Department of Built Environment

Governing water for local development

Solutions to implementation challenges in remote, rural Nepal

Juho Haapala

Aalto University

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Juho Haapala

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Abstract

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Abstract

This dissertation recognises practical ways to advance rural development in remote mountainous areas through water service institutions and infrastructure construction. Water is crucial for development, as access to water resources preconditions much of the rural residents' livelihood possibilities and their quality of living. The research focuses on rural Nepal, and more specifically on the implementation of rural development interventions in the country's remotest and poorest regions. The dissertation examines two large-scale water and rural development interventions by surveying selected communities under these projects. Besides institutions and governance, the dissertation examines the contribution of individual interactions to the development processes and outcomes.

The overarching research question is 'What are the practically feasible ways to implement and manage water services in developing, mountainous, rural areas?' The research question is scrutinised through three sub-questions: (1) 'Where are the pitfalls of local-level social embeddedness'; (2) 'How can these pitfalls be addressed'; and (3) 'What potential contribution individual stakeholder acts and interactions have to the water service developments and implementation processes?' The research employs institutional bricolage; and the capabilities approach as the theoretical basis and reference literature. Methodologically, the dissertation demonstrates the pragmatist philosophy of science in action and emphasises the strengths of its multi-perspective orientation. The dissertation applies a set of participatory, qualitative research methods.

The novelties of the dissertation are threefold: First, the dissertation analytically describes the pitfalls of social embeddedness, identifying three corresponding governance challenges. Second, the findings emphasise that a large share of the operational implementation and local institutional operation occurs in social spaces beyond the direct influence of the regulatory governance discourses and institutions. Yet, the research results indicate that such social spaces are crucial for the development processes. Third, the dissertation acknowledges that individuals amidst these processes possess an important dual role in the studied setting: they are agents of governance as well as agents of locally originated, bottom-up problem solving outside governance. The latter agency remains less acknowledged, but crucial for the development processes and outcomes.

The dissertation indicates that individuals and their formal and informal interactions are crucial for governing water and local development in the developing, remote countryside. At the grassroots level implementation, one should therefore focus on interactions, not only at the institutional, but also at the interpersonal level.

Keywords Water governance; pragmatism; rural development; development cooperation; Nepal.

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Tiivistelmä

Väitöskirja tunnistaa käytännöllisiä keinoja maaseudun kehittämiseksi syrjäisillä vuoristoalueilla vesihuollon instituutioiden ja vesi-infrastruktuurin rakentamisen avulla. Vesi on elintärkeä resurssi, sillä vesivarojen saatavuus on perusedellytys valtaosalle maaseudun asukkaiden elinkeinoista sekä heidän elämänlaatunsa kulmakivi. Tutkimuksessa keskitytään Nepaliin maaseutuun ja tarkemmin maaseudun kehittämistoimien toteuttamiseen maan syrjäisimmillä ja köyhimmillä alueilla. Väitöskirjassa tarkastellaan kahta laajamittaista maaseudun vesivarojen hallinnan kehitysprojektia tutkimalla valittuja yhteisöjä näissä hankkeissa. Instituutioiden ja niiden hallinnan lisäksi väitöskirjassa tarkastellaan yksilöiden välisiä vuorovaikutuksia ja heidän vaikutuksiaan kehitysprosessien tuloksiin.

Väitöstyön päätutkimuskysymys on "Mitä käytännössä toteuttamiskelpoisia tapoja on toteuttaa ja hallita vesipalveluja kehittyvillä vuoristoisilla maaseutualueilla?" Tutkimuskysymystä tarkastellaan kolmen alakysymyksen avulla: (1) "Missä ovat sosiaalisen ulottuvuuden hallinnan ongelmat paikallistasolla"; (2) "Miten näitä epäkohtia voidaan käsitellä"; ja (3) "Mikä on yksilöiden toimien ja heidän välisten vuorovaikutusten potentiaalinen panos vesipalvelujen kehitykseen ja implementoinnin prosesseihin?" Tutkimuksen teoreettisena perustana ja tutkimuskirjallisuutena käytetään institutionaalisen itseohjautuvuuden (institutional bricolage); ja toimintakykyjen (capability approach) teorioita. Menetelmällisesti väitöskirja soveltaa pragmatistista tieteenfilosofiaa käytännössä ja korostaa sen monitahoisen suuntautumisen vahvuuksia. Väitöskirjassa käytetään joukkoa osallistavia laadullisia tutkimusmenetelmiä.

Väitöstyön keskeisenä uutuusarvona on kolme löydöstä. Ensinnäkin väitöskirjassa analysoidaan implementoinnin sosiaalisen ulottuvuuden laiminlyönnin aiheuttamien ongelmien syitä ja yksilöidään kolme tähän liittyvää hallinnon haastetta. Toiseksi tulokset korostavat, että suuri osa operatiivisesta implementoinnista ja paikallisesta institutionaalisesta toiminnasta tapahtuu sosiaalisissa ympäristöissä, jotka eivät ole sääntelevän hallinnon instituutioiden välittömässä vaikutuksessa. Väitöskirjassa todetaan, että nämä sosiaaliset tilat ovat silti ratkaisevia kehitysprosessien kannalta. Kolmanneksi väitöskirjassa tunnistetaan, että yksilöillä on tärkeä kaksoisrooli ylhäältä alas suuntautuvan hallinnan välittäjinä ja toisaalta paikallisen, alhaalta ylöspäin suuntautuvan ongelmanratkaisun osallistujina. Viimeksi mainittu rooli on vähemmän tunnistettu, mutta silti ratkaiseva kehitysprosessien kannalta.

Väitös osoittaa, että yksilöt ja heidän väliset muodolliset ja epämuodolliset vuorovaikutuksensa ovat vesivarojen hallinnan ja paikallisen kehityksen kannalta avainasemassa kehittyvällä syrjäisellä maaseudulla. Ruohonjuuritason implementoinnin kannalta pitäisikin siksi keskittyä vuorovaikutuksiin sekä institutionaalisella että yksilöiden välisellä tasolla.

Avainsanat Vesihallinto, pragmatismi, maaseudun kehitys, kehitysyhteistyö, Nepal.

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Espoo, 13 March 2018
Juho Henrik Haapala

CONTENTS

LIST OF APPENDED ARTICLES

This doctoral dissertation consists of a summary and of the following appended publications. They are referred to in the text by their roman numerals.

Article I: Haapala, J., and White, P. 2015. Why do some behaviours change more easily than others? Water use behaviour interventions in rural Nepal. *Waterlines* 34(4): 347-364. DOI: 10.3362/1756-3488.2015.031. ISSN: 0262-8104 (print) 1756-3488 (online).

Article II: Haapala, J., Keskinen M., White, P., Rautanen S-L., and Varis O. 2016. Organic Design of Water Resources Management in Rural Nepal - Synthesizing institutional design and bricolage approaches. *International Journal of the Commons* 10(2): 1172-1201. DOI: 10.18352/ijc.688. ISSN: 1875-0281.

Article III: Haapala, J., and White, P. Development through Bricoleurs: Portraying Local Personnel's Role in Implementation of Water Resources Development in Rural Nepal. *Water Alternatives* [In review].

Article IV: Haapala, J., and Keskinen, M. 2018. The Influence of Different Discourses on the Outcomes of Development Policies and Projects: Insights from Water Project Implementation in Nepal. *Environmental Policy and Governance* 2018:1-12. DOI: 10.1002/eet.1799.

AUTHOR'S CONTRIBUTION

Article I: The author is fully responsible for the idea of the study, fully responsible for the research design and theoretical framing, fully responsible for data collection, mainly responsible for data analysis and interpretations, and mainly responsible for the writing and editing processes. The co-author Pamela White contributed her expertise by providing knowledge about gender, social inclusion, and cultural behaviour changes, and insights about the project implementation context for the study. White assisted in the writing and editing processes.

Article II: The author is fully responsible for the idea of the study, fully responsible for the research design and theoretical framing, fully responsible for data collection, mainly responsible for data analysis and interpretations, and mainly responsible for the writing and editing processes. The co-authors gave their insights to the data analysis and interpretation, and assisted in the writing, and editing processes. Sanna-Leena Rautanen and Pamela White contributed by providing insights about the role of Water Users' Committees and the processes of project implementation to the study. Marko Keskinen and Olli Varis provided steering, academic writing guidance, and peer-support during the data analysis.

Article III: The author is jointly responsible for the idea of the study together with the co-author Pamela White, jointly responsible for the research design together with the co-author, mainly responsible for the theoretical framing, mainly responsible for data collection, mainly responsible for data analysis and interpretations, and jointly responsible for the writing process together with White. The author had the leading role throughout the study, data analysis, interpretation and writing processes. The author designed and planned the study, and the related questionnaires and interviews, in cooperation with Pamela White. The author collected most of the data, with rest of the data collected together or by White. The author was responsible for the theoretical framing, first agreed with White. The data analysis and the resulting interpretations were conducted together. The authors contributed equally to the writing process.

Article IV: The author is fully responsible for the idea of the study, fully responsible for the research design and theoretical framing, fully responsible for data collection, mainly responsible for data analysis and interpretations, and mainly responsible for the writing process. The co-author Marko Keskinen provided academic writing support, presented suggestions that directed the analysis, clarified the rationale of the methodology, and gave continuous feedback throughout the process. Keskinen also assisted in the writing and editing processes.

'Books are good enough in their own way, but they are a poor substitute for life.'

Robert Louis Stevenson

'Policy documents are but ink on paper until they become implemented to practice.'

Implementing practitioner's opinion about top-down steering

'Action expresses priorities'

Mahatma Gandhi

1. INTRODUCTION

1.1. Research setting

This dissertation recognises practical ways to advance rural development in remote mountainous areas through water service institutions and infrastructure construction. The research focuses on rural Nepal and more specifically on the implementation of rural development interventions in the country's remotest and poorest regions.

Water is a basic requirement for all life on Earth. Access to potable water is the foundation for all human civilizations and individual lives. However, it is not only geographically and temporally, but also politically and socially, an unequally distributed commodity. Today, water crises are said to be primarily the crisis of governance (OECD, 2011). On the other side of the coin, this makes water a possible source of ever more sustainable development and a key driver for improving individual lives. Advanced governance and management of water resources thus hold the keys to positive change.

Water is often the most obvious commonly utilisable resource, specifically for people living in mountainous rural regions. Today, high mountain ranges are the most utilised storages and sources of fresh water for a large percentage of the world's population (FAO, 2003). These highlands and mountain ranges convey relatively abundant water resources for local people living in temperate and arid hilly regions (FAO, 2003). The remote countryside in the foothills of the Himalaya, literary 'the home of snow', is a prime example of a region where water is a key commodity for the local people.

1.1.1. Water resources and local development in rural Nepal

Much of the Himalayan mountain ranges and foothills spread into the territory of the Republic of Nepal, one of the most mountainous countries in the world. This makes the area ideal for deeper scrutiny.

By many measures, Nepal is currently one of the least developed and least urbanised nations. In 2010, four-fifths of the population lived on less than 5.50 USD a day, and 15% on less than 1.90 USD a day (World Bank, 2017). The central government is in practice unable to have a presence in the remotest rural areas. The country's remotest hilly regions are characterised by extreme poverty, malnutrition, illiteracy, a lack of government administration, a lack of public health and security services, a lack of employment and education possibili-

ties, and limited access to markets, electricity, and modern communication networks. The male youth move from the countryside to urban centres for better employment and education. The population therefore remains stagnant in the hilly and mountainous areas.

Water-based rural livelihoods are remarkable for the national economy and rural lives in the country. Four-fifths of the population live in rural areas (Central Bureau of Statistics of Nepal, 2014), mostly relying on primary production in small family farms. The families' food security and diet often depends on their own production on both rain-fed and irrigated terraced fields. Agriculture plays a major role in the economy, representing one-third of the gross domestic product (World Bank, 2017).

Access to water resources determines much of the rural residents' livelihood possibilities and quality of life. Figure 1 demonstrates the various ways water is utilised locally, inspired by a Hindu *yantra* style figure[1].

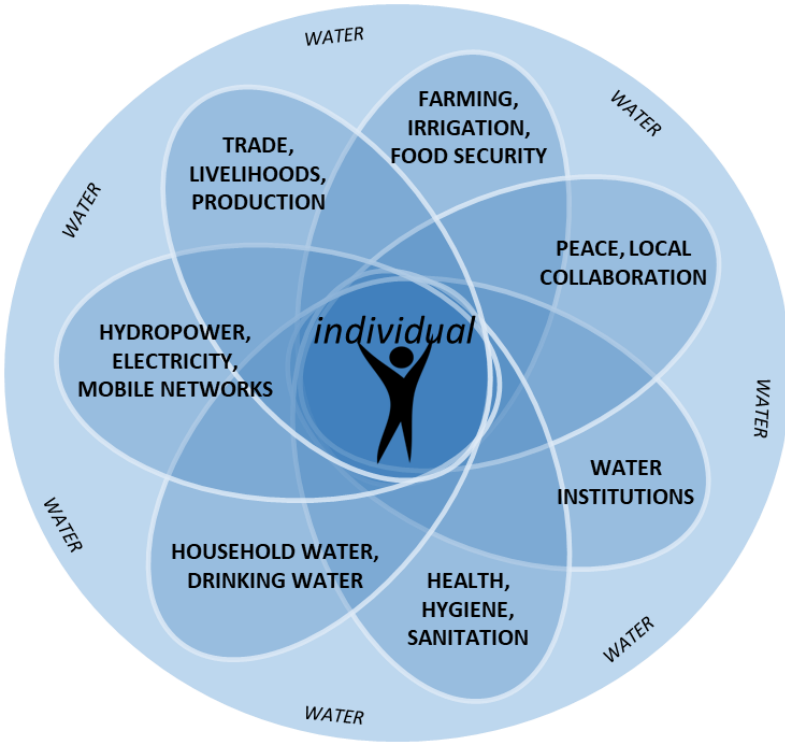


Figure 1: Water-life Nexus yantra shows the ways in which water resources influence individual rural lives and livelihoods in mountainous Nepal.

The condition of water resources management and water infrastructure has obvious effects on local food production and farming possibilities, on local sanitation, hygiene, and overall health in households, on drinking water availability

[1] Yantra is a geometrical version of a *mantra*, an orally repeatable prayer.

and safety, and on access to electricity and mobile networks through micro hydropower developments. The more indirect effects are both institutional and behavioural, founded on the development of local institutions and businesses that enable cooperation, employment, and education opportunities for the residents. Water is therefore one of the most central elements for improving the local lives and for capacitating people in these regions.

Despite the central role of water for local people, the remotest localities still lack the most basic local water management institutions and the basic water distribution infrastructure. Recently, access to an organised basic water supply and sanitation has improved on paper, but the lack of long-term sustainability of the schemes and institutions remains a major challenge (Bhandari & Grant 2007; Liski, 2016). Challenges remain in finding ways to facilitate water service delivery further in remote, mountainous developing areas. Further enhancement of water resources management and water infrastructure developments could still significantly enhance the local residents' livelihoods and quality of life.

1.1.2. Implementing rural water sector developments

This subsection describes the ways in which the international development community furthers rural water sector development, and it depicts the related implementation challenges in the introduced context. These efforts provide the basis for the empirical and theoretical explorations presented in this dissertation.

Top-down implementation of development is by nature a regulatory, interventionist process. In this process, development targets are set by collaborating actors, resources allocated jointly, actions taken to change the current state for a more desirable one. In interventionist processes, the aim is to have powerful stakeholders proactively intervene in the current state of development. This intervention is conducted in a way that regulates the desired development processes and outcomes. Regulatory processes are characterised by regulative, normative, and cultural-cognitive elements that define and organise institutional order (Scott, 2008).

Development agencies tend to employ designs that relate to contemporary development discourses. At the local level, they lean towards adaptive governance and participatory poverty reduction approaches. In the rural development context, the relevant discourses involve community management, participation, and social inclusion (Chambers, 1994; de Haan, 2009; Rusca et al., 2015), with an emphasis on sustainable rural livelihoods development (Chambers & Conway, 1991; Krantz, 2001; De Haan & Zoomers, 2005; Scoones, 2009) or microfinancing and social funds (De Haan, 2009).

The long continuum of this type of interventionist collaboration between local, national and international partners has resulted in the development of various implementation instruments. These instruments include sectoral, programmatic, and project approaches. The most basic, standard device for the implementation of common goals is a development project (De Haan, 2009). The sectoral and programmatic approaches are often in operation 'projectified'

(Sjöblom et al., 2013:3). This note makes the project organisation a central means of interventionist development.

Besides the directive policies, projects are platforms for sectoral practices. In the water sector, the guidelines for the practices are provided by generally acknowledged approaches. One such approach is Integrated Water Resources Management (IWRM), which has been recognised by several UN processes, most recently by the Sustainable Development Goals. Furthermore, water project management should follow the accredited principles of good water governance (OECD, 2015).

1.1.3. Challenges in governing implementation

In the implementation process, imposed regulatory governance discourses and institutions transform into socially embedded local realities. This happens through an implementing organisation that is pressed between the top-down requirements, local realities, government administration, and other stakeholders (Figure 2).

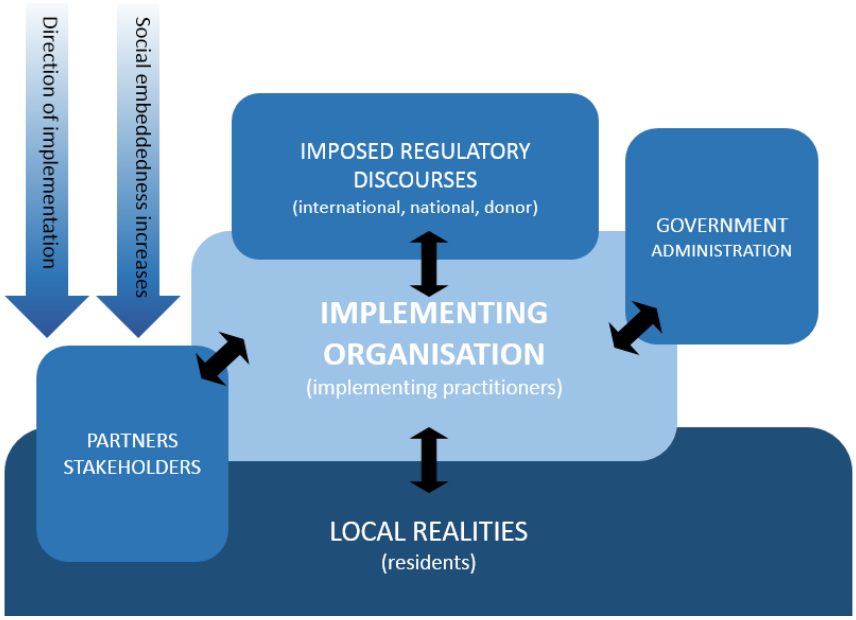


Figure 2: The position of an implementing organisation in between regulatory top-down steering institutions and bottom-up social pressures.

The starting point is that development interventions need to be aligned with the policies and objectives of the government administration, significant donor stakeholders, and international contracts. However, the implementation organisations typically work locally, within the surrounding socio-cultural environment. They should simultaneously adapt to local conditions and cooperate with

the local and national partner stakeholders (Rusca and Schwartz 2014; Rusca et al. 2015). The implementing actors encounter various socially embedded institutions at the grassroots level (Cleaver 2007, 2012; Jones, 2015; Rusca et al. 2015).

The challenge is the increasing social embeddedness in the implementation process. Social embeddedness refers to the inclusion of various complex sociocultural factors that in practice complicate implementation processes. The encounter produces a gap between designed institutions and the local reality (Cleaver 2002; Gutu et al., 2014).

The critique argues that the governance approaches have too limited understanding about social dynamics (Cleaver, 1999; 2012; Frediani, 2010; Castillo, 2014; Ferrero & Zepeda, 2014; OECD, 2015:3). Already Mosse (1998; 2004) has pondered why strangely little attention is paid to the relationship between policies and the actual practices that they are projected to produce. It is now acknowledged that development interventions have high necessity for process approaches (Mosse, 1998) that comprehend the importance of unpredictable elements of interventions—the need for highly adaptive, flexible designs and management processes (Dietz et al., 2003; Walker et al., 2004; Folke et al., 2005; Ferrero & Zepeda, 2014) and the relevance of learning (e.g., Pahl-Wostl, 2009).

Despite an improved understanding, the reality is that the social embeddedness poses continuing problems to implementation practice. A gap remains between the theories of governing development at the grassroots, and the local realities that escape the rationales of the current analyses. Especially, the role of individual stakeholders for the development outcomes remains an understudied aspect of implementation. This provides the research setting and problematic for this dissertation.

1.2. Research objectives and dissertation formula

1.2.1. Research questions

The above-described research setting raises three concerns regarding water use and water governance in the introduced context. First, the current situation in the developing mountainous rural areas leaves under-utilised much of the potential that improved water resources management could bring to the local lives and livelihoods. Second, evident challenges related to the governance of the implementation process make the water-based developments difficult to realise in practice. Third, the current approaches to the implementation emphasise the role of institutions, but the potential role of local residents and the implementing practitioners remains less studied. A better understanding of these processes could help in furthering functional water services delivery in developing, remote, hilly rural areas.

This dissertation therefore addresses the following research question (RQ) through three more specific sub-questions (SQ) in the described interventionist research setting.

- **RQ**: *What are the practically feasible ways to implement and manage water services in developing, mountainous, rural areas?*

Regarding this process…

  - **SQ1:** *…where are the pitfalls of governing the local-level social embeddedness?*
  - **SQ2:** *…how can these pitfalls be addressed?*
  - **SQ3:** *…what potential contribution individuals' acts and interactions have to the water service developments and implementation processes?*

In practice, the dissertation examines two large-scale water and rural development interventions operating in Nepal by surveying selected communities under these projects. Most of the studies in this dissertation consider rural localities influenced by the Rural Village Water Resources Management Project (RVWRMP), which operates in Far West Nepal in the remotest and poorest rural localities of the country. The project's scope includes facilitating water supply, sanitation, agriculture and local farming, community cooperatives, livelihoods development, renewable energy, and irrigation[2]. The project operates in 10 districts, with a beneficiary population of over 600,000 (2006-2017). The second intervention, the Rural Water Supply and Sanitation Project in West Nepal (RWSSP-WN), focuses mainly on water supply, sanitation, and institutional capacity building. It has served hundreds of thousands of beneficiaries in 14 rural districts (2008-2017). The appended articles provide more details on the projects.

1.2.2. Structure of dissertation

The dissertation consists of the synthesis and four appended articles. The findings of the dissertation are founded on the evidence stated in these articles. The four articles cover the research context through case studies (Figure 3). The figure shows how the articles link to the research setting. The articles approach the research setting from interlaced individual and institutional standpoints. Article I regards the residents and community relations, Article II looks at the individuals within local water resources management institutions, Article III examines implementing practitioners in operation, and Article IV focuses on the interventionist discourses of development within development project operations.

[2] For more research on the intervention and the related bilateral water sector development cooperation, see Saarilehto, 2009; Koponen, 2012; Hänninen, 2014; Rautanen, 2016; Doty, 2016.

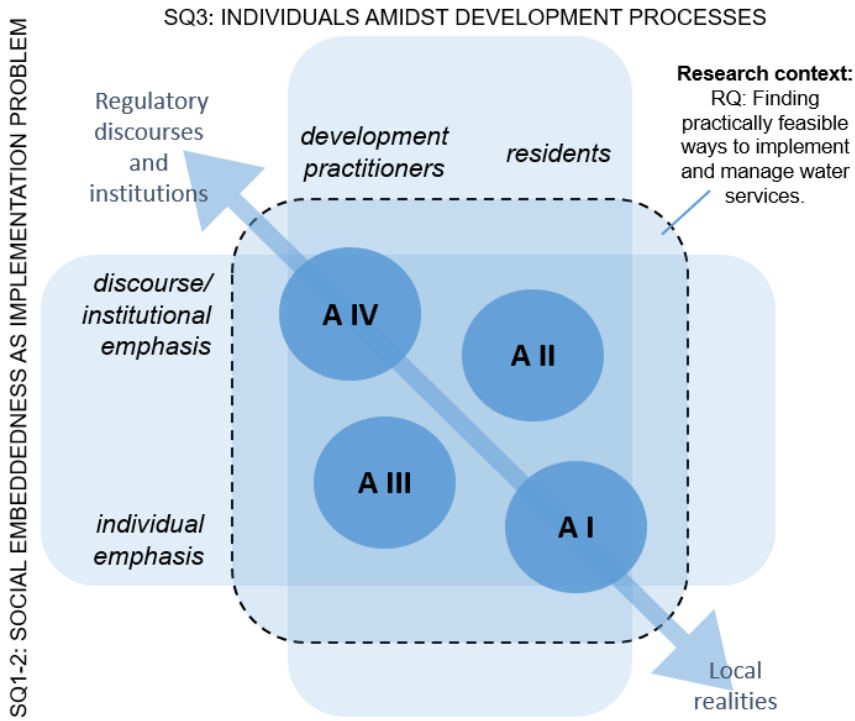


Figure 3: Positions of the appended research articles in relation to the case study context and research questions.

The contents of the sections are as follows: This section (Section 1), 'Introduction', presents the background and research context and sets the scene and scope of the study. Section 2, 'Methodology', discusses the scientific foundations of the conducted research and describes the employed methods and materials. Section 3, 'Theoretical themes', builds up the theoretical approaches and the analytical lens of the research. The research question and the sub-questions are answered in Section 4, 'Findings', which compiles the main results of the articles. The findings and resulting theoretical and practical contributions are reflected in Section 5, 'Discussion'. The final Section 6, 'Conclusion', summarises the main points of the dissertation.

1.2.3. Scope of research

The dissertation examines local institutions and people's behaviour in their socio-cultural environs, as illustrated above in Figure 3. Even though the research has an institutional and individual orientation, this is not a study of frank politics or of the psychological aspects of human functioning and behaviour, which are both out of the scope of this study.

The research considers water resources development and rural development. Other natural resources are not at the core. Urban development is out of the scope of this study. Ecological questions, such as water-related problems, climate change, and environmental concerns, remain in the background of this investigation. They are considered as the acknowledged surroundings to the research setting.

The core emphasis is at the local, operational 'grassroots' level of implementation, the scale varying from the individual and community level up to the district level. Global, international, and national development policies and environmental discourses are out of the scope, being considered only when relevant to the research context.

The empirical part of the research has focused on two large-scale bilateral water projects between Nepal and Finland, operating in West and Far West Nepal (with an emphasis on Far West Nepal). The other project modalities remain out of the scope. Geographically, the scope remains mainly in the remote rural areas and communities of Nepal. The other geographical areas inside and outside Nepal are out of the scope of this dissertation; they are brought up mainly by the research literature as reference cases that may have similarities or differences with the research in question.

As stated above, the dissertation scrutinises the institutional and operational anatomy of the described interventionist development context and the people amidst this process. The objective of the research is not to assess or evaluate the condition, organisation, or achievements of the water interventions, or the sustainability or state of development of the water management institutions or the rural localities, or to in any way appraise the residents and practitioners.

2. METHODOLOGY

2.1. Applying pragmatism as a philosophy of science

Considering the foundational philosophy of science that underlies the research process is important, as it sets the ontological and epistemological background presumptions of the investigation. The scientific philosophical foundations of this dissertation follow the spirit of classical pragmatist thought. The dissertation does not specifically follow or apply any classical pragmatists' line of thought *per se*. Rather, it consistently refers to the pragmatist thinkers and interprets the philosophy of science through the pragmatist literature and orientation. The introduced concepts are not specific to only pragmatists, but pragmatism considers them all profoundly.

Pragmatism involves plenty of slightly variable orientations that share an emphasis on real-world actions, practices, and practical verifiability of research, problem-solution, and knowledge production (Pihlström, 2008: 49). Pragmatism endures as a generic philosophy of science, while much of the scientific philosophy and methodology has diverged to manifold specialised sciences (Juti, 2013:379).

The roots of pragmatism are in the 17th century. Early proto-pragmatists include Ralph Waldo Emerson (1803-1882) in America, and Friedrich Nietzsche (1844-1900) in Europe. Their philosophical views considering non-dualist epistemology and wholistic individual phenomenology later became central subjects to pragmatist philosophers. Charles S. Peirce (1839-1914) started pragmatism as a scientific philosophical movement. His thoughts are still central foundations for the contemporary philosophy of science. Other classical pioneers of the approach are William James (1842-1910) and John Dewey (1859-1952). The latter popular pragmatists include W.V.O. Quine (1908-2000), Richard Rorty (1931-2007) and Hilary Putnam (1926-2016). In Finland, Raimo Tuomela (1940-) and Sami Pihlstöm (1969-) are among the high-profile contemporary pragmatist thinkers. In South Asia, such thinkers as Mahatma Gandhi (1869-1948) and Amartya Sen (1933-) have presented clearly pragmatist considerations.

2.1.1. Fallibilism and constructivism

The epistemological departure points in social and human sciences involve epistemological and social constructivism, as well as fallibilism. These concepts are strongly associated with classical pragmatists.

Fallibilism refers to the errant nature of human observations and knowledge creation processes: Scientific theories can always be proven false because of our imperfect knowledge and understanding. The pragmatist Charles S. Peirce first introduced the concept. Peirce (1931) highlighted three unattainable characteristics of knowledge: absolute certainty, absolute precision and absolute universality. Peirce (1931) aimed at substantiating that there is no certain knowledge, and that knowledge does not require such certainty. Later, both Karl Popper (1956; see Popper, 2014) and Thomas Kuhn (1962)[3] followed Peirce's (1931) fallibilism by stressing that our perceptions are inevitably always construed and inflated with theoretical material. This makes knowledge evidently imperfect and uncertain. Scientific methodology then endeavours to minimise the influence of these recognised distractions.

Pragmatist epistemology stresses that scientific knowledge is a social construction of the scientific community that is supported by empirical observations. The background of this constructivism is that James (e.g., 2008:54), Dewey (e.g., 1929; Vo & Kelemen, 2014) and particularly Peirce (1931) urged that reality is constructed in interaction between the subject and its objective environment. A subject is therefore not an independent or detached actor, but is defined by one's interactions with the objective world (Pihlström, 2008:40). This interaction-oriented, intersubjective perspective is fruitful, as it explains why knowledge creation is an inevitably construed, socially constructed and theory-bearing process.

Notably, the fact that scientific activity is mediated by subjective experiences does not lead to extreme relativism[4], as the experiences are always directed by the shared, surrounding reality. In this sense, pragmatist epistemology applies to realism. The dissertation shares the pragmatist view of the subject and the resulting view of constructed knowledge, as will be discussed more in detail in Section 5.3.

2.1.2. Perspectivism

Perspectivism was originated by the proto-pragmatist Friedrich Nietzsche. The concept argues that an 'objective' perspective is inevitably out of reach because we are always in the middle (not outside) of things (e.g., Nietzche, 1885 Part I; see also Dewey, 1929; Vo & Kelemen, 2014). We inevitably perceive and interpret the world from *a* subjective perspective. Notably, this experienced, phenomenological world does not contrast with the 'real world' as such, but with another phenomenological world of formless (unconceptualised) sensations. Sami Pihlström (2008) describes the pragmatist perspectivism as follows:

[3] Kuhn (1962) famously argued that changes in scientists' views of reality are a result of revolutions in scientific practices and changes in paradigms.

[4] Extreme relativism states that everything is entirely and incomparably subjective.

'We can never depart for a search for the structures of experience or consciousness from such a point at which we would not already conceive ourselves as parts of the world construed by experience and consciousness." (Pihlsröm, 2008:46; translated by the author).

As a result, there are always several relevant viewpoints and alternative conceptual theories that can justify our observations and epistemic and normative interpretations. These alternative interpretations and viewpoints may lead to manifold, even contrasting, actions based on the same information.

The so-called scientific viewpoint is therefore not perspective-free, impersonal philosophizing, but an ability to transfer, employ, identify with, and compare several relevant viewpoints in a systemic manner (see James, 1907:44-46). Strong relativism can be avoided by the fact that there are scientifically founded empirical criteria for comparing the relevance of different explanations and viewpoints. As a result, scientific research does not produce a privileged, 'godly' perspective to understanding the world, though it provides a systematic methodology for producing as reliable, explanatory, and empirically well-founded knowledge as possible through the proper application of the scientific method.

2.1.3. Conceptualism

Pragmatist thought emphasises that a theory is *just* a figure of phenomenological reality, and concepts are *just* vague ways of describing these phenomena. Pragmatists also highlight that nobody 'owns' concepts and they are not located in anybody's mind, but in intersubjective, social relations or institutions that people have internalised. This orientation is generally referred as *conceptual nominalism*, or *conceptualism*.

Reality is not conceptualised as such, but we construe and confine the world through conceptualisation that occurs in social interaction (Tuomela, 1983). Concepts describe the dynamics of the reality incomprehensively, in rather limited, perspective-oriented, culture-laden and theory-laden ways. Tuomela (1983) criticizes the error of the pre-conceptualised reality (calling it 'the Myth of the Given'; see also Sellars, 1956) in three ways: In the ontological version, a researcher mistakenly presupposes that reality would be divided into pre-conceptualised, or naturally defined, objects and categories. In the epistemological version, a researcher mistakenly presumes that one could recognise the world directly, with no interpretation whatsoever. The third, linguistic, version mistakenly supposes that there would be a single primary, preferable linguistic system.

The pragmatist viewpoint emphasises that although concepts are mandatory for practical problem solving and communication, it is a mistake to reflect concepts as direct manifestations of reality (Dewey, 1929; Tuomela, 1983; Hildebrand, 2003). This possible confusion may lead to pseudo-disputes when it is not clear whether under discussion is an understanding of a linguistic term or the underlying empirical phenomenon as such (see James, 2008: 44-46). Another confusion may result from the observer's tendency to drown in conceptual jargon, losing a grip on the empirical phenomena.

Pragmatists, with Dewey and Peirce pioneering, aim at synthesizing conceptual dichotomies (Alhanen, 2013; Niiniluoto, 2008; Juti, 2013: 362-378). This process comprehends that popular bipolar distinctions are rather indistinct descriptions of qualitative differences, rather than bipolar, exclusive alternatives. Such dichotomies involve thought-activity; learning-doing, theory-practice; theory-methodology; science-technology; fact-interpretation; nature-culture; society-economy; subject-object; internal-external; mind-body; facts-values; normative-descriptive; and technical-political.

Importantly for the philosophy of science, pragmatism synthesizes the interface of theory (scientific theories and paradigms) and practice (conducting research) by considering them inseparable, interlaced processes. Theory is empirically tested in action, whereas working practices become abstracted to concepts and theories. The interaction between them is reciprocal. This is hence an adaptive process, resembling, for instance, Layder's adaptive theory (Layder, 1998).

Furthermore, so-called scientific 'facts' belong also to wider conceptual and value-laden contexts. In a detailed evaluation, the separation of normative and descriptive elements becomes difficult: 'Epistemic values are values too [...] Theory selection always presupposes values' (Putnam, 2002: 30-31). Science cannot be a 'factual' institution that is very detached from values. Many pragmatists emphasise the importance of operationalising knowledge as a means of understanding the world, and problem solving in concrete situations—a clearly normative objective that steers the very definition of knowledge in pragmatist thought.

2.2. Methods and materials

2.2.1. Methodology design and triangulation

The pragmatist methodology, applied to the research context, emphasises participatory, constructivist research approaches (Mertens, 2014). The pragmatic approach described above comes methodologically and results-wise close to action research. Action research is a solution-oriented, applied research orientation that fades the distinction between research and social influence (Mikkelsen, 2005:132). The purpose of the orientation is locally originated problem-solving through participation, awareness creation, and the use of local knowledge (Rautanen, 2016:42).

Pragmatism also fades the explicit distinction between theory and methodology (see Section 2.1). Pragmatist perspectivism enables analyses that look at the research topic from multiple interwoven theoretical viewpoints and methodological perspectives. This principle is to prevent the emergence of overly narrow theoretical viewpoints and narrowly grounded results, and enables comparisons between the different perspectives and viewpoints. The pragmatist scientific viewpoint is based on this ability to transfer, employ, identify with and compare several relevant viewpoints in a systemic manner.

The principle also allows continuous, flexible *triangulation* between the employed methods and information sources. The triangulation patterns of this dissertation are presented in Table 1. The research validity emerges from the triangulation of data, observers, methodologies and theories against one another. In practice, triangulation proceeds by using several data sources, observers and methods in the analysis, allowing comparisons. Theory triangulation occurs by the selection and application of the most suitable theories and through continuous adaptive theoretical reflection during the research process (see adaptive theory below for more).

Phenomenography, grounded theory, and adaptive theory are general methodological approaches to conducting qualitative research, applied by one or many of the attached articles of this dissertation. They convey assumptions concerning what is valid and valuable knowledge and how one can gain that knowledge.

Articles III-IV employ *phenomenographic research orientation* (e.g., Svensson, 1997). It is generally applied for analysing the differences and similarities in people's ways of understanding and experiencing the world. The orientation scrutinises the ways in which examinees describe a certain phenomenon. The phenomenographic orientation of the attached research articles target similarities (rather than differences) in the individual understandings of the research context. In practice, the idea was utilised for analysing the implementing practitioners' understanding of the implementation context in the articles focusing mainly on project personnel.

The research processes for the articles can be interpreted as applications of the *Adaptive Theory* method (e.g., Layder, 1998), referring to continuous adaptive theoretical reflection during the research process. The theoretical hypothesis is continuously being empirically tested in practice, whereas the accumulated empirical evidence develops the thesis further. The interaction between them is continuous and reciprocal. As a result, the methodology is adaptive, as the study questions and the focus evolve during the research process.

Article II, the author's first initiated study on the research context, provides an exception to the above-mentioned research process description. The research process started from scratch, without any preliminary theoretical perspective or previous empirical experience about the study context. The process can therefore be described in terms of a *grounded theory* that is based on constructivism and pragmatism[5] (Bryant & Charmaz, 2010; Kinnunen & Beth, 2012). The aim of the method is to generate theories directly grounded on data, without theoretical steering caused by hypotheses or presumptions. This type of research requires significant unfamiliarity with the research context and no prefixed theoretical lens. The data-grounded process implicitly influenced the outcomes of Article II, although the research process later changed to resemble more adaptive theory.

[5] Grounded theory is a qualitative research method developed in the 1960s by the sociologists Anselm Strauss and Barney Glaser. The early positivistic characterisations of the method have changed towards more constructivist approaches (see, e.g., Bryant and Charmaz 2010).

Table 1: Triangulation of research approaches, methods, and information sources. WUSC: Water Users' and Sanitation Committee

	method and/or information source	specification	Article I	Article II	Article III	Article IV
methodology designs	pragmatism	research philosophy	x	x	x	x
	phenomenography	research orientation			x	x
	grounded theory	research process description		x		
	adaptive theory	research process description	x	x	x	x
	case study design	single-case with multiple embedded units	x	x	x	x
observations	participatory observation	by author on project operations	x	x	x	x
	participant observation	by personnel	x	x	x	x
	field survey / visits	household level	x			
		WUSC; community level	x	x		
		district level	x	x	x	
communications	informal discussion	residents	x	x		
		personnel	x	x	x	x
	semi-structured interview	resident groups	x	x		
		personnel groups			x	
		personnel individuals				x
	questionnaire	personnel			x	
	workshop	personnel			x	x
	discourse hierarchy analysis	personnel				x
literature	literature review	project, internal	x	x	x	x
		grey literature	x	x	x	x
		academic	x	x	x	x

Articles I-IV represent a *case study design* with a single case study setting with multiple, embedded units of analysis under scrutiny (Yin, 2013:50). The units vary, being either communities (Article I), water users' committees (Article II), project practitioners in various positions (Article III), or internal project discourses (Article IV).

2.2.2. Methods and information sources

As presented in Table 1, the methods vary depending on the focus of analysis: The first two articles have the focus on local residents and their behaviours and institutions, whereas the latter two focuses on the implementing practitioners and the implementation processes. Table 1 describes the corresponding differences in analysis methods and data sources.

In general, the attached analyses are based on the understanding of the study context. The understanding is founded on long-term participatory observations in the study area and on acting within operational implementation processes. The author spent a total of eight months visiting the projects, including several months outside the project headquarters. The related data collection methods involved listening to the participant observations, and field surveys conducted at the household (Article I), community (Article II), and district levels (Article III-IV). Informal discussions were also a crucial part of data collection in the field and at the project headquarters; many of the relevant phenomena become evident only through informal discussions.

More structured methods include semi-structured interviews, conducted with both local residents (Articles I), water management association members (Article II) and project personnel (Articles III-IV). The data collection process for Article III involved questionnaires for the project personnel and related workshops and group interviews with district staffs. The discourse hierarchy analysis developed in Article IV required a workshop at the project headquarters, as well as numerous individual key-informant interactions.

Furthermore, all studies involved literature reviews on the internal project documents, guidelines, field reports, and statistics, as well as on the grey literature involving government documents, working papers, annual reports, strategic policy papers, and evaluations. Finally, the research was naturally integrated into the academic literature and theoretical frameworks. These are introduced next in Section 3.

3. THEORETICAL THEMES

3.1. Governing natural resources

3.1.1. Descriptions of main concepts

The dissertation can be described as a study of *political ecology*. Political ecology is a research approach that highlights political explanations in social processes and ecological changes (Robbins, 2011). Concerns over governance of common pool resources (such as water and land) and over access to natural resources overarch this understanding.

Governance and management are decisive processes of social conditions and change. They are operationalised through institutions that set the rules, norms, and power relations that characterise governance interactions. *Governance* consists of ubiquitous, dynamic social 'processes of interaction and decision-making among the actors involved in a collective problem' (Hufty, 2011:405) within actor-networks and institutions (Ostrom, 2010; Chaffin et al., 2016; Sojamo, 2016). *Management* is context-specific, operative governance of certain collective problems within given institutional environs. Notably, both governance and management are not scale-dependent but they occur at all scales. The difference remains in the attitude towards institutional modification.

Collective problem is a vague term for the thematic subject of governance, and for the governance process in which the stakeholders (actors) become both intentionally and willingly, and unintentionally and unwillingly involved in. The *stakeholders* are actors (individuals, and formal and informal groups and organisations) that have agency (stake) in particular collective problems.

Agency is an actor's ability to pursue goals that one has reason to value (Alkire, 2005), and 'the capability or power to be the originator of acts' (Cleaver, 2007:226). In other words, agency is an actor's capacity to influence the course of events or the outcomes of processes to a direction one has reason to value (see Sojamo, 2016:31; and the capabilities approach Section 3.3).

Agency is like physical quantity: It has a magnitude and a dimension. The magnitude indicates an actor's capability to pursue the valued goals, and the dimension corresponds with an actor's desire towards such ends that one has reason to value. Foucauldian and Gramscian viewpoints are today cited as common approaches to agency (Robbins, 2011). These perspectives emphasise the socio-cultural embeddedness of institutions, governmentality, and the self-organising nature of social power hierarchies (Robbins, 2011).

Societies are governed and organised through institutions. *Institutions* refer to particular, *consistent, structured, molar* sets of rules, norms, and power relations that characterise the interactions between actors (North, 1990; Ostrom, 1990; Ostrom et al., 1994). Institutions set boundaries, limit, and regulate, but also allow and enable social action (Koontz et al., 2015).

Interaction refers to the *contingent, unstructured, molecular* interconnections between actors that recreate actor networks and institutions. Many interactions are informal and they are products of and embedded in the socio-cultural environs, rather than steered by the formal, structured institutions. This is the key to understanding the findings of the dissertation.

Remarkably, these definitions indicate that governance is by nature a *regulatory* process. It is regulatory because it is characterised by its aim to intervene in the trajectories of socio-ecological change to create a 'desired state' regarding the subject of governance (see Ostrom, 2009; Rusca and Schwartz, 2014; Koontz et al., 2015; Chaffin et al., 2016). The *regulatory* description involves in this case the regulative, normative, and cultural-cognitive elements that underlie institutional order (Scott, 2008).

Environmental governance is an example of regulatory governance being considered as a 'set of regulatory processes, mechanisms, and organisations through which political actors influence environmental actions and outcomes' (Lemos & Agrawal, 2006:298). Development cooperation, as well as project-based development interventions, are manifestations of this regulatory nature of governance.

Regulatory governance functions through *governance discourses* (cf. 'discursive practices' of Michel Foucault (e.g., Alhanen, 2013)) that conceptualise the interventionist aims, goals, and preferred ways of doing. The introduction mentioned such discourses as community management, participation, social inclusion, and sustainable rural livelihoods development (Chambers & Conway, 1991; Chambers, 1994; Krantz, 2001; De Haan & Zoomers, 2005; Scoones, 2009; de Haan, 2009; Rusca et al. 2015).

Regulatory institutions (cf. Foucault's non-discursive practices in Alhanen, 2013) operationalise the discourses. These institutions include the introduced devices of the international development community. These devices involve development projects and the local management institutions that are to fulfil the aims of regulatory governance. One example of such are the water resources management institutions established by development interventions, or the interventions themselves.

3.1.2. Regulatory institutional approaches

Regulatory environmental governance is one of the main themes of this dissertation and the attached articles. This governance is scrutinised through a set of institutional approaches. The understanding about how institutions work has been utilised in multiple ways for managing natural resources. It is acknowledged that institutions constitute the 'rules of the game', in other words the evolving set of values, norms, and customs that our culture holds (North, 1990; Ostrom, 1990; Ostrom et al., 1994). In a natural resources management context,

the collective problem often regards collectively managed common pool resources, such as water. This understanding has led to the development of regulatory frameworks, enabling conscious steering of institutional processes. This recognition stems from extensive studies on adequate institutional designs of natural resources management (Cox et al., 2010). The best known of such characterisations is the eight principles of institutional strengthening (Ostrom, 1990), which have been widely adopted by national and global development agencies such as the UN and the World Bank (Gutu et al., 2014).

There has been a shift from established natural resources management and development governance modes to more integrated and dynamic institutional approaches. One emergent approach to the governance of natural resources is that of *adaptive governance*. The approach aims at managing complexity and uncertainty in socio-ecological systems (Dietz et al., 2003; Walker et al., 2004; Folke et al., 2005; Pahl-Wostl, 2009) towards a 'desirable state' (Rusca and Schwartz, 2014; Koontz et al., 2015; Chaffin et al, 2016).

The relevant tools are characterised by buzz words like 'participatory, inclusive, integrative, risk tolerant, flexible, legitimate, accountable, diverse, creative, learning, iterative, autonomous, resourceful, self-assessing, collaborative, transparent, [and] reflexive' governance and management approaches (Koontz et al., 2015:141-142). These tools are to produce *adaptive capacity* for the governance institutions as a result (Folke et al., 2005; Cook et al., 2011). Many of the above-mentioned properties link the approach closely with sustainability science (Kates et al. 2001; Clark & Dickson, 2003) and resilience research (Holling, 1973; Adger, 2000; Folke, 2006; Rockström et al, 2014; Olsson et al., 2015; Cai et al., 2017; Seekell et al., 2017), involving planetary boundaries research (Rockström et al., 2009; Leach et al., 2013; Steffen et al., 2015).

Institutional learning in governance organisations provide another link to adaptive governance that is close to conventional political ecology (Pahl-Wostl et al., 2007; 2008; 2013; Pahl-Wostl, 2009). The institutional learning orientation emphasises institutional evolution, informal actor-networks, and their connection to formal policy processes (Olsson et al., 2006; Nooteboom, 2006; Pahl-Wostl , 2009; Pahl-Wostl et al., 2013). This emphasis approaches the institutional *bricolage* viewpoint (see Section 3.1.3. below) while maintaining the governance perspective.

The current trends in the field of water resources management and governance replicate the same direction. The current tendency is that water should be managed through more and more integrated, comprehensive, and cross-sectoral approaches. The most acknowledged of such approaches is Integrated Water Resources Management (IWRM; see Agarwal et al., 2000; Keskinen, 2010), which underlines discourses such as participation, gender equality, and institutional capacity building (Agarwal et al, 2000; Keskinen, 2010; Varis et al., 2014). IWRM is a broadly recognised backbone approach by global networks and development programmes (Merrey & Cook, 2012) such as Sustainable Development Goals.

The related sustainable governance research has shifted towards addressing the interlinkages of water governance and security (Global Water Partnership,

2000; Grey & Sadoff, 2007; Cook & Bakker, 2012). Recently, water resources governance research has also focused on the nexus of water, food, and energy securities (Hoff, 2011; Granit et al., 2013; Guillaume et al., 2015; Jalilov et al., 2015; Keskinen & Varis, 2016; Keskinen et al., 2016; Jalilov et al., 2016).

3.2. Institutional bricolage

3.2.1. Practical problem solving in everyday life

An alternative approach to institutions explores the ways in which social change occurs in practice, instead of searching for the general principles of their governance. The difference with the governance approaches is in the renunciation of the subject of governance (a collective problem) for an indefinite multiplicity of heterogeneous, multipurpose, formal and informal social flows and agencies that cover the social space. This shift releases the thought from the leash of the regulatory mind-set of governance.

Though the regulatory governance modes and principles enjoy massive empirical support (e.g., Cox et al., 2010), the practical problem solving occurs within multidimensional, informal, and improvised institutions and social relations. This aspect opens up additional, 'unregulated' socio-cultural perspectives for institutional research (Rusca and Schwartz, 2014).

The current critical institutional literature increasingly understands socially embedded interactions and institutional processes through the idea of *institutional bricolage* (Cleaver, 2002; 2012; Merrey & Cook, 2012; Cleaver & Koning, 2015). Two attached articles of this dissertation employ institutional bricolage as the analytical framework. The bricolage approach notes that water resources management and governance may today be more dynamic and less attributable to single factors than suggested by the regulatory institutional approaches (Cleaver, 2000; 2012). It is a pragmatic, bottom-up approach to inspecting institutional reality.

Institutional bricolage is a critical institutionalist viewpoint. It emerged partly as a critique of the failing understanding about institutional dynamics within former institutional approaches (Cleaver, 1999; 2002; 2012; Hall et al., 2014; Cleaver and de Koning, 2015). It describes the ways that institutions emerge bottom-up as a combination of socially embedded practices and formal structures (Cleaver, 2012; Jones, 2015). It emphasises social contexts, such as power relations, and dynamics, such as individual agencies (Gutu et al., 2014). Cleaver and de Koning (2015) describe the concept as follows:

> *'Institutional bricolage is a process through which people, consciously and non-consciously, assemble or reshape institutional arrangements, drawing on whatever materials and resources are available, regardless of their original purpose. In this process, old arrangements are modified and new ones invented. . . . These refurbished arrangements are the necessary responses to everyday challenges, and are embedded in daily practice.'*

(Cleaver & de Koning, 2015:4-5).

The description underlines social embeddedness. It also resembles the problem-solving orientation of the introduced pragmatist viewpoint (Section 2.1). Institutional bricolage can thus be interpreted as an operationalisation of pragmatist thought.

Another description by Cleaver relates to the key aspects of bricolage. These key aspects include everyday practice, necessary improvisation and innovation, multi-purpose and dynamic institutions, social embeddedness and fit, and socially embedded power relations (Cleaver, 2012:44-50). These aspects describe a social reality beyond hegemonic regulations—a space consisting of a continuous, ever-changing flow of goals, purposes, values, and practices with a vast multiplicity of collective problems and countless desirable states in each of them.

Another related, relevant concept is that of legal pluralism. Legal pluralism relates to a condition in which different institutions co-exist in a particular situation (Griffiths, 1986). Legal pluralism sorts the social reality to plural institutions to be able to study and compare them as normative orders. These institutions may have combative, competitive, cooperative, and complementary relationships (Swenson, 2017). Institutional bricolage, on the other hand, considers the existence of the socio-cultural environs as a multifaceted whole of interlaced, dynamic formal and informal institutional processes. Interpreted against legal pluralism, institutional bricolage occurs within the multiple co-existing institutions, but these institutions then form the socially embedded reality of the institutional bricolage.

Legal pluralism and institutional bricolage are alternative conceptual models of the similar institutional phenomena, sharing many characteristics. As discussed in Section 2, the applied pragmatist viewpoint supports this type of perspectivist, multi-faceted orientation. This dissertation prefers the use of institutional bricolage, as it emphasises more the interlaced, dynamic process nature of the whole local socio-cultural environment, which is a central subject of the appended articles.

In water governance and development contexts, the existing institutional bricolage literature mainly considers either local actors and communities (Gutu et al., 2014; Rusca et al., 2015; Rusca and Schwartz, 2014; Ingram et al., 2015) or local natural resources management institutions (Gutu et al., 2014; Rusca et al., 2015; Rusca and Schwartz, 2014; Verzijl & Dominguez, 2015). Furthermore, some studies on institutional bricolage have focused on the operations of a donor agency (Jones, 2015) or governmental structures (Sehring, 2009; Funder & Marani, 2015).

3.2.2. Individuals as bricoleurs

Institutional bricolage has an intersubjective and socially embedded viewpoint on individuals. The viewpoint draws from Mary Douglas (1987) and Claude Levi-Strauss's (2004) concept of *bricoleur*, but with even stronger emphasis on

pragmatic problem solving by individuals. People may act as bricoleurs to solve everyday problems in their socio-cultural institutional surroundings.

Bricoleurs use whatever is at hand and recombining the available stuff together in new ways and for new purposes (Cleaver, 2002; Sehring, 2009). This becomes evident in Cleaver's description of institutional bricolage as 'a process in which people consciously and non-consciously draw on existing social formulae [...] to patch or piece together institutions in response to changing situations' (Cleaver, 2012:45). Local actors (Ingram et al., 2015; Verzijl & Dominguez, 2015), researchers (Merrey & Cook, 2012), and government officers (Funder & Marani, 2015) have recently been portrayed as bricoleurs.

In reference to Pierre Bourdieu's concept of *habitus*, emphasising how the socially embedded conscious and unconscious habits and routines shape people's practices (Bourdieu, 1986), institutional bricolage highlights that people also draw on social formulae through institutions to transform events into opportunities (Cleaver, 2012:38-39). This strongly links institutional bricolage with pragmatist thought and its understanding of knowledge production as a means of practical problem solving.

3.3. Capabilities approach

3.3.1. Human development and capabilities

The capabilities view of individual development takes the theoretical viewpoint from the institutional level to the sphere of individual lives and experiences. The capabilities approach is explicitly applied in Article I, but its central themes are considered implicitly in all the appended research articles and in the findings of the dissertation. This view focuses on human development.

Human development is a process of expanding human possibilities and opportunities (UNDP, 1990). It is based on the view that investing in people's education and health is the most effective way of achieving comprehensive socio-economic development (Fukuda-Parr, 2011). In international policy making, human development is one of the cornerstones of the United Nations Development Programme, including the Millenium Development Goals, Sustainable Development Goals, Human Development Reports (Fukuda-Parr, 2011), and Human Development Index (Alkire, 2005; Fukuda-Parr, 2003).

The human development paradigm owes its principles to the capabilities approach philosophy, originated by the Indian philosopher Amartya Sen in 1989 (Fukuda-Parr, 2003). The capabilities approach asserts that a person strives for a good and valuable life, and the human development paradigm argues that this should be in the focal point of development. The basic idea of the capabilities approach is the focus on individuals' effective *de facto* capabilities of achieving the kinds of lives and freedoms they have reason to value. Capability is seen as

an individual agency to do something (Sen, 2011: 19), strongly linking the capabilities approach with other agency-centred perspectives.

'The capabilities approach evaluates policies and other changes according to their impact on people's capabilities as well as their actual functionings. It asks whether people are able to be healthy, and whether the means or resources necessary for this capability, such as clean water, adequate sanitation, access to doctors, protection from infections and diseases, and basic knowledge on health issues, are present. It asks whether people are well-nourished, and whether the means or conditions for the realisation of this capability, such as having sufficient food supplies and food entitlements, are being met. It asks whether people have access to a high-quality education system, to real political participation, and to community activities that support them, that enable them to cope with struggles in daily life, and that foster caring and warm friendships.' (Robeyns, 2016: Section 2.3).

Martha Nussbaum has outlined Sen's viewpoints further towards a theory of justice by defining the basic capabilities that are supposedly common to all people, and that should arguably be provided to everyone (e.g., Nussbaum, 2011). This dissertation, however, holds to a Senian interpretation of the capabilities approach.

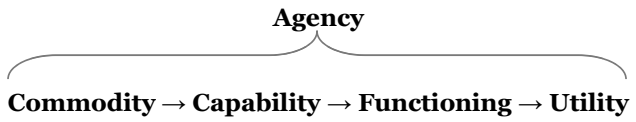
3.3.2. Positioning the capabilities approach

Sen distinguishes the capabilities approach from other theories in a few ways. First, he stresses that economic decisions always have a moral value basis, fully in line with political ecology and pragmatism. Sen thus play a part in the reintroduction of the classical economics (e.g., Adam Smith) and moral philosophy viewpoints to the socio-economic discourses (Putnam, 2002:48-50; Clark, 2005). For instance, Sen considers that social change should occur through democratic discussion. This idea links with pragmatist approaches, especially that of John Dewey (e.g., Alhanen, 2013). This blurring of hard economics with moral considerations links Sen with the pragmatist viewpoints employed in this dissertation that stress the collapse of dichotomies such as that of hard facts and values, or economy and society (Putnam, 2002:48-50).

Second, Sen (2011) sees development as a process that goes beyond the ideas of establishing perfectly just institutions. He (2011) argues that we should start improving our lives from the current, actual situation rather than from a theoretical 'social contract' (a tradition represented by Thomas Hobbes, John Locke, Jean-Jacques Rousseau, and John Rawls) or ideal rules of a perfect society (Sen, 2011). Sen prefers the view that sees development as a process of enhancing of genuine social choices, rather than to a degree of externally defined 'utilities' (Bentham, Mill), 'resources' (Ronald Dworkin), 'needs' (Thomas Robert Malthus), or 'primary goods' (John Rawls). This process view of society echoes well with the pragmatist viewpoint.

3.3.3. Core ideas and concepts

The key distinction of the capabilities approach is between the means and ends of well-being and development: The ends have substantial importance for an individual or a group, whereas the means have instrumental value in achieving the ends (Robeyns, 2005). Sen identifies the relations of these concepts as follows (cf. Clark, 2005):



The key concepts in the capabilities approach are accordingly:

- *Agency* is one's ability to pursue goals that one has reason to value (Alkire, 2005). Agency and freedom are closely interlinked as they reinforce each other (Sen, 1999:1-4; Ibrahim, 2006).
- *Commodities* are resources that enable capabilities in different ways for different individuals depending on one's personal characteristics, properties, and agency;
- *Capabilities* are a person's or groups' effective abilities, freedom of choice, and valuable opportunities to achieve valuable functionings and lifestyles (Sen, 1985; 1999). A *capability set* is the set of real attainable opportunities that a person possess (Alkire, 2005). Capabilities do not include freedoms and opportunities that one might legally or theoretically hold but that lie beyond reach in reality (Alkire, 2005);
- *Functionings* are a person's or group's realised beings and doings. Sen describes a functioning as 'an achievement of a person: what she or he manages to do or be' (Sen, 1985:10). The distinction between capabilities and functionings is between realized and effectively possible (Robeyns, 2005).
- *Utility* is the valuable end goal for an individual or group, such as human flourishing, or an enjoyable, meaningful, happy life.

The capabilities approach refers to a tradition that values individual freedom[6]. It states that whether people do or do not have valuable options is significant: The famous example by Sen (1999:75) is that of a starving and a fasting man - even if the nutritional state of the two is the same, the fact that fasting is a choice not to eat should be recognized.

[6] But it should not be confused with the large variety of other political and philosophical meanings of 'liberal' (Robeyns, 2005). It is notable that although the approach embraces ethical individualism, it does not rely on ontological individualism (Robeyns, 2005). It recognises and accounts for the influence of social institutions, as well as environmental factors, through the analysis of capabilities and functions.

'If nothing the nature of human lives, we have reason to be interested not only in the various things we succeed in doing, but also in the freedoms that we actually have to choose between different kinds if lives. The freedom to choose our lives can make a significant contribution to our well-being, but going beyond the perspective of well-being, the freedom itself maybe seen as important. Being able to reason and choose is a significant aspect of human life' (Sen, 2011:18).

Development is in this view seen as expansion of freedoms: The expansion of available capabilities expands the person's effective freedom to live a valuable life. Therefore, the concept of development must recognise both actual achievements (functionings) and effective freedom (capabilities). This expansion of effective freedom is then the normative goal of development for the capabilities view (Sen, 1999).

3.3.4. Capabilities approach in interventions

Capabilities research emphasises the social embeddedness of development interventions. Frediani et al. (2014) argue that the capability perspective on development projects would offer a broad vision that acknowledges multidimensional individual well-being and the nature of poverty and social exclusion. Ferrero & Zepeda (2014) criticize the inflexible results-based project management approaches that do not consider development projects as social learning organisations or evolutionary processes. They follow the pioneering work of Mosse on a 'process approach' (1998).

Many researchers in the human development research field emphasise that development projects work as catalysts that trigger positive changes (Frediani, 2010; Castillo, 2014; Ferrero & Zepeda, 2014; Frediani et al., 2014). These views also capture the rationales of adaptive governance (Section 3.1.2) and fostering institutional bricolage (Section 3.2). Development projects need to engage with the local asymmetries of power and pursue the institutionalisation of operational spaces that foster socially fit and sustainable practices of development that can expand individual freedoms (Frediani, 2010; Frediani et al, 2014). For instance, Ferrero & Zepeda (2014) suggest a process freedoms-oriented approach to development project management, approaching the adaptive governance viewpoint. They argue that development projects could work as catalysts for shared synergies, recognition and collaboration that trigger positive changes (Ferrero & Zepeda, 2014). This also very much resembles the concept of 'adaptive capacity' (Section 3.1.2), 'capability space' (Frediani, 2010; OECD, 2015:3), or 'dynamic capacity change' (Rautanen, 2016).

4. FINDINGS

The findings address the set research question through analysing the specified sub-questions. SQ1 regarded the challenges arising from social embeddedness for interventionist implementation of development. The findings below argue that much of socially embedded reality comprises of social spaces beyond regulatory governance discourses and institutions. These spaces are often characterised by multi-purpose institutional *bricolage* practices between individuals. For SQ2, the findings convey that these spaces are often more prevalent than the regulatory institutional spaces or governance discourses on the operationalised implementation processes. This has several consequences to the implementation processes.

SQ3 reflected the contribution of individuals' acts and interactions to the local water management and implementation processes. The findings highlight individuals' interactions in the social spaces outside regulatory governance discourses and institutions. The empirical evidence conveys that the ability to apply practices beyond regulated contexts has a more direct influence than the forms of the directive governance discourses or institutional modalities. They have thus a decisive role for the interventionist outcomes.

4.1. Article contributions

4.1.1. Contribution of Article I

Article I contributed to exploring the above-mentioned questions by examining domestic water-use behaviour changes in several villages in Far West Nepal. The study analysed a rural village water resources management intervention that initiated reforms in local water institutions and individual behaviours. The study started from the observation that some of the initiated water-related behaviour changes had been much easier to realise than others. The article then analysed why this was the case. The study applied the capabilities approach to look at the opportunities to choose behaviours that individual residents regarded as valuable.

The findings emphasised that managing local behaviour changes was the core challenge for the implementing practitioners. The imposed behaviour changes were easy to realise only if they visibly and likely benefitted the individuals, and if they did not alter the existing cultural customs. The existing local cultural conventions restricted some of the initiated changes in the studied case. This was

especially the case if the behaviour change severely contradicted communal traditions, family customs, or dealt with cultural taboos. In these cases, individuals, menstruating women as a particularly critical group, had no opportunity to choose whether or not to participate in the evident, community-wide customs. They would have likely been excluded from their family or their community if they refused to participate. The community tradition represented a local informal institutional hegemony. Both maintaining and changing the local customs, even if only imposed upon women, required explicit support from the local male elites (such as teachers, priests, and village elders) from influential local informal groups and formal committees, and from adult men as an informally decisive collective, reflecting the male-dominated culture. This exemplifies how informal institutions rule the local reality instead of formal institutions.

In reference to the RQ, the empirical evidence suggested that the local customs and traditions had a pronounced impact on the imposed development outcomes. Much of the working environment was informal and beyond the impact of regulatory efforts of the intervention. The local traditional ways of doing often overcame the imposed behaviour changes despite the significant efforts to change behaviours locally.

4.1.2. Contribution of Article II

Article II contributed to exploring the research question by analysing institutional realities of water user associations at the village level. The examined water users' committees (the executive decision-making boards of the respective associations) had relatively recently been established with the support of a development intervention, and run by an elected representation of local residents[7].

The research exposed how the formal institutional design of the project and the socially embedded, informal management processes were interlaced locally. The local institutional management strategies involved a notable degree of informal and improvised activities besides the planned formal responsibilities imposed by the development intervention. The committees did not habitually follow the designed operation modes or the formal water users' rules and regulations. Instead, they followed more applied, informal, and locally fit practices in the community management institutions[8].

The article conveyed that both formal and informally applied management practices were crucial for the functionality of the water users' associations. The

[7] Such a community-based management mode is a deliberate strategy by the government administration to organise the basic water supply and sanitation services in rural areas. The committees thus have a formal and official status. The committees established by the examined development intervention were autonomously responsible for the operation and maintenance of the village-wide water supply and irrigation schemes for the first time in history in rural Far West Nepal.

[8] For example, the research surveyed the ways in which the users' committees arranged the water tariff collection and financed their operation. They addressed the poor accessibility to markets and banks by acting as a local cooperative bank that invests the collected water fees as micro-loans within the home village. Such alternative, informal solutions seemed to be essential for the financial stability of the institutions, particularly in the most remote and poorest communities. Furthermore, the article mentioned, e.g., the donor preference of the studied communities as a bricolage occurrence in more traditional sense, i.e., in the sense that people take the opportunities and use the available opportunities that they find in their environment.

study found that the socially embedded, informal arrangements often provided the only potential way to maintain institutional operations in locally apt ways. This was the case especially in the remotest localities. Without the observed informal arrangements, the operation and maintenance would have been practically impossible. The institutions would have become less socially apt. The lack of resources, capabilities, and governance support compelled the local institutions to search for alternative, improvised solutions.

However, the improvised local management modes also often included both 'bad ideas' and 'bad executions' that posed risks to the scheme maintenance or institutional functionality. The examples given in the article included different forms and degrees of elite capture, gender discrimination, and risky water scheme operation and maintenance practices.

The article outlined ways in which the institutional bricolage processes could be better managed. The project documents did not recognize the informal and improvised modes of local management, although the implementation reality was that the project personnel acknowledged, encountered, and worked with both formal and informal institutional practices every day. This made the project modalities and the reality discontinuous. The study suggested acknowledging the inevitably applied informal local operation modes in the project documents. This would have enabled more conscious encountering and steering of the socially embedded local practices by project personnel.

The second suggestion was to consider conscious triggering of such local 'bricolaged' operation modes that were desirable for project targets[9]. Bricolage 'just occurs', but the question is how it may occur. Every institution is subject to bricolage, but the ways in which it manifests is related to the social context in which it occurs. The quality of the phenomenon can be thus carefully triggered towards desired direction by purposefully modifying the social context.

The article suggested that this would happen in practice by consciously generating facilitated, locally legitimate, inclusive, and inspiring spaces for the institutional bricolage processes by project personnel. The article outlined 'organic institutional design' that would synthesise the institutional design and bricolage approaches (Table 2). One proposal for the hands-on implementation of new institutions and schemes was to start with the planned institutional design and then gradually allow and encourage local applications while the implementing project personnel are still present for facilitating them.

Consequently, the study demonstrated that informal and applied management practices existed regardless of the imposed institutional designs, and beyond regulatory governance. At the local level, institutional bricolage can be steered towards desirable direction by creating enabling spaces. This is based on the idea that the ways in which bricolage manifests itself depends on the surrounding socio-cultural environment. The quality of the phenomenon could therefore be carefully triggered towards desired direction by purposefully mod-

[9] The project targets in the analysed case included social inclusion, gender equality, and institutional sustainability through certain fixed ways of operation, all partially externally imposed objectives to local communities.

ifying the social context. This is particularly important to prevent the unsustainable, authoritative, and segregated bricolage occurrences from happening. The local people's ability for problem solving and constructive practices outside the regulated space of governance was crucial for local institutional functionality.

Table 2: Synthesising the objectives of institutional design and bricolage approaches.

Conducts driven by...		**...advancing sustainable natural resources management?**	
		Less	**More**
...quest for understanding social institutional realities?	**Less**		Institutional design
	More	Institutional bricolage	Organic institutional design

At national and international levels, the article considered that broader understanding of the bricolage as a phenomenon could result in modification of regulatory governance methods from regulative towards facilitative governance. This change allows the facilitation of bricolage at local levels by local practitioners.

4.1.3. Contribution of Article III

Article III put the analysis a step closer to individuals by scrutinising the influence of the local implementation personnel on intervention processes and outcomes. The study described the challenges the implementing practitioners encountered in their everyday work in the development intervention.

One of the contributions of the article was the depiction of the implementation process from the implementing project personnel's viewpoint (Figure 4). The study examined the practitioner's relations with three institutional domains: The communities, in which they largely conduct their work; the project modalities that should steer their work; and the local tiers of government as their official working partners. Furthermore, the study investigated personal motives and values.

The study observed the personnel collaborating with these institutional domains often in rather informal and improvised ways. Much of the personnel's work had to do with facilitating local behaviour changes. The personnel often addressed the behaviour change and social mobilisation challenges in the communities through informal interactions. This involved finding culturally appropriate and socially acceptable ways of implementing new customs and behav-

iours with limited resources in often rather conservative environments. The personnel reportedly felt overwhelmed by the task, feeling that their capacity and project resources were too limited for coping with local challenges.

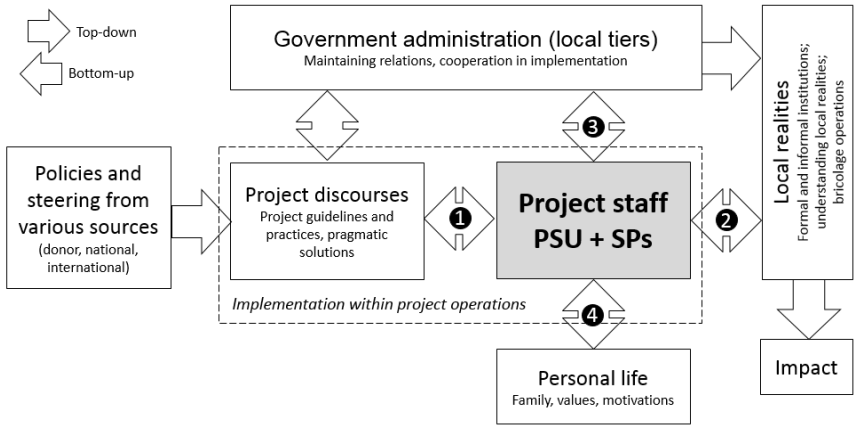


Figure 4: Interventionist implementation process from the implementing personnel's viewpoint.

The study emphasised the significance of practices and interactions between practitioners and the project partners and other stakeholders. The project personnel were continuously involved in concurrent formal and informal cooperation, and informal conflict with the local government tiers and with individual officers. The personnel got significant backing from the stated project modalities for their work; but the same regulations complicated their cooperation with the local district and village-level institutions by stalling some of the standardised local ways of cooperating[10].

The staff enabled the functioning of the project in the informal, unregulated social contexts through improvised everyday problem solving. These applied practices went beyond the regulatory discourses of governance that direct the project, but they still were enormously significant for the project functioning in practice.

The article presented that functional interactions are crucial for local implementation and institutional functionality, in line with the contribution of Article II. Their work considers both regulated governance settings and more informal, unregulated settings. The work in more informal settings enabled social aptness and bottom-up problem solving in local institutions. The influence of local interactions to the implementation processes was in practice most often more direct than the influence of the institutional structures or regulatory discourses.

[10] Such as provision for extra allowances to project partners, or allowing potentially corrupted or in other ways suspicious ways of doing, at least in Nordic standards.

4.1.4. Contribution of Article IV

Article IV contributed to exploring the research question by developing a systematic, participatory research method for analysing the ways in which development project personnel transform external steering discourses into internal project discourses and actual project operations. The analysis enabled visualisations of positions and interrelations of the key discourses within organisations in a transparent way. The method enabled comparisons between the discourses, and between the officially stated project objectives versus the observed, actual discourse hierarchy.

One of the article's conceptual contributions was the detection and visualisation of tensions between the regulatory models of governance and the socially embedded implementation reality (Figure 5). The analysis highlighted the project practitioners' role in addressing these discursive tensions within the project organisation.

The findings of the analysis demonstrated the ways in which the main project discourses interacted with each other, leading to distinct hierarchical groups and clusters of discourses within project operations. The clusters indicated partially overlapping roles and strong mutual synergies between the internal discourses. The found discourse hierarchy corresponded with the observed project operations conducted by the personnel. The project personnel must therefore have a significant role in interpreting and organising the given discourses into a functional whole that works at the operational level in practice.

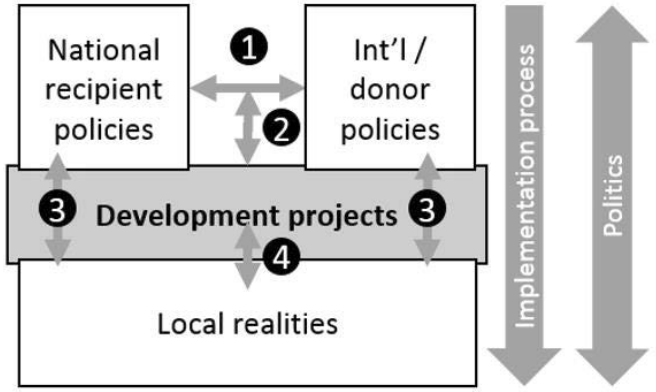


***Figure 5: Identifying four types of tensions regarding the implementation process*[11].**

The article discussed the ways in which organisations could utilise the analysis in planning, team formation, monitoring and supervision. This understanding supports implementing managers to meet with external policy requirements, fit with local realities, and improve policy and project outcomes.

[11] (1) The interplay between the international, donor, and national recipient policies and objectives. (2-3) The steering policy discourses, originating from various sources, may not reproduce a complementary set at the project or local levels. (4) Another possibility for tension occurred between the intervention discourses and their application to the local reality.

The article concluded that while the regulatory policies were important to set the direction for development interventions, the project organisation had a dominant role in applying, construing, and organising the discourses within the intervention. The minds of the project personnel were decisive in transforming the discourses to fit the operational context. The practitioners therefore have great influence on the ways in which the variable discourses interact and manifest themselves in praxis.

4.2. Summary of findings

4.2.1. SQ1: Development beyond governance

Answering SQ1 provides a description of social embeddedness as an implementation challenge. Governance regulates local realities through discursive steering and institutionalisation. Undoubtedly, regulatory governance is crucial as it provides the objectives and institutional designs, and it allocates resources to the implementation process (Articles I-IV). This dissertation, however, argues that this is only the other, better-acknowledged side of the coin.

A short answer to SQ1 is that social embeddedness makes interventionist implementation so challenging because the regulatory approach to governance cannot perfectly comprehend or control the diversity, complexity, and blurriness of the social spaces in which the implementation takes place. The above-discussed findings suggest that social reality involves three unattainable characteristics for the governance approaches: Complete fit, complete extension, and complete dominance[12] (Figure 6).

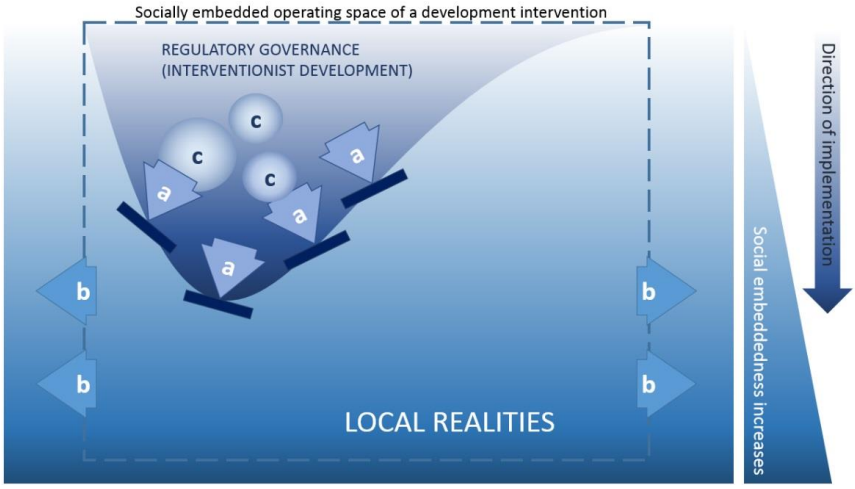


Figure 6: Illustrating the three unattainable characteristics of the regulatory governance approach within implementation processes. (a) incomplete fit, (b) incomplete extension, and (c) incomplete dominance.

[12] These features resemble Peirce's three unattainable characteristics of scientific knowledge, presented in Section 2.1.1.

The figure presents the space that is institutionalised by governance, and the more unregulated, non-institutionalised social space that covers the majority of the total operating space.

a) Incomplete fit: Context-specific social complexity and diversity inevitably extends deeper than the capacity and influence of regulatory governance interventions;
b) Incomplete extension: Social space inevitably spreads beyond the capacity and influence of regulatory governance interventions;
c) Incomplete dominance: the regulatory capacity and resources are inevitably to a degree insufficient for coping seamlessly with socially embedded environs.

The first characteristic is incomplete fit (a): The regulatory discourses remain inevitably to a degree too generic and nonspecific for directing context-specific implementation processes without further interpretation (Article IV). Much of implementation occurs in variable local, less institutionalised social environs (Article I) which largely remain unregulated by external governance (Articles II–III). They are thus beyond the discursive instructions or formal institutional influence.

The second characteristic is incomplete extension (b): The social space inevitably extends beyond the means of regulatory governance interventions. The numerous institutional bricolage management modes of the local water users' institutions demonstrated this argument (Article II). The work of the implementing practitioners also involved lots of informal, even improvised practices and activities beyond the regulatory instructions (Article III).

The third characteristic is incomplete dominance (c): Imposing effective regulation in practice would require massive resources to overcome the existing institutions governing the local social trajectories (Article I). The empirical evidence from the articles implies that the originators of the interventionist development could not provide enough of such resources (articles II and III). The implementing practitioners felt insufficiently equipped to cope with these currents (Article III). The implementation therefore remains strongly influenced by local formal and informal social currents, such as local customs (Article I) and groups of elites (articles I and II), or administrative customs (Article III).

4.2.2. SQ2: Importance of unregulated spaces

Answering SQ2 provides understanding about the water service facilitation and intervention implementation challenges. In short, discursive concepts may address conceptual problems, but concrete problems that occur in reality must be addressed by concrete hands-on practices in real interactions. In other words, the characteristics of the acts and interactions are important, not so much the exact words and concepts through which the interactions occur.

The findings emphasised that a large share of the implementation and local institutional operation occurs in social spaces beyond the direct influence of the regulatory governance discourses and institutions. The informal and unregulated interactions in these spaces were crucial for the development processes and governance outcomes.

The research characterised multiple action situations within this largely less-regulated, less-institutionalised, more informal space. Article I described how the local cultural traditions overpowered the externally imposed behavioural changes and how the actualised changes always required wide support from local elites. All the locally achieved behaviour changes were intrinsic rather than exogenous in the end. Articles II and III showed the partially informal ways of managing local water institutions and implementing the project. These less regulated, informal interactions had a more direct influence on the management processes and outcomes than the institutional forms. Article IV demonstrated how the project personnel collectively determine the meanings and hierarchies of the steering discourses within the project operations.

The dissertation proposes potential solutions for enabling water services. The first proposed solution is to comprehend the importance of the existing unregulated social spaces and the need to find ways to influence these spaces. Article II argued that every institution is subject to bricolage, but the ways in which it manifests are related to the social context. The quality of the phenomenon could therefore be carefully triggered towards desired direction by purposefully modifying the social context. At national and international levels, broader understanding of the bricolage as a phenomenon could result in modification of regulatory governance methods towards facilitative governance. This type of governance acknowledges and allows the facilitation of bricolage at local levels by local practitioners. Another solution is to comprehend the decisive role of the quality of individual interactions, considered more in detail in the next section.

4.2.3. SQ3: Role of individual interactions

Answering SQ3 analyses the role of individuals' acts and interactions. Figure 7 presents a simplified graphic of the social operating space of a development intervention. The figure presents the space that is institutionalised by governance, and the unregulated, non-institutionalised social space that covers the majority of the total operating space. Articles I-IV demonstrate that individuals play a dual role in this setting. The silhouettes in the figure above represent the two roles individuals possess as:

- agents of regulatory governance and formal interactions
- agents of locally originated interactions, and bottom-up problem solving outside regulatory governance

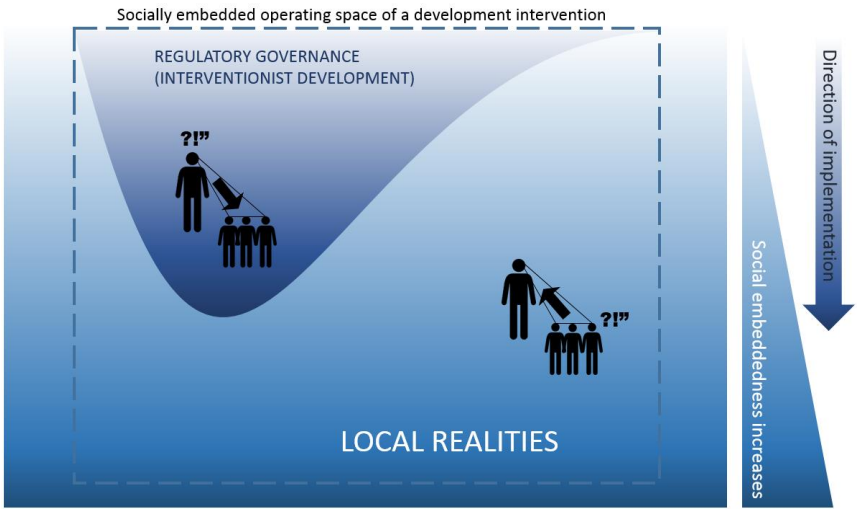


Figure 7: Illustrating the two roles and two different types of interactions individuals possess within the implementation processes.

First, individuals play agents of regulatory governance and formal interactions, e.g., as implementing practitioners or water users' committee members (Article II). The implementing practitioners have a powerful role in organising and interpreting the regulatory discourses within the implementing organisation (Article IV), applying them in practice (Article III), and triggering local changes in line with the requirements of the dominant governance approach (articles I and II). The articles conclusively argued that the influence of the practitioners' contingent interactions on the implementation processes was more evident than the influence of the regulatory governance structures or discourses.

Second, individuals also cope with the informal, unregulated settings through interactions that are beyond the control of regulative governance. These interactions are crucial for development processes and outcomes, yet remaining less acknowledged by the research literature. Articles I-IV argue that in socially embedded, unregulated settings, individuals do not primarily act as agents of governance, but as facilitators of bottom-up problem solving processes of local origin. This problem solving often occurs under contradictory requirements of governance and the local realities. These properties make the individuals *bricoleurs*, using whatever is at hand for solving problems. These somewhat informal settings are very common working environments for the studied individuals (articles I-III). In conclusion, functional contingent interactions are required to make successful decisions and prioritisations and to take responsibility in situations where governance support and guidelines fall short.

5. DISCUSSION

The first subsection discusses the academic implications of this dissertation. It considers the findings with the theoretical literature, with a special focus on practical and academic novelties. The second subsection discusses the methodological contributions of this dissertation, based on the understanding derived from the methodology section. The third subsection provides philosophical novelties of this dissertation to the governance literature by discussing the topic of intersubjective governance.

5.1. Findings vis-à-vis the theoretical literature

Governance-oriented viewpoints on development will remain the most dominant perspective on institutions and on questions of political ecology. The benefits of regulatory governance approaches enjoy massive empirical support (e.g., Cox et al., 2010). However, the findings emphasised that practical problem solving often occurs in socially embedded places beyond the influence of regulatory governance.

The governance literature aims at coping with the social embeddedness problem through increasing institutional learning (Olsson et al., 2006; Pahl-Wostl, 2009; Pahl-Wostl et al., 2013), adaptive capacity, and adaptive governance (Mosse, 1998; Dietz et al., 2003; Walker et al., 2004; Folke et al., 2005; Pahl-Wostl, 2009; Cook et al., 2011; Koontz et al., 2015; Chaffin et al, 2016). Similarly, the capabilities approach literature considers development projects as evolutionary social learning organisations (Ferrero & Zepeda, 2014; Frediani et al., 2014). These considerations are valid, but the problematic goes beyond the lack of adaptive governance or institutional learning.

An academic contribution to this discussion is the analytical characterisation of the governance processes and the limits of governance approaches. The findings analysed why the regulatory approach to development could not perfectly comprehend or control the socially embedded spaces. The findings emphasised that a large share of the operational implementation and local institutional operation inevitably occurred in the unregulated social spaces, making them crucial for the studied implementation processes.

The dissertation also studied the role of individuals amidst these processes. The bricolage literature, applied in many appended articles, considers individuals as bricoleurs (Cleaver, 2002; Sehring, 2009; Merrey & Cook, 2012; Ingram et al., 2015; Verzijl & Dominguez, 2015; Funder & Marani, 2015). This dissertation contributes to this literature by analysing the implementing practitioners

as bricoleurs for the first time (Article III), and more generally by acknowledging the importance of bottom-up problem solving, informal institutions, and interactions.

In the adaptive governance literature, Nooteboom (2006) argues that individuals need to first understand the local operative setting, and they should also be able to operate informally for local problem-solution outside governance purposes. Only then can they operate effectively in local, unregulated institutions (Olsson et al., 2006; Pahl-Wostl, 2009; Pahl-Wostl et al., 2013). These ideas are in line with the findings of this dissertation on the dual role of the individual stakeholders.

Many researchers in the human development research field emphasise that development workers could work as catalysts that trigger positive changes (Frediani, 2010; Castillo, 2014; Ferrero & Zepeda, 2014; Frediani et al., 2014). The bricolage literature has similarly examined possibilities for facilitating institutional bricolage processes (e.g., Merrey and Cook; 2012). In the context of Nepal, Gerwel-Jensen et al. (2015) inspected the possibility to 'trigger' sustainable changes in local behaviours, and Rautanen (2016) has similarly argued for dynamic capacity building for ensuring sustainable water and sanitation services.

Castillo (2014), representing the capabilities literature, sums up the ideal role individuals may have amidst development processes: 'When project practices constrain the opportunities and felt competence of individuals to help themselves, the 'development' or change promoted by those projects will not be sustained. If instead project planners and managers consciously select autonomy-supportive practices and adapt them to specific contexts, projects will have greater chances of furthering sustainable human development.' The quote stresses the importance of actual practices, individual capabilities, and intersubjective interactions for the implementation of development. Institutions can be organised in several ways, but they remain empty without people occupying them.

The academic implication provided by the dissertation in this regard is the characterisation of the individual interactions, and the dual role individuals play in this process. The second role individuals possess as agents of locally originated, bottom-up problem solving outside governance remains less acknowledged in the research literature. Functional contingent individual interactions in less-regulated social spaces are more evident perquisite for practicing successful operative implementation that the regulatory institutional or discursive structures.

5.2. Science as practical, multi-perspective problem solving

This dissertation applied a pragmatist philosophy of science (Section 2.1). Pragmatism emphasises real-world actions, problem-solution, and knowledge production (Pihlström, 2008: 49). The dissertation followed this line of thought by analysing the problematic of the research context from multiple institutional and individual perspectives from several theoretical viewpoints at multiple levels in a systemic manner (see Figure 3 and Section 2.2.). The research was *cross-*

disciplinary (see Keskinen, 2010), as it involved influences from environmental studies, political ecology, development studies, governance studies, institutional theories, organisational and management studies, and social and political philosophy. The related specific theoretical themes regarded approaches to environmental governance, critical institutionalism, and the capabilities approach (Section 3). They all produced possible frameworks for alternative interpretations, demonstrating the cross-disciplinary nature of this research, and allowing comparisons and critical reflections. The research also considered several scales from institutional governance to local communities, and individual behaviours and agencies (Section 1.2.2). This spectrum of scales opened up the research context in a multidimensional fashion.

The multi-perspective orientation was in many ways evident in the research. Article I criticized critical development studies from a capabilities viewpoint. Article II criticized governance and institutional approaches by showing that both institutional design and critical institutional approaches miss parts of the big picture. Article III continued this line by demonstrating the importance of individual capabilities and informal interactions. Article IV demonstrated the weakness of discursive steering of regulatory governance, and the individual influences on the implementation process in this regard.

In line with pragmatism, the author aimed in this dissertation at connecting practical actions to academic science. The practical research setting and the human development oriented basis of the dissertation justified the chosen perspectives. It is, however, important to understand that, as always, chosen viewpoints inevitably emphasise certain aspects of reality over some others. Other valid points of departure may have displayed as valid, but potentially differing results. For instance, a more general-level water governance study would not have exposed the local realities and informal interactions as much as the chosen research strategy, but maybe something else instead. The finiteness of one's perspectives and the resulting alternative coexisting interpretations are fully in line with the employed pragmatist philosophy of science (see Section 2.1.).

Overall, the dissertation hopefully demonstrates that science does not need to be overly theoretical, difficult, or far from real-world praxis. As a result, science can remain grounded on actual empirical evidence and become less dependent on fixed theoretical frameworks and conceptual jargon. Science can also be practically beneficial and consider ordinary life. This balances empirical evidence and theory building, linking them together in natural ways. The systemic comparison of various viewpoints makes observations and theoretical framing less biased and more open to various alternative ideas. The cross-disciplinary, multi-perspective orientation with strong linkages to the 'real world' requires and promotes broad, unprejudiced attitudes towards looking at how the world works.

5.3. Governance in intersubjective relations

While conducting fieldwork in Nepal, one project practitioner made an important statement: If the political concepts that are set to steer the intervention change (as they sometimes did, following tendencies in the donor or recipient governance), the project workers simply change the project documents so that they point out how the project already addresses these new discursive requirements in practice. This statement reflects the problems of the institutional and discursive steering of implementation: Governance primarily occurs in the practical, socially embedded interactions between people. As stated above, discursive concepts may address conceptual problems, but concrete problems that occur in reality must be addressed by hands-on practices in real interactions.

The given example highlights the findings of the dissertation. Much of governance in action occurs in often rather informal and unregulated interactions and individual relationships. The formal institutions, rules, and regulations may set the scene, but people make the institutional structures, and actor-networks function and evolve over time through interactions. The wordings, concepts, and organisational forms are not at the core of making change. In other words, the characteristics of the interactions are important, not so much the exact words and concepts through which the interaction occurs. The core lies in the interpersonal and inter-institutional interactions, and this makes them so important for governance.

This understanding links the institutional, governance, and individual agency oriented theoretical themes of this dissertation together: All of them are ultimately products of interactions. At the grassroots level, one should focus on interactions, not only at the institutional, but also at the interpersonal level. The findings highlighted that the ways in which we understand formal and informal individual interactions define much of what governance is essentially about at the practical level.

The pragmatist philosophy and the applied theoretical literatures have much say about improving the governance of these interrelations. The pragmatist philosophy of the dissertation follows a *synechist* view of individuals and their interrelations. The pragmatist Charles Peirce first proposed the concept of synechism. It holds that the world is a non-dualist, dynamic continuum and that individual identities are crafted in interaction with this constantly changing continuum (Pihlström, 2015). John Dewey has also been on the front line in advancing this intersubjective view of the individual and furthering the non-dualist interpretation of the world (see Alhanen, 2013; Pihlström, 2015). This interactionist view states that a subject cannot be isolated, as it originates nothing and is not the absolute origin of its own ideas.

This idea of a flickering, intersubjective individual identity is also evident more broadly in various traditions of thought. In the East, the ancient Buddhist, Hinduist, and Taoist traditions have considered the flickering ego that is embedded in interaction within the dynamic socio-environmental world. Various philosophers have considered and furthered similar views, from Heracleitus in the antiquity to a number of phenomenologists and existentialists including Martin Heidegger and Maurice Merleau-Ponty, and French post-structuralists

such as Michel Foucault, Michel Serres, Gilles Deleuze, Jacques Derrida, Pierre Bourdieu, and Bruno Latour in the 20th century (see Helin et al., 2014). In conclusion, a massive amount of thinking suggests that the individual self emerges in interactions.

Many capabilities-approach scholars have also internalised the idea of synechism. They suggest that we cannot distinguish a truly individual agency from social influences. Robbins (2011) describes the idea in detail:

> *'People do not make up their mind about what is right, good, proper, and appropriate and then act it out. Instead, they act out their social and political interactions in the world and these come to govern their selves.'*
> *(Robbins, 2011:75).*

In the capabilities literature, Amartya Sen (e.g., 1999) has continually considered that individuals interact with and participate in the social and political processes of their societies as socially embedded agents. Capabilities, freedoms, and agency are produced, even constituted, through embedded social relations (Smith & Seward, 2009). Structures constitute the individual agency, but individual agency can also alter social structures (Ibrahim, 2006).

Values are not simply a product of individual preferences; they are also an outcome of the social environment (Ibrahim, 2006). In other words, values underlie our actions as individuals, but individuals do not choose their values freely; they adopt the *zeitgeist* ('the spirit of an era') of their social surroundings. It is therefore the zeitgeist that fundamentally directs our values and visions, and this zeitgeist is constituted through all our interactions.

This shift in the understanding of the emergence of individuality in socio-ecological relations could change our everyday stance towards governance. Robeyns (2017) stresses that the 'standard common-sense view that we can make our own decisions fully individually is not applicable in most cases which concern the use of ecological resources' (Robeyns, 2017). As she highlights, the most critical change maker is the change in our own mind-sets. One crucial mind-set change would be the realisation the *synechist* process worldview. This improved understanding about how the world functions could lead us to comprehend that we finally should resume living in the limited space between the ecological and social boundaries of our world (Raworth, 2017). This knowledge should finally start steering our hearts, minds, and actions. Pihlström (2015: 165) writes:

> *'When we understand that our self depends on the interactions with other human beings, we also understand that we must relate with empathy and solidarity to these as much as interconnected others who may also hold differing viewpoints' (p. 165, translation by the author).*

A better understanding of how our identities and values emerge could thus bring guidance for such required ways of governing that would lead us towards a more valuable and sustainable future: a new zeitgeist.

6. CONCLUSION

The dissertation recognised practical ways to advance rural development in remote mountainous areas through water service institutions and infrastructure construction. The empirical research focused on the implementation of rural development interventions in the remotest and poorest Far Western Regions of Nepal, with a focus on local institutional development and water infrastructure.

The dissertation first acknowledged challenges in furthering water services development, identifying discounted social embeddedness as the foundational implementation problem. Implementing organisations based on regulatory governance faced these challenges in particular. Besides institutions and governance, the dissertation examined the contribution of individuals to the development processes and outcomes.

Methodologically, the dissertation demonstrated the pragmatist philosophy of science in action and emphasised the strengths of its multi-perspective orientation. The multi-perspective orientation prevented the emergence of overly narrow theoretical viewpoints and narrowly grounded results, and it enabled continuous triangulation and comparisons between different perspectives and viewpoints.

The novelties were threefold: First, the dissertation analytically described the pitfalls of social embeddedness. The regulatory approach to development could neither perfectly comprehend nor control the diversity, complexity, and blurriness of the social spaces in which the implementation takes place. The dissertation identified three corresponding governance challenges: incomplete fit, incomplete extension, and incomplete dominance of the social operating space.

Second, the findings emphasised that a large share of the operational implementation and local institutional operation occurred in social spaces beyond the direct influence of regulatory governance discourses and institutions. The dissertation found that they are still crucial for the development processes and governance outcomes. The conducted research characterised multiple action situations within this informal and unregulated institutional space.

Third, the dissertation acknowledged that individual interactions were twofold within this setting, individuals playing respectively a dual role as agents of governance and as agents of locally originated, bottom-up interactions outside of governance. The latter agency was less acknowledged but crucial for the development processes and outcomes. This problem solving often occurred under contradictory requirements of governance and local realities. Institutions and discourses can be organised in several ways, but in the end, the right people

interacting successfully in the right places at the right time make changes possible. Capacitating especially the local residents made the development processes more sustainable and permanent.

The dissertation proposed potential solutions to enabling water services in the research setting for further consideration: Acknowledging the importance of the existing unregulated social spaces for the implementation processes and outcomes would advance implementation and management processes. The second solution relates to the realisation of the dual role of individuals and the importance of their interactions. Individuals and the quality of their formal and informal interactions were crucial for governing water and local development in the developing, remote countryside.

This understanding about the fundamental nature of interactions for development processes links the institutional, governance, and individual agency oriented themes of the dissertation together: The consistent institutions and even ourselves are ultimately products of the interlaced, contingent interactions. At the grassroots level implementation, one should therefore focus on interactions, not only at the institutional, but also at the interpersonal level.

This dissertation ultimately highlighted that the ways in which we understand formal and informal individual interactions define much of what governance is essentially about at the practical level.

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The dissertation recognises practical ways to advance rural development in remote mountainous areas through the development of water service institutions and infrastructure construction. The research focuses on Nepal, and more specifically on the implementation of rural development interventions in the country's remotest and poorest regions where the influence of the central government remains limited.

The dissertation argues that acknowledging the importance of the unregulated social spaces advance the implementation and institutional management outcomes at the grassroots level. The dissertation highlights that the local molecular, contingent formal and informal individual interactions define much of what local water governance and the implementation of development is about in the developing remote, rural areas.

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