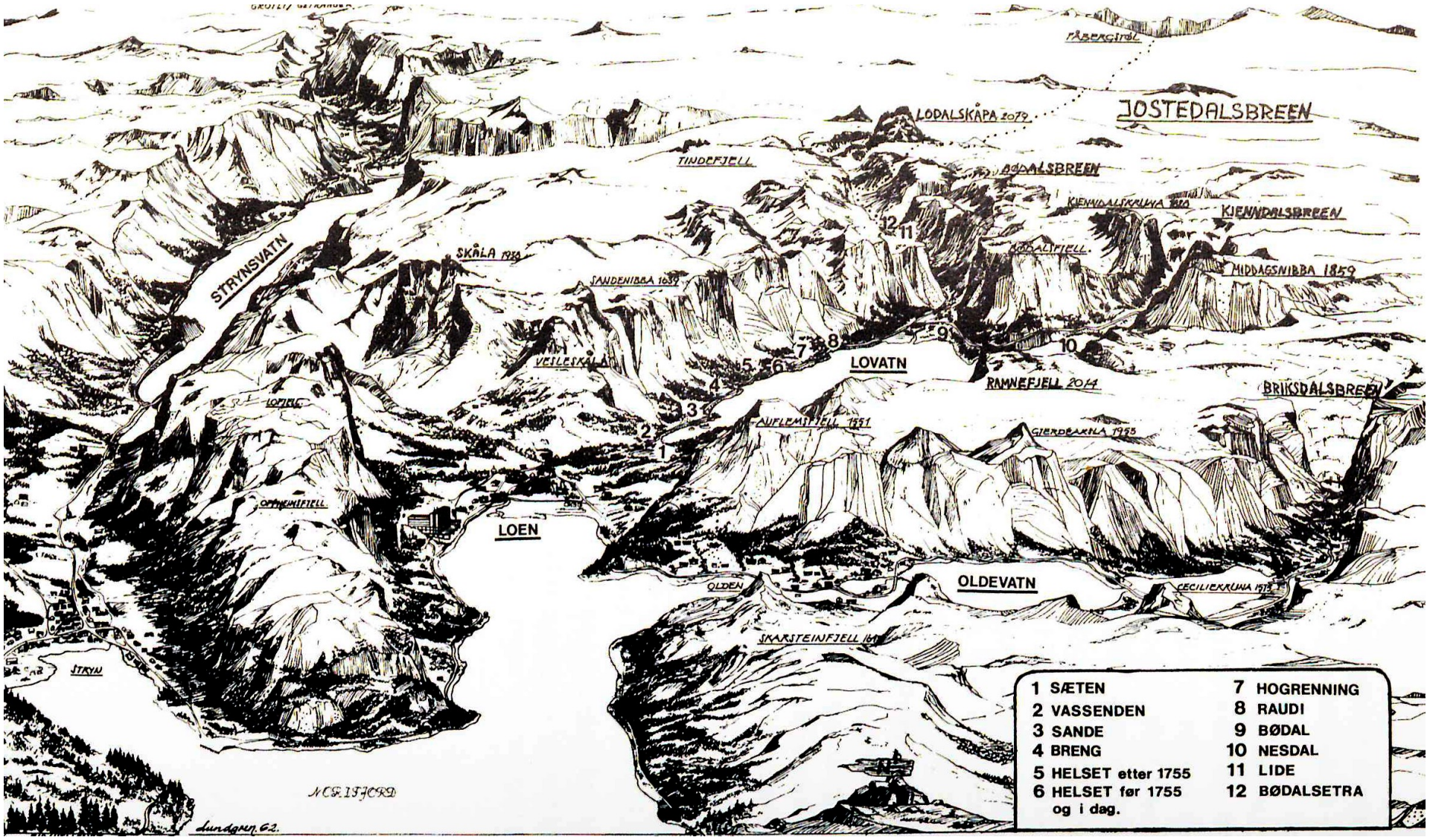
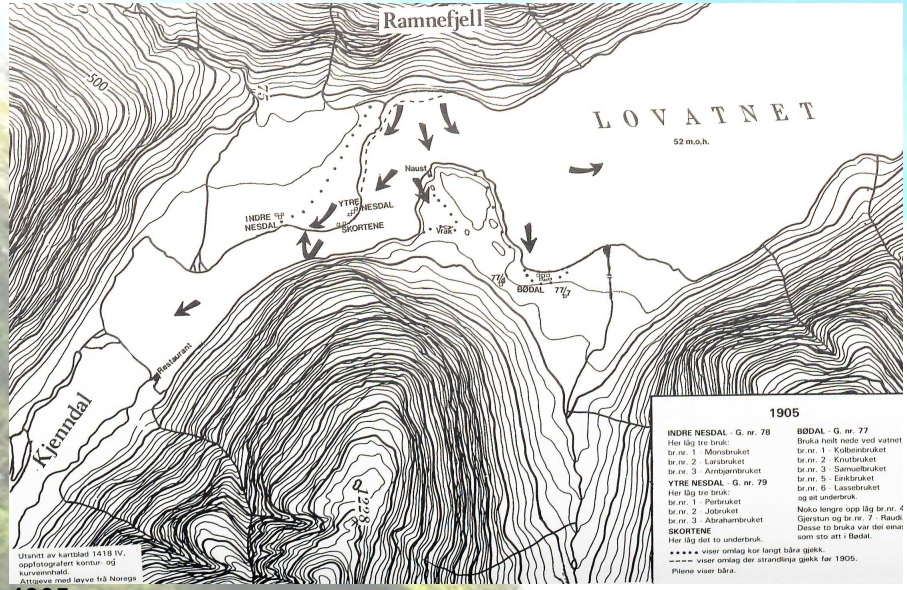
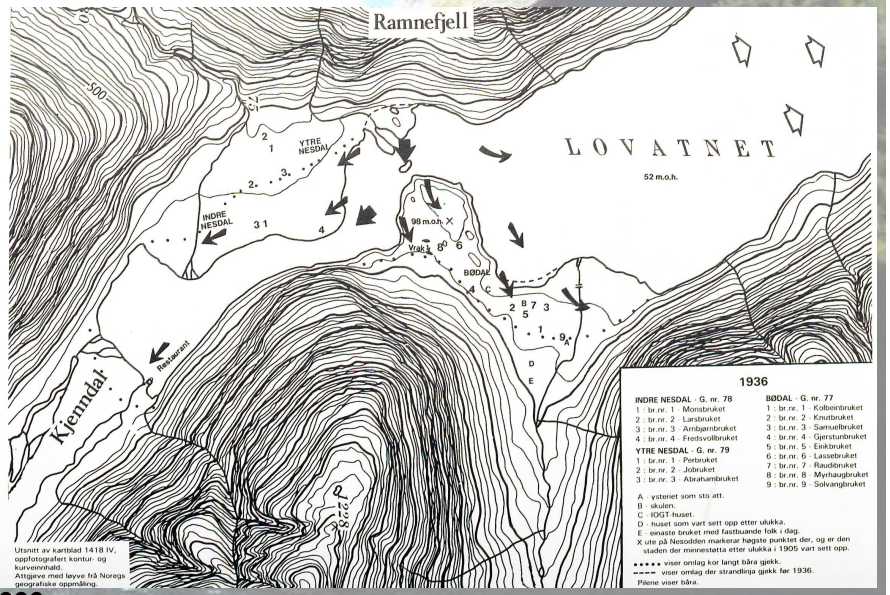


CHART 25: **Mt. Ramnefjell disasters in 1905 and 1936** (source NESDAL 1984: 114pp)

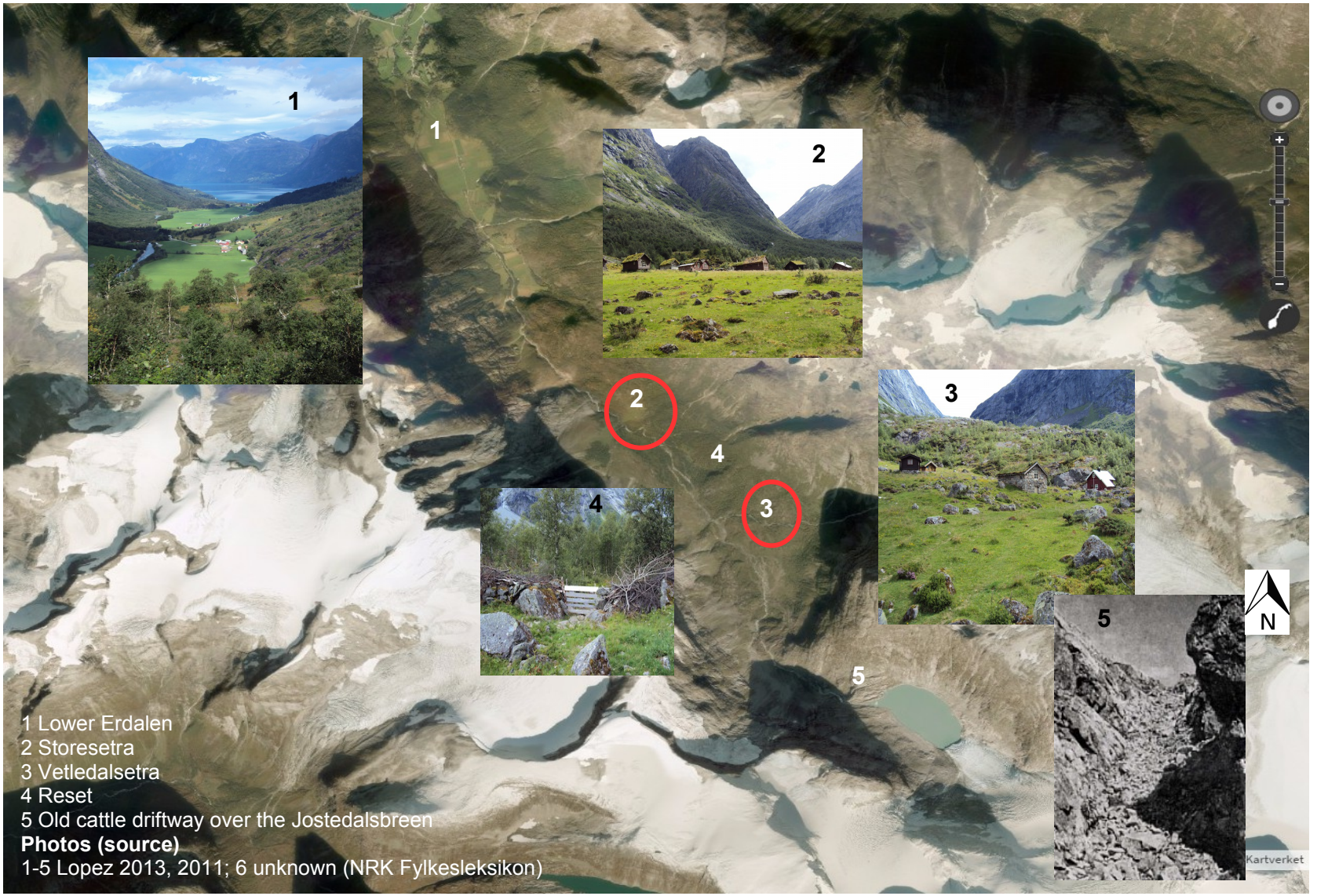


1905



1936

CHART 26: **Cultural landscape features in Erdalen**



1 Lower Erdalen
2 Storesetra
3 Vetledalsetra
4 Reset
5 Old cattle driftway over the Jostedalsbreen

Photos (source)
1-5 Lopez 2013, 2011; 6 unknown (NRK Fylkesleksikon)

CHART 27: **Profiles of the National Park Centres at the Jostedalsbreen National Park**

The **Norwegian Glacier Museum**[1] (NGM) in Fjærland opened on May 31st, 1991. According to its homepage: "The Norwegian Glacier Museum is a non-profit foundation established by the International Glaciological Society, the Norwegian Trekking Association, Norwegian Water Resources and Energy Directorate, Norwegian Polar Institute, Sogn og Fjordane University College, The University of Bergen and The University of Oslo." Ulltveit-Moe Climate Centre is responsible for the climate exhibition in the NGM. Main aims of the NGM are to collect, create and disseminate knowledge about glaciers and climate (HTTP://ENGLISH.BRE.MUSEUM.NO/ABOUT-USS 2014). NGM is designed as an interactive museum. A separate exhibition focuses on protected areas and outdoor activities (AALL et al. 2009: 19; WEICHERT 2008: 39).

The **Breheim Centre**[2] (BC) in Jostedalen opened on June 12th, 1993. The exhibition informs about the natural and cultural history of the area. BC developed as an important meeting place for visitors and locals during the summer and hosts also cultural events (AALL et al. 2009: 19; WEICHERT 2014: 39).

Jostedalsbreen National Park Centre[3] (JBNPC) opened on July 19th, 1993 and is located in Oppstryn. The exhibition is organised into four main subjects that are accentuating geology, avalanches, the fauna and the traffic routes over the Jostedalsbreen. A geological park with rocks and a botanical garden with wild growing local plants is connected to the centre (AALL et al. 2009: 19; WEICHERT 2008: 36)

1 *Norsk Bremuseum.*
2 *Breheimsenteret*.
3 *Jostedalsbreen Nasjonalparksenter.*

Chart 28: **Map of the Nordfjord** (source VISIT STRYN&NORDFJORD 2012)

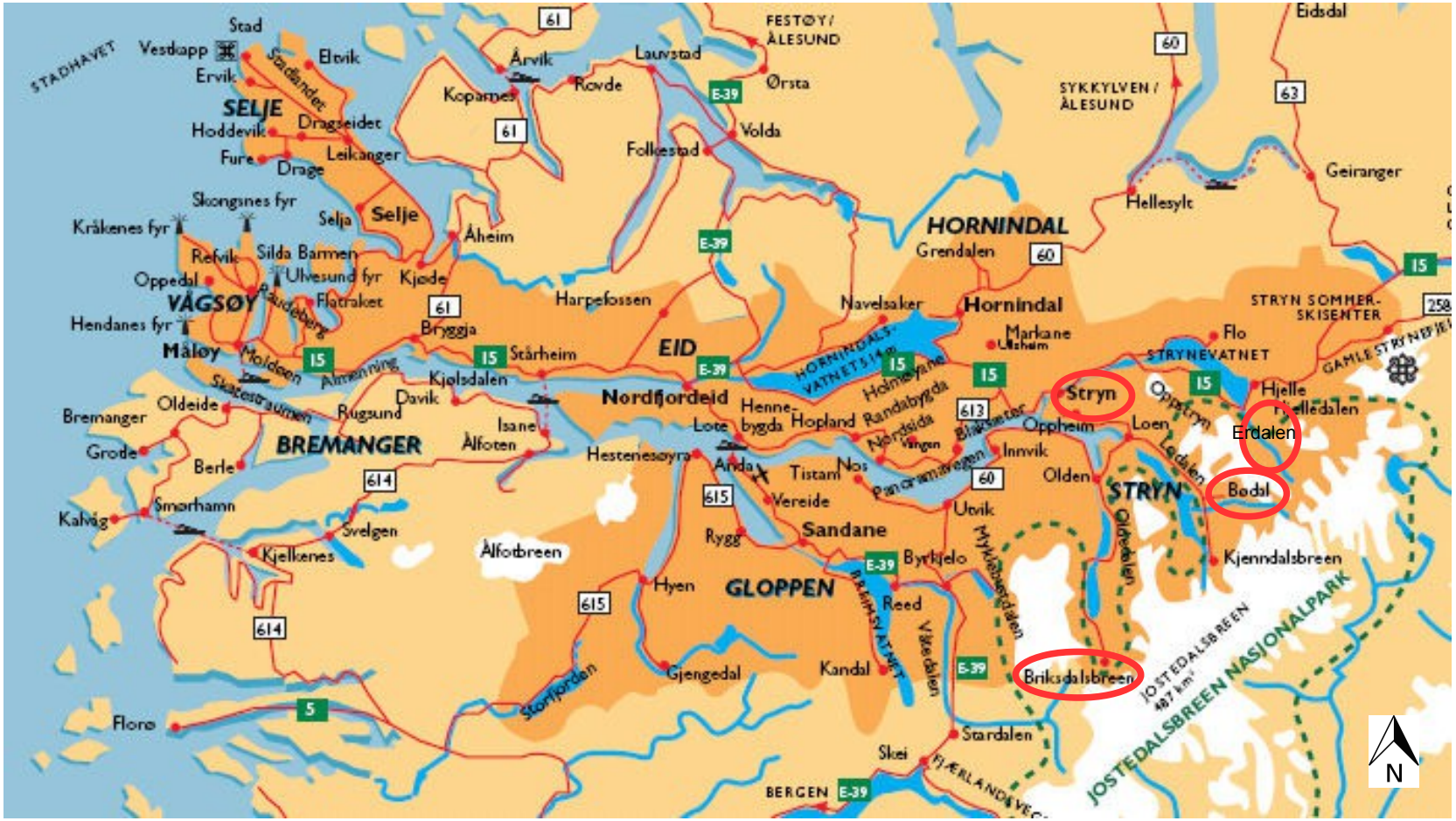
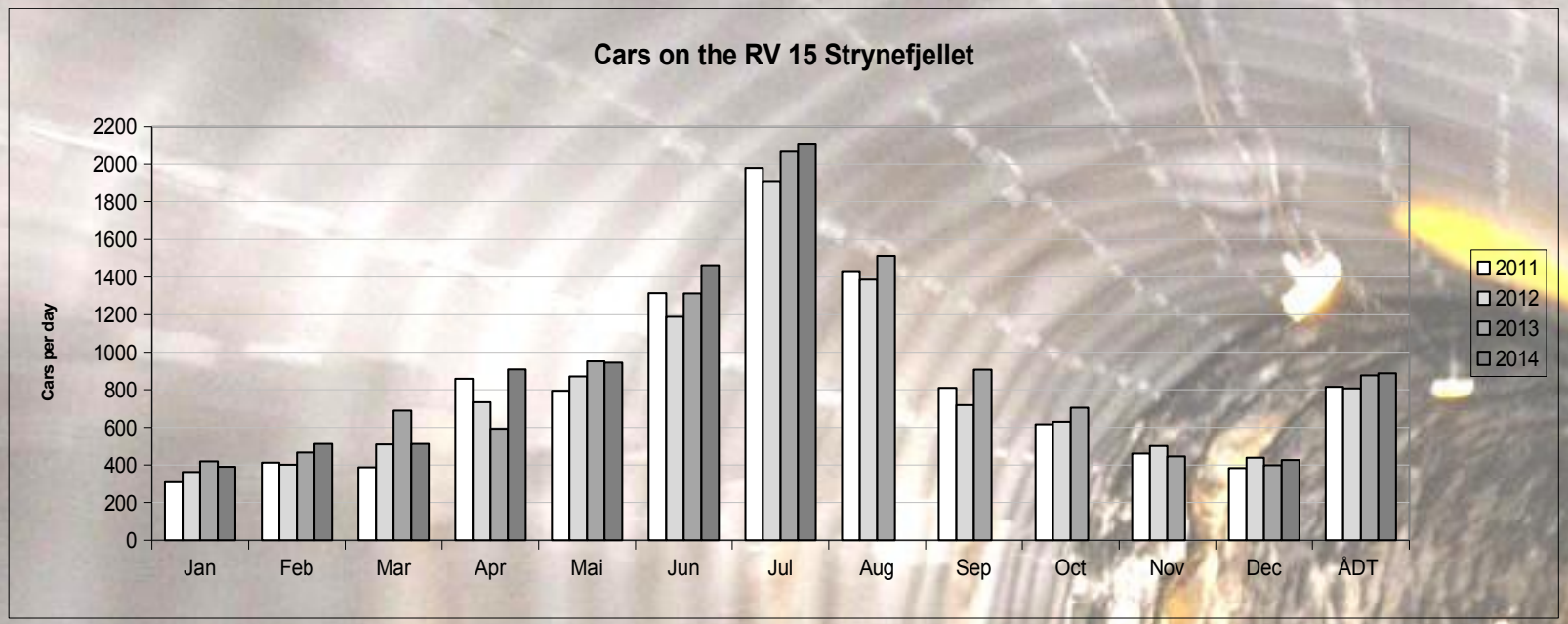
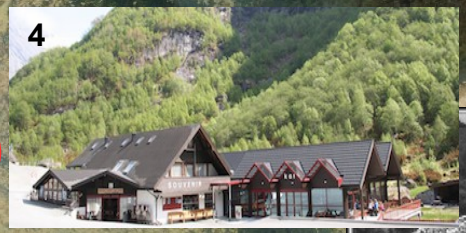


CHART 29: **Traffic on RV 15 in/out of Nordfjord** (source STATENS VEGVESEN 2015)



ÅDT Vehicles < 5,5 m

CHART 30: **Cultural landscape features in Briksdalen**



1 Horse carriages (1910)
2 Troll cars in Briksdalen (2013)
3 Old Briksdalsbre-Fjellstove
4 Kleivavegen from Briksdalsbre Fjellstove
5 Bridge
6 Hikingpath to the Briksdalebreen

Photos (source)
1,3 Oldedalen-skysslag.com
2,4-6 Lopez 2013

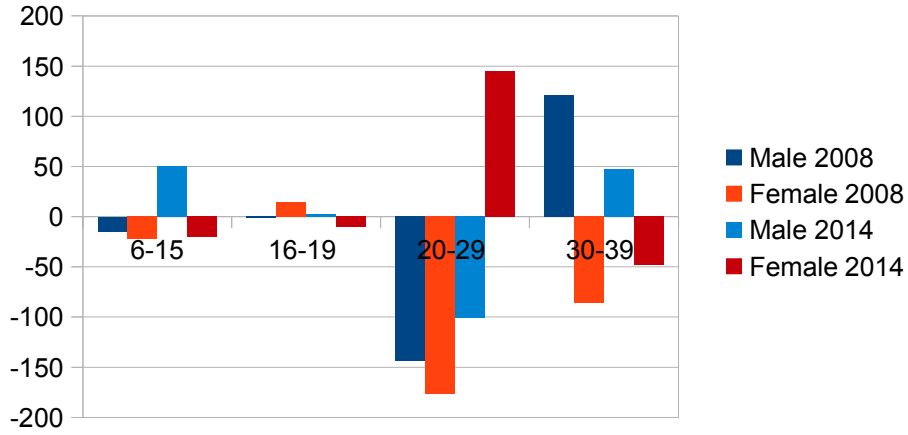
N

CHART 31: **Cultural landscape features in Bødalen**

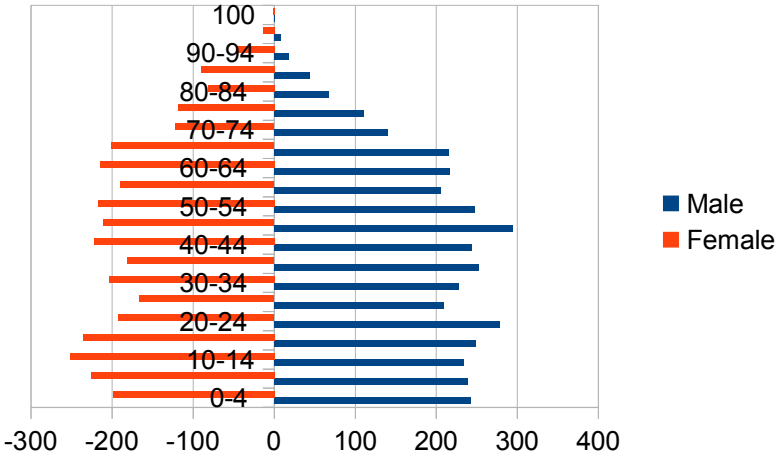
1 Field on Bøaøyna
2 Road to Bødalssetra
3 Bødalssetra
4 Hikingpath
5 Bridge

Photos (source)
1-5 Lopez 2013

CHART 32: **Demographic numbers and population pyramid Stryn Municipality** (source SSB 2015)



1 Youth migration in different sex and age groups between 2008 and 2014.



2 Distribution of population by age and sex in Stryn Municipality 2014.