Norwegian University of Life Sciences
Faculty of Social Sciences
Department of International Environment and Development Studies

Master Thesis 2016
30 credits

Is Sustainable Development a Utopia? Norfund's Investment in a Hydropower Plant in Peru

Charlotte Østensen

Thesis credit page

The Department of International Environment and Development Studies, Noragric, is the international gateway for the Norwegian University of Life Sciences (NMBU). Eight departments, associated research institutions and the Norwegian College of Veterinary Medicine in Oslo. Established in 1986, Noragric's contribution to international development lies in the interface between research, education (Bachelor, Master and PhD programmes) and assignments.

The Noragric Master Thesis is the final thesis submitted by students in order to fulfil the requirements under the Noragric Master programme "International Environmental Studies", "International Development Studies" and "International Relations".

charlotte.ostensen@nmbu.no

Noragric
Department of International Environment and Development Studies
P.O. Box 5003
N-1432 Ås
Norway
Tel.: +47 67 23 00 00
Internet: https://www.nmbu.no/om/fakulteter/samvit/institutter/noragric

Declaration

I, Charlotte Østensen, declare that this thesis is a result of my research investigations and findings. Sources of information other than my own have been acknowledged and a reference list has been appended. This work has not been previously submitted to any other university for award of any type of academic degree.

Signature……..

Date……

Acknowledgements

Writing this thesis has been challenging and eventful. The professors at NMBU introduced me to many new affairs and my fields of interest have increased each semester. It was challenging to narrow down the research aims. Fieldwork in Peru and writing during six months was a true learning experience, and I learned very much about how to link theory and practice, and how to analyze from different point of views.

There are many people I can thank for helping me get this far; writing a master thesis. First I would like to acknowledge the professors at NMBU that inspired me to wanting to learn more and ask questions I never asked before starting my master program. This thesis would not have been possible without the help from people in Liple, Naván, Andajes, Huacho Sin Pescado, Churín and Lima in Peru. Thank you for your openness and hospitality. And thank you Professor Darley for answering questions wherever you are in the world. Thank you for guiding me through this process, and for encouraging me to set new goals and helping me achieve them. And thank you Caroline for using the very little free time you have to help me during the writing process. I appreciate it much more than you realize. Thank you Víctor for never stop believing in me. Most of all, I would like to thank friends and family for your patient and encouragement during this process.

Abstract

The Norwegian Investment Fund for Developing Countries (Norfund) was established by the Ministry of Foreign Affairs to reduce poverty in developing countries. Norfund is funded through Norway's development assistance budget and the Norwegian government has extended capital supply annually since 2009 due to increased need to focus on sustainable development. Climate change has become apparent and climate change mitigations are becoming included in business strategies and political policies. Consequently, sustainable development has become the mainstream form of development. Norfund's projects affect many people and more investments means that more people are impacted by their activities. In 2010 Norfund invested together with Statkraft, through their joint-venture SN Power, in Cheves hydropower plant in Peru. The main objective of this research is to examine the socio-economic impacts from the Cheves project in a sustainable development perspective.

Interviews with local population living in four of the directly affected communities provided information about their perspectives and revealed the impacts through people with first-hand experiences with the Cheves HPP project. Field work in Peru revealed that SN Power impacted many people through acquisition of land during the construction process. Three of four visited communities were negatively impacted due to loss of land, income and social conflicts. Nevertheless, one community experienced exclusively positive outcomes and this was solely due to implementation of social support programs and the absence of direct financial support. SN Power did not use economic capital to obtain land in this community and this resulted in improvement of social, natural, human and economic resources. The findings from this research underline the perception that sustainable development is a process focused on human's well-being and capabilities without compromising the nature's ability.

List of figures

List of tables

TABLE OF CONTENT

CHAPTER 1: INTRODUCTION

1 INTRODUCTION AND PROBELM STATEMENT

This thesis examines the socio-economic impacts from Cheves hydropower plant (HPP) in Peru from a sustainable development perspective. Norwegian companies have invested in Cheves and one of the investors is the Norwegian Investment Fund for Developing Countries (Norfund), which is owned and financed by the Norwegian Ministry of Foreign Affairs. Norfund invests to contribute to sustainable development through creation of profitable and viable labor in developing countries (Norfund, 2016a). Norfund invested in Cheves in 2010 together with Statkraft, through SN Power. Statkraft is a Norwegian state-owned company that develops renewable technology. Norfund and Statkraft established SN Power together in 2002 to create a company with interdisciplinary resources (SN Power, 2016). SN Power invests in international development project to contribute to sustainable development, and they approved construction of Cheves HPP in 2010 and invested 400 million dollars (SN Power, 2011b, p. 52). The power plant was finished in September 2015 and has an installed capacity of 168 MW with an expected average annual production of 834 GWh (SN Power, 2014, p. 52). According to national Peruvian news this generates energy to 100 000 families in Cheves (TVPeru, 2015). There are 14 communities directly affected by the power plant, and positive impacts that benefit the locals are important (SN Power, 2010b). Due to climate change and population growth measures that promote sustainable development are of increased focus, and environmental friendly approaches are on the political agenda in many countries today. Therefore 'sustainable development' is used as the theoretical framework in this thesis and the findings are analyzed by applying Ian Scoones' Sustainable Rural Livelihood Framework. There are many different perceptions of what 'sustainable development' is and this has resulted in diverse strategies and expectations, and affected the concept's influence. 'Sustainable development' has become a common concept today, and therefore a clear practical and theoretical framework is crucial.

Norfund's objective is to contribute to the reduction of poverty through creation of profitable and sustainable businesses in developing countries (2016f). Norfund's investment in Cheves HPP in Peru has been a controversial project and this thesis will study the impacts from Cheves HPP on local population and discuss whether or not this contributed to sustainable development.

The nature of the central issues that are evaluated in this thesis will be presented and explained in order to demonstrate relevance of topics and provide context. This chapter presents the thesis' main objectives and research questions, and briefly explains how this is studied. In order to obtain knowledge about the involved companies Norfund and their relationship with SN Power is explained. Reflections as to why the socio-economic impacts from Cheves HPP are studied from a 'sustainable development' perspective will conclude this chapter.

1.1 MAIN OBJECTIVE AND RESEARCH QUESTIONS

The main objective of this research is to examine the socio-economic impacts of Cheves HPP from a sustainable development perspective. The Cheves HPP project is extensive and has impacted many people, it is therefore important that local population is not negatively affected. Sustainable development should benefit humans, the environment and the economy. Approaches that include these aspects have been included in development strategies and 'sustainable development' has been put on the political agendas worldwide. In order to organize the research and the results two research questions were developed.

The first research question is "what are the most significant socio-economic impacts on the local population from the Cheves project?". The second research question is "how has SN Power, through Cheves HPP, impacted local population's livelihood resources?".

1.2 HOW TO STUDY THIS

The results are based on personal perspectives and reflections about Cheves HPP from interviews with local people that have been impacted by SN Power's work. Because the aim of this study is to evaluate different individuals representing the affected communities and their experienced perspectives it was considered necessary to travel to Peru to gather information. Interviews in the form of face-to-face conversations with people that lived in four of the directly affected villages were conducted, and employees at involved companies were also interviewed. Information from people indirectly and directly impacted by the project provides various perspectives about the project outside of the companies' objectives. More detailed information about the research methods is presented in chapter three 'research methods'. The data collected from Peru will be discussed in relation to sustainable

development. The concept ‘sustainable development’ is used as a guideline and shapes ‘the landscape’ of the study. According to Blumer in *Social Research Methods* concepts are employed to “give a very general sense of what to look for and act as a means for uncovering the variety of forms that the phenomena to which the refer can assume” (Bryman, 2012, p. 388). Concepts and approaches deriving from ‘sustainable development’ contribute in providing different perspectives to analyze, and Scoones’ ‘sustainable livelihood framework’ is used as a tool to connect the findings to the theoretical framework. Scoones is a Professorial Fellow at the Institute of Development Studies in the University of Sussex and has a PhD in Renewable Resources Assessment Group (Scoones, 2016).

This thesis emphasizes more on Norfund than Statkraft because Statkraft possesses the industrial and technical knowledge, while Norfund has more contextual knowledge regarding the social, economic and cultural ramifications when investing. Statkraft has a long history of constructing hydropower plants, while Norfund has invested in different projects in developing countries since 1997. Their experiences are different in terms of fields, but united it can be very useful.

1.3 WHY THIS IS IMPORTANT

The Norwegian government spends increased amounts of public money on Norfund and therefore it is worthwhile to evaluate their work specifically. Not only because it is public money through Norway’s development assistance budget, but also because their investments affect many people and their livelihoods. The amount of Norfund’s investments has increased yearly since 2009, the total amount of equity has more than doubled and the capital provided by the owner, the Ministry of Foreign Affairs in Norway, has more than doubled. In 2014 the Ministry supplied Norfund with 1 230 million Norwegian Kroners (Norfund, 2015, p. 5). The current government has stated there is an increased need to focus on sustainable development and has therefore increased the capital supply to Norfund (Regjeringen, 2015). More projects mean that more people are impacted by these decisions and that is why evaluation of Norfund’s investments is crucial. It is always useful to evaluate various projects to obtain information about positive and negative outcomes, and, more importantly, to learn about areas for improvement and knowledge sharing. Additionally, one can argue that it is always useful to evaluate use of public money and particularly capital that is invested abroad. This is because it can be difficult for contributors, such as tax payers, and other investors to see and

understand the effects on local communities by international investments. The Cheves project is big, both in extent and in terms of costs; it is important that Norwegian funded international projects have successful results and positive impacts on the local communities.

Another reason for why this research is important is because climate change has become apparent and is considered the biggest human threat today. Because the consequences of global warming are excessive, sustainable development is becoming the mainstream form of development. Many organizations and enterprises are now aiming to become more sustainable by implementing policies and strategies that consider human and natural aspects as well as economic growth. Climate change mitigations are becoming included in business strategies and political policies. It is important that SN Power create environmental friendly businesses that contribute to sustainable development so that their projects provide positive and long lasting sustainable results.

1.3.1 Norfund: an important player in development

Norfund is a development finance institution (DFI) and was established by the Norwegian parliament in 1997. The organization is owned and financed by the Ministry of Foreign Affairs and aims to reduce poverty. They provide economic support in different forms such as equity, loans and other risk capital to companies or institutions for them to develop. This is to create more economic activities in emerging economies to reduce poverty. Their objective is to contribute to sustainable development through creation of profitable and viable labor (Norfund, 2014).

1.3.1.1 What is Norfund

The organization's goal is to create economic development and reduce poverty through their investments in sustainable businesses and profitable labor. Their investments are distributed in three different sectors: clean energy, financial institutions and agribusinesses. Over half of their portfolio consists of direct equity investments, but they also loan, and sometimes they invest using both forms of financial support (Norfund, 2015). Norfund never invest in projects alone and normally enters into a project with a maximum of 35 percent of equity (Norfund, 2016h). They collaborate with several actors to gather different types of needed knowledge, capital and experiences. Such combination of resources makes Norfund a valuable actor in the developing markets, and also an interesting point of departure in terms of research regarding sustainable development.

The organization is primarily focused on countries south of Sahara in Africa, Central America and Southeast in Asia. Norfund is the "government's main instrument for combatting poverty through private sector development" (Norfund, 2016a) and in 2014 they received 1.23 billion kroners from the Norwegian government to invest in sustainable business abroad (Norfund, 2014, p. 2). Norfund invest if they believe in projects within the mentioned sectors that have potential to grow and create sustainable development. Nonetheless, it crucial that all projects fulfill formal requirements such as environmental and human responsibilities (Norfund, 2014).

1.3.1.2 How Norfund works

There are many steps in Norfund's road to investments and the process is very thorough. The organization emphasizes greatly on trust and potential to create a sustainable and profitable business. Their goal is to help new businesses to develop sustainably and obtain revenue for reinvestments. Before entering a project Norfund analyze possible risks, its market potentials, and its future (Norfund, 2016c). The figure below is Norfund's way of demonstrating the different steps in their investments process:

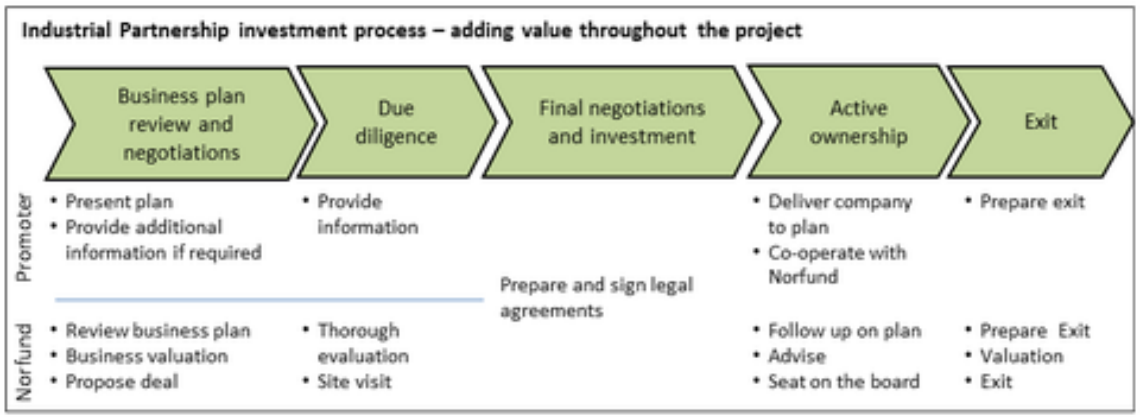


Figure 1: Norfund's investment process. Source: Norfund, 2016f

As demonstrated above, Norfund's investment process is divided in five steps; business plan review and negotiation, due diligence, final negotiations and investments, active ownership, and exit. In the first step the organization evaluate the overall business plan such as potential partnerships, market possibilities, value chain, business structure, possibilities for a successful exit among many (Norfund, 2016c). In the beginning of the investment process is also when the organization evaluate exit possibilities. The second step focuses on thoroughly analyzing

the business before signing contracts with other partners. This takes place in the third step (Norfund, 2016d, 2016g). Norfund aims to be an active partner, and in the fourth step their employees become more visible by being project managers, "discussion partners and support to management in investee companies" (2016b). The organization offers different financial instruments and the last step, the exit, normally takes place between five to ten years. Norfund sell their part of the project and the capital is used to re-investments in other projects (2016e).

1.3.1.3 Why Norfund

The resources are meant to function as catalysts for other investors to mobilize capital and invest in the same project or country. Norfund is not an aid organization, and thus it is crucial that Norfund is able to exit after maximum ten years. In the end of 2014 their portfolio was worth over 12.8 billion Kroners (2016a). Today capital is crucial in order to develop, but in many developing countries it is difficult for small companies to develop or get financial support by the state or banks because of high risks and uncertain marked. Large part of Norfund's portfolio is invested in small or medium sized enterprises that normally have difficulties to develop due to little or no economic support. Fluctuating economies and market uncertainty make it challenging to start or expand businesses.

Access to energy is another important aspect when aiming to develop. Energy is essential for economic development and with population growth comes increased demand for energy. According to the UN there are almost 3 billion people living without access to modern energy and over 1 billion has no electricity in private homes (Sustainable Development Knowledge Platform, 2016). Norfund aims to ensure economic development through energy production and state that "lack of electricity is one of the biggest challenges for many developing countries" (Norfund, 2014, p. 2). Renewable technology benefits both humans and the environment, and according to their report on operation from 2014, over 2 and a half billion Kroners, 56 percent of their total portfolio, of Norfund's investments were allocated in clean energy. Norfund's role as an investor is important; it is essential to have capital when wanting to invest or develop projects, but it can be difficult to obtain loans in many developing countries. This means that Norfund's decisions are crucial for many developers and that they play a very important role. Because Norfund invested in Cheves HPP through SN Power is it worthwhile to briefly explain this joint-venture and their relationship with Norfund.

1.3.2 SN Power; a valuable contributor

Statkraft is also a state-owned company and works with constructing and operating hydropower plants both in Norway and abroad. Statkraft has 120 years of experiences from building hydropower plants. The company's starting point is considered to be as early as in 1895, when the state acquired rights of a waterfall in the west of Norway to provide electricity to a rail way. From then Statkraft's business has expanded abroad and is now "a leading company in hydropower internationally and Europe's largest generator of renewable energy" (Statkraft, 2016). Statkraft started projects in Nepal and Laos and SN Power is an extension of their international involvement. SN Power was established "to become a leading hydropower company in emerging markets, contributing to economic growth and sustainable development" (SN Power, 2014, p. 15). Norfund has experience doing business in emerging markets with high risks investments and Statkraft has a long history of constructing hydropower plants. The combination of local knowledge, experience, and capital makes these two organizations suitable as investors and active partners. Since the establishment SN Power's strategies and organizational structures have changed several times. Over the last decades, due to reorganizations and Norfund's investment processes (exit between five to ten years to re-invest), Cheves HPP is now operated by Statkraft Perú and Empresa de Generación Eléctrica S.A., (EGE CHEVES). SN Power is the parent company of Statkraft Perú, and EGE CHEVES was established when it was decided to begin the construction of Cheves. Statkraft Perú now operates nine hydropower plants in Peru and generates 5.5 percentage of the country's total effective capacity (Statkraft Perú, 2016). SN Power, through Statkraft Perú, financed 100 percent of Cheves HPP and Norfund owns approximately 18 percent today in the company structure which also has ownership in Cheves project (Informant from Norfund, 2016). However, Norfund possessed 40 percent of the shareholder of SN Power when they invested in Cheves HPP in 2010 and is therefore considered Norfund's project as well.

1.3.3 Cheves hydropower plant

In this section short general information about the hydropower plant will be presented, in order to establish a general understanding of its significance among the investors, workers and the local people. The hydropower plant is located in the northern and mountainous areas in the Lima region in Peru. Cheves HPP consist of one underground power house, three dams, four tunnels, and additionally it was necessary to construct high-voltage pylons to transfer the generated electricity (Løvoll, 2012). The power plant has expected average annual production

of 834 GWh and compared to Norwegian energy use would this installation provide electricity to approximately 22 000 households (J. Østensen, 2016). Norfund has a rich portfolio and they have finished many different projects, but impacts from Cheves project was chosen to examine due to three main reasons; completion date, existing information about impacts and language spoken in Peru. In this section the background for examining social impacts from Cheves HPP will be presented.

1.3.3.1 Why Cheves?

To have interviewees that actually remember the construction process and its impact was crucial in terms of establishing this research. Cheves opened for commercial activities 15th of September 2015, which means that the project was constructed and finalized within a timeframe that people may still remember important details. Another important element that was considered was the available information about the project. News articles and reports revealed much information about Cheves and interest around this particular project emerged. When searching for information about Cheves much data revealed several conflicts between local population and SN Power, and this resulted in higher level of interest to examine this specific project and its impact on the communities. According to SN Power report (2011) the project was delayed due to "local unrest linked to local social conditions" (p. 20). Technical and practical information about the power plant also contributed to a good understanding of the project. To be able to read local news and blogposts about the project also allowed the researcher, now referring to myself, to gather data from different points of view.

The third reason for why Cheves was chosen is because Spanish is the official language spoken in Peru and the researcher speaks Spanish fluently. To be able to clearly grasp the arguments and perspectives of the informants it was necessary to manage the language well. Knowing Spanish made it possible to interview informants in their own language, which made it easier for both the interviewees and the researcher to follow up with questions and other comments and observations. Being able to talk directly with the informants may have contributed positively the level of confidence between the interviewer and the interviewees and improve the overall conversation. Using an interpreter could have resulted in lack of confidence, loss of valuable meaning, and increased distance between the interviewer and interviewees.

Another relevant aspect of this research is the importance of sustainable development; because climate change has severe consequences for the present and future generations, development that is focused on renewable resources that do not harm the environment is becoming more important than ever before. Emergence of focus on a sustainable development is evident and Cheves HPP is a result of SN Power's contribution to increased clean energy production and creation of labor. The concept 'sustainable development' is defined in many different ways and includes several aspects within the social world, and can be related within various disciplines, such as social sciences, environmental science and technology, and bioscience. The emergence of the concept and various definitions will be discussed in more detail in the next chapter on 'theoretical framework'.

CHAPTER 2: THEORETICAL FRAMEWORK

2 INTRODUCTION

'Sustainable development' is the main concept in this thesis and lays the foundation for the discussion and analysis. This is because it is important that SN Power's impact on the local societies not compromise present nor future generations to meet their needs. Efficient and well-functioning sustainable development is crucial and use of appropriate measures is essential when wanting to develop sustainably. Yet, different perspectives of what 'sustainable development' truly mean result in varying approaches and policies. This chapter aims to unpack and present some of the different versions and perceptions of sustainable development. History of the formation and diverse perspectives of the concept will be presented and explained later in this chapter, and to end this chapter is limitation of topics presented.

2.1 HISTORY OF THE CONCEPT 'SUSTAINABLE DEVELOPMENT'

This section presents a brief presentation of many years of development and some of its outcomes. *Our Common Future,* also called the Brundtland Report, introduced 'sustainable development' in 1987 and this report can be considered as the beginning of a new form of development. The report demonstrated challenges the world's population is either encountering or will encounter in the future due to globalization and the consequences of greenhouse gas emissions. The report, that emphasised on the importance of human and environmental aspects, presented suggestions and plans of action for local and international policy-makers to develop strategies that correspond with these challenges. As a result of this report several new concepts and approaches related to 'sustainable development' were created. The history of the concept 'sustainable development' is abundant and consists of many important events, however, only the happenings and discoveries that are most relevant to the thesis will be presented.

Technological development has led to tremendous social changes. After the industrial revolution human development in many western countries increased quickly and economic growth became standardized. Fast technological innovation of production materials influenced the market and economic growth became the driving force in the western countries. Efficient production increased the amount of products and decreased production expenses and price of each product. Local trade developed into an international market,

production chains became longer in both stages and distance, and mass produced products sold across countries became regular routine. Globalization flourished, boarders became less visible, international trade increased, and capitalism became the hegemon. A combination of more private assets and access to products improved human well-being and the world population increased rapidly. The consequence of population growth is increased consumption, and this result in increased energy production. Unfortunately, improved living standards and increased private income did not happen for everyone; the difference between rich and poor, north and south became more apparent. This short resume starts at the industrial revolution because it was the beginning of big social changes. According to the authors of *Theories of development: Contentions, arguments, alternatives*, Peet and Hartwick (2009) the geographical differences was "only the beginning of the inequality story" (p. 6). Extreme inequalities within countries became a reality and global inequality is still increasing. Peet and Hartwick (2009) state that "200 million of the richest people living in the rich countries (3 % of the global population) get 40 % of total global income" (p. 7) Unequal distribution of wealth and possibilities became evident, and as a result some people begun to question this new reality.

The watershed in the history of 'development' is when people started to question the concept 'development' itself in 1970s. According to Du Pisani (2006), Professor of history at School for Social and Government Studies in South Africa, it become clear for many that economic growth did not reduce inequalities as many had hoped for. Even though living standards, labour conditions, technology, incomes and social support improved in many countries, it did not spread to all countries. Because poverty did not decrease in certain countries and the world's population increased, 'growth' was challenged. As Du Pisani observes, it became clear that "the earth's finite resources would not be able to support all the people" (p. 92) if everyone started to consume as the industrialized countries. The paradigm shift came when people considered 'resource conservation' and not 'resource exploitation', as part of development. Protection and not depletion contributed to the formation of the concept 'sustainable development'. There have been created many different definitions of the concept since the1970s, and Du Pisani presents several examples in the article *Sustainable development-historical roots of the concept*. People define the concept using different but related ideas such as "stable societies" and "sustainable resources" (p. 91). To not deplete natural resources was often a common link in the new conceptual frameworks, and the new

perspectives about development boosted when consequences of much greenhouse gases became evident.

An important event for the increase of approaches relating to sustainable development strategies was when scientists demonstrated the consequences of high levels of carbon dioxide, CO_2, in the atmosphere. CO_2 is a type of gas that is also referred to as greenhouse gasses and much CO_2 has resulted in global warming and climate change (NASA, 2016a). The Brundtland Report demonstrated that human activities are changing the planets natural ecosystems and that the "new reality, from which there is no escape, must be recognized - and managed" (Brundtland et al., 1987, p. 11). The consequences of greenhouse gas emissions are many because almost everything in the earth's ecosystem is interrelated, and thus climate change can have severe ripple effects. For example: floods destroy houses or entire villages and may cause diseases, and droughts prevent crops from growing and both animals and humans may lose food source. Extinction of animal species due to climate change will affect other animals that are connected in the same food chain. The report called for action and international collaboration to develop environmental friendly while the population was increasing. It proposed several measures on how to develop sustainably and, moreover, it became common knowledge that development needs to include more than economic growth being that climate change is a result of not including any other aspects. The Brundtland Report defined the term 'sustainable development' and this is the one of the most used definition. According to International Institute of Sustainable Development (IISD) (2012) the term 'sustainable development' became "popularized" (p. 5) after it was defined in the Brundtland Report. Unfortunately, the term has become a buzzword for many politicians, and can now be considered vague due to different understandings and ideas when discussing sustainable development.

To include nature and human aspects in theoretical and practical framework of the concept 'development' was a turning point and a new way of thinking that contributed to new movements and political strategies. William Adams, the author of *Green Development,* stated that the "key event in the emergence of sustainable development" (2001, p. 54) was as early as the Stockholm Conference in 1972. IISD has created a timeline over the key events for the evolution of 'sustainable development'. The timeline demonstrates big movements of environmental protecting measures established by governments, organizations, and funds. Scientific journals, research projects, reports and books contained information about

increasing greenhouse gas emissions, impacts from air pollution, and species extinctions. Since the last half of the 1900s funds have been formed, organizations have been established and research initiated (Creech, 2012). Greenpeace and International Institute for Environment and Development, IIED, were both established in 1971, Polluter pays principle was presented that same year, and in 1975 the United Nations Environment Programme, UNEP, was established (2012). Very much happened in short time and these are only four of many important events that increased the focus on sustainable development. Adams state that the new form of development had taken roots and during the 1990s environmentalists were invited in from the "cold to talk at boardroom tables (2001, p. xv)". Political strategies shifted towards a more 'green' development and 'sustainable development' has now become a much used concept in design of approaches and resolutions.

As seen there are many factors that played important roles in the emergence of the concept 'sustainable development'. Even though the concept evolved many years ago, people still perceive 'sustainable development' differently and this result in various forms of policies, strategies and promotions. Development policies and practices have changed over time and there is extensive literature on this topic. It is positive that people started to challenge the concept development because they perceived successful development as something different and more than only economy. Unfortunately, outcomes such as inequality in people's living standards, climate change, and unjust distribution of resources had to surface as consequences before some questioned the outcomes of development.

2.2 DEFINITIONS AND PERCEPTIONS OF SUSTAINABLE DEVELOPMENT

Different understandings of a concept may result in various approaches when creating strategies to, for example, solve a problem, evaluate an event or design a project. The way we think and look at the reality develops and changes over time, and what people mean when they refer to 'sustainable development' is not unambiguous. Underlying expectations and experiences influence how we understand and perceive ideas, and this has unfortunately affected the concept 'sustainable development' negatively. This section will present a short discussion of different points of view of the thesis' main concept and how this has impacted its significance.

Inconsistent use of 'sustainable development' has led to diverse interpretations and practice methods. Vague definitions and different use may result in lack of influence and this is

evident when O`Riordan claims, in *Sustainable Development: a critical review* (1991), that the terms are contradictory because of its lack of theoretic and practical framework. He state that sustainable development can be understood as a progress that sustains or maintains with focus only on economic development. This is because development can be considered as "growth" or "improvement" (Lélé, p. 608). Looking at the two terms separately it is possible to understand the concept as development that sustains, and if development itself is understood as 'economic growth', 'process of improvement' or 'advancement' the concept 'sustainable development' will be abused. People from different disciplines may not understand or use the same concept equally. For example, economists may include the oil industry when discussing sustainable development approaches because the revenues can contribute to improvement of living standard, while an engineer may only include renewable energy because it is based on natural resources that do not deplete. An article about mapping sustainable development approaches from University of Northumbria in United Kingdom (UK), the authors argue that the concept "needs more clarity of meaning, concentrating on sustainable livelihoods and well-being rather than well-having, and long term environmental sustainability, which requires a strong basis in principles that link the social and environmental to human equity" (Hopwood, Mellor, & O'Brien, 2005, p. 38).

IISD state that the definition that was published in the Brundtland Report is the "most frequently quoted definition" (2016). Even though there are numerous opinions about flaws regarding the concept, is it possible to argue that this version includes important elements, and identifies necessary and relevant concepts. The definition from the Brundtland Report is presented below:

> Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts:
>
> - the concept of 'needs', in particular the essential needs of the world's poor, to which overriding priority should be given; and
> - the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs (Brundtland et al., 1987, p. 41).

The two bullet points clarify the intended meaning of the used concepts and justify the use; it defines a development that considers the needs of the world's poor, future generations and the environment's ability. One can argue that this definition is comprehensive and include necessary meanings and ideas. The definition refers to depletion of natural resources which

affect both the environment and the future. Although the report explain much about possible solutions for how to achieve sustainable development as defined, the definition itself can be considered too broad, and one can argue that it does not present a specific plan of action. If looking back at why the concept sustainable development emerged it is useful to ask *how* global equality can be achieved. In order to reduce poverty it is important to find the fundamental causes and develop strategies that will benefit the economy of the poor, social life, and the environment. Although the Brundtland definition includes economic, social and environmental aspects, it is essential to discuss use and need for implementation of methods, policies and strategies. Additionally, for poor people to meet their needs in present and future, while people in developed countries continue with 'business as usual', one can argue that there is a need for fundamental social changes in the developed countries. Moreover, it is worthwhile to mention that this definition is almost 30 years old. Very much has happened since 1987 and history shows that greenhouse gasses are still increasing, wealth distribution is not improving and exploitation of natural resources are still happening (Cronin & Pandya, 2009; NASA, 2016b; Piketty, 2014). Consequently, a feasible action plan is essential, but it is also crucial to create comprehensive and clear definitions with precise concepts and terms in order to understand its framework, means and approach.

2.3 SUSTAINABLE DEVELOPMENT IN CONTEXT

Based on the evolution of the definition 'sustainable development' there are three aspects that lay the foundation; society, environment and economy. As mentioned previously, globalization and modern technology has made the world's population more connected than ever before. Transnational trade, peace or labour agreements, and institutions in an international economic market produce extensive impacts when something happen one place. This can have both negative and positive consequences, such as renewable technology innovation may benefit many countries and the environment, and financial downturns in one country have negative consequences for other countries.

Because of population growth and climate change it is essential to develop viable renewable energy further. Population growth has many consequences and increased demand is one of them. In order to supply goods and services to an increasing world population more production of energy, food, houses, means of transportation - just to mention a few - are required. For the future generations to meet their needs without exploiting human or natural

resources, not increase poverty rates or release more environmental damaging gases, practical and feasible measures are crucial. Many in the developed countries have a way of living which result in CO_2 emissions and resource exploitation. A lifestyle that requires high quantity of products and services, also called a 'disposable society', is based on a high level of consumption and this requires high level of resource usage. The earth has infinite and finite resources and this distinction is essential; natural resources that restores themselves and do not restore themselves. Use of renewable resources such as water and air provide sustainable energy and is a mean that contribute to develop sustainably. Use of for example coal or oil release great amount of greenhouse gas emissions and will eventually culminate. Energy is essential to develop in today's society because private homes, schools, hospitals, and infrastructure are dependent on electricity almost everywhere. Increased consumption requires increased production and therefore renewable energy is a valuable contribution. Fortunately, renewable technology has developed quickly and environmental friendly measures have become more visible.

Sharing knowledge will improve approaches and measures that can contribute to a development where nature and humans are equally included as economic growth. There are many organizations and institutions that investigate and publish researches about this topic. Governments are implementing policies to protect nature and vulnerable groups, international organizations are developing strategies to reduce greenhouse gases, and research institutions are publishing data about climate change mitigations. Political and civil actions, both national and international, that considers climate change and global inequality, is essential to achieve sustainable development. Applicable frameworks and effective methods provided by empirical studies may facilitate this. The thesis' analytical framework will be presented in the next section.

2.4 SUSTAINABLE LIVELIHOODS

Appropriate policies and practices are essential to establish when wanting to achieve the desired development. Consequently, analytical framework is a useful tool in order to evaluate approaches, results, concepts and indicators among many. This thesis uses Ian Scoones' Sustainable Rural Livelihood Framework to analyze the findings. Scoones is from International Development Studies (IDS) in UK and his framework contributes to a better understanding of relevant concepts and approaches from the point of view of sustainable

development. This section will first present Scoones' definition and framework, and conclude by explaining why this framework is used in this thesis.

2.4.1 The concept 'Sustainable Livelihoods'

The analytical framework and the theoretical framework are linked in this thesis. Scoones' framework derives from the Brundtland Report that introduced the concept 'sustainable development'. 'Sustainable livelihoods' is a concept that lays the foundation for Scoones' framework and this is his definition of the concept:

> A livelihood comprises the capabilities, assets (including both material and social resources) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks, maintain or enhance its capabilities and assets, while not undermining the natural resource base (Scoones, 1998, p. 5).

Scoones (1998) state that his definition consists of five key elements; creation of working days, poverty reduction, well-being and capabilities, livelihood adaptation, vulnerability and resilience, natural resource base sustainability (p. 5). Furthermore, Scoones (1998) explains that the wide range of terms and aspects in these five elements constitute the concept 'sustainable livelihood' and argues that it is important to remember that it is "subject to negotiation" (p. 7); he argues that personal opinions, debates, and different prioritizing will affect framework, but can be considered as a valuable tool.

In order to achieve sustainable livelihoods Scoones (1998) stresses the importance of access to diverse forms of livelihood resources, and he divides and categorizes these resources in four types of capitals; human, natural, social and financial. Human capital is defined as knowledge, ability to labor, good health and physical capability. This resource allows people to act. Natural capital can be land, water, air, and environmental services such as hydrological cycle. Social capital is resources such as networks, associations, social relations and claims. This type of capital is valuable when pursuing livelihood strategies that need to be coordinated or synchronized with others. Financial capital is economic assets such as cash, savings, basic infrastructure or production supplies. This type of capital can be used to pay for goods or services and is according to Scoones essential to develop any livelihood strategy (1998, pp. 7-8).

2.4.2 Sustainable Rural Livelihoods Framework

Reducing poverty in rural areas can be challenging considered limited access to resources. Scoones (1998) presents "practical, methodological and operational implications of a sustainable livelihoods approach" (from Summary). Krantz (2001) from the Swedish International Development Cooperation Agency (Sida) states that the importance of Scoones' approach is his emphasize on "institutional process and organizational structures" (2001, p. 2). This observation is crucial as it incorporates in-depth and systemic advancement. Scoones includes social structures as an important element in his framework and argues that the construction of livelihoods and the power relations within societies are always important. It is important to understand relevant social structures within a society to include more than measurable variables when creating strategies sustainable livelihood approaches (1998, p. 11). In IDS Working Paper from 1998, Scoones developed a question that he believed was the key for analysis of sustainable livelihoods:

> Given a particular ***context*** (of policy setting, politics, history, agroecology and socio-economic conditions), what combination of ***livelihood resources*** (different types of 'capital') result in the ability to follow what combination of ***livelihood strategies*** (agricultural intensification/extensification, livelihood diversification and migration) with what ***outcomes***? Of particular interest in this framework are the ***institutional processes*** (embedded in a matrix of formal and informal institutions and organisations) which mediate the ability to carry out such strategies and achieve (or not) such outcomes (1998, p. 3).

Contextual considerations formed sustainable livelihood approaches. Similar frameworks are used by influential organizations today, such as United Nations Development Programme (UNDP), the international non-governmental organization CARE and British Department for International Development (DFID). Krantz (2001) listed three prominent sustainable livelihood approaches and there are several similarities among the three; focus on the poor's capabilities, the locals' perceptions of poverty, and the inclusion of the poor in the development of strategies and policies (p. 2).

Scoones developed the framework to explain useful elements and aspects of sustainable rural livelihoods and present relevant steps to analyze sustainable livelihood approaches. The framework is presented below and it is possible to see that it consist of five very relevant and important elements; contexts, resources, institutions, strategies and outcomes.

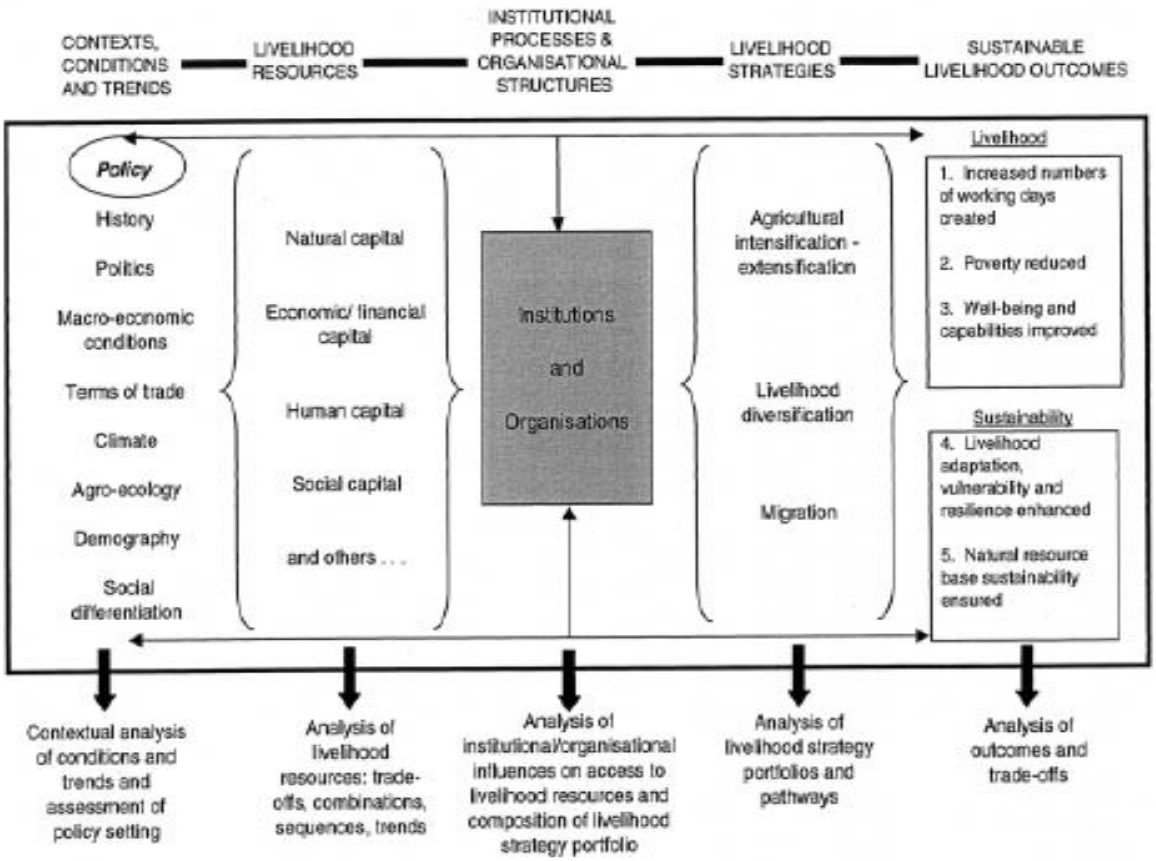


Figure 2: Sustainable Rural Livelihoods Framework. Source: Modified from Scoones, 1998.

It is possible to see that Scoones include many important elements in his framework. Scoones aimed to "explore some of the central conceptual and methodological issues involved in investigating sustainable livelihood issues" (1998, p. 3). His emphasis on the context contributes to a better understanding of possible solutions and provides information about specific targets, available resources and wanted outcomes. Institutions and organizations play important roles because they influence social relationships, possible limitations and plan of actions. Based on contextual knowledge it is possible to develop suitable and appropriate strategies to achieve successful outcomes.

Due to many years of research and information sharing definitions, approaches and frameworks have been updated, and, as seen with the concept of sustainable development, there are different definitions and frameworks that are used to promote sustainable livelihood. This concept is normally used when aiming to reduce poverty and evolved in the 1980s as an approach to focus on "humans well-being and sustainability rather than economic growth" (Solesbury, 2003, p. vii). Scoones included assets and resources that are used when wanting to

develop sustainably such as human, natural and social capital. Additionally he included elements that play important roles, such as context, power relations, and society structures among many. Sustainable development approaches in rural areas can be challenging. Consequently, strategies that include more aspects than only sustainable resources contribute to more effective processes. Scoones' inclusion of local population in the policy making process is another aspect that is worth mentioning. Poor communities possess valuable knowledge about possibilities, needs, and social influences that impact the development and potential new strategies.

The reason why Scoones' framework was considered best suited for this thesis is because of its main objective (examine impacts on local population nearby Cheves' hydropower plant), the second research question (how SN Power, through Cheves HPP, impacted local population's livelihood resources?). Cheves is located in rural areas and Scoones framework is developed for rural livelihoods. The framework has therefore many similarities to the research aim and the context of the research. Additionally, the researcher wanted to investigate many of the aspects that Scoones assess such as livelihood resources and strategies from a sustainable development point of view. Morse, Acholo, and McNamara (2009) from University of Reading UK and Diocesan Development Services in Nigeria, state that a sustainable livelihood approach "combines consideration of social, economic and natural assets and mirrors the broader field of sustainable development and indeed integrated rural development in that regard" (p. 14). Because the framework derives from the concept 'sustainable development' it provides useful information and includes several elements that are considered necessary and important.

2.5 TOPIC LIMITATIONS

All the informants from this research provided much information, but to create a coherent thesis was it considered necessary to narrow down the data. Only findings that are relevant to the theoretical and analytical framework are presented and discussed. Nevertheless, relevant or explanatory information has not been ignored, it underpins data that is discussed and analyzed. Additionally is it worthwhile to mention that even though there were four key informants that provided information in this research, not everyone is mentioned or quoted in the findings or discussion. This is not because the information is not relevant, but because it laid the foundation for the researcher's understanding and knowledge about Cheves project.

Little information from Norfund and SN Power influenced this research. Even though these organizations constitute a key role in this research, they are not discussed as much as wanted. In the meeting with Norfund it was revealed that they do not give information about specific projects apart from what is published on the internet, but only about investments in general. Due to little certain knowledge about Norfund's involvement in the Cheves project it was not possible to examine their role very detailed. Fortunately this was discovered early in the research process, however lack of detailed information has resulted in less discussion about Norfund's strategies and responsibilities in Cheves project. Statkraft contributed with information about SN Power and their involvement in Cheves before travelling to Peru, but not after. Many follow-up questions, new topics and perspectives developed when the data was collected and analyzed, and more information from the Norwegian investors would have contributed to a more thorough discussion.

There were many topics within the theoretical framework (sustainable development) that are relevant to study and discuss in this thesis. However, the discussion will only be based on the findings, even though there are other topics that are relevant to emphasize, such as Norfund being the Ministry of Foreign Affairs' main channel for sustainable development, DFI's investments for poverty reductions, power relations between north and south, poverty reduction through sustainable development etc. Norfund's main aim is to reduce poverty and contribute to sustainable development through their investments, but this is not examined in this research because the power plant was finished in September 2015 (Norfund, 2014). The energy generated from Cheves HPP is transported to Peru`s national grid. Cheves has not been functioning for a long time and all planned social support programs have not been implemented in all the affected communities yet. It is not feasible to measure poverty alleviation using Cheves project as a case study and that is why this topic is not the main focus of this thesis.

CHAPTER 3: RESEARCH METHODS

3 INTRODUCTION

Research strategies play an important role in the conduction of research and methods of data collection will also influence the research because it shape and structure the overall research. Nevertheless, data analysis and discussion is influenced by the researcher because personal experiences, values, expectations, prejudgments and forms of rationalization influences how one understand data given by other social actors. Professor of Organizational and Social Research, Alan Bryman, state that "if we are interested in the world views of members of a certain social group, a qualitative research strategy that is sensitive to how participants interpret their social world may be the direction to choose" (2012, p. 41). Sampling approaches, methods of data collection, data management and ethics are presented and explained in this chapter. The reasons for why specific methods were chosen and fieldwork challenges are also presented and discussed, and the last part of this chapter is a critical review of the used methods during this process. How data was collected and main objectives is presented firstly in research design.

3.1 RESEARCH DESIGN

The strategy of this research was to collect and analyze data about socio-economic impacts in a restricted area and because the goal was to interpret personal perspectives provided through conversations with specific groups of people, qualitative research method was considered as the correct form. To understand the impacts of Cheves HPP in Peru through the lens of sustainable development it was necessary to visit the country. The researcher stayed in Peru for six weeks to collect and analyze data from people that have been or is affected by the project and make observations from the areas around the hydropower plant. The trip had two specific goals: conduct interviews with people living in villages nearby the hydropower plant and employees at the office in Lima. To reach the goals it was necessary to visit the villages that are located nearby the power plant and interview employees Statkraft Perú.

Primary data and observation was necessary to answer the research questions, and interviews with the local population enabled the researcher to gather information that is not published by the companies involved in the project. Meeting people living in villages near the hydropower plant that have been and still are impacted and affected by the plant contributed with information about their opinions, and reflections about the project. Their experiences have not

been mentioned in information provided by Norfund or Statkraft, but are very relevant because Norfund's main aim is to reduce poverty and develop sustainable. To gather information about the local population's opinions and experiences is therefore crucial when analyzing Norfund's work.

3.1.1 Social research strategies

Qualitative research emphasizes on meanings (Bryman, 2012). Meanings and opinions laid the basis of this research and therefore semi-structured interviews were conducted. Literature about Norfund's and SN Power's work, sustainable development, and Cheves were studied before conducting interviews. It was necessary to study different theories and aspects of 'sustainable development' in the early process of this research. This was done in order to develop feasible and clear research questions, objectives, and to narrow down the aim of the study. Background information contributed to not only more knowledge about sustainable development, but the researcher was also introduced to different approaches on how to measure and analyze sustainable development. The analytical framework became decided during this literature review. It is possible to state that contextual understanding is crucial when aiming to develop sustainably. Access to assets, cultural and institutional framework is only a few of many important aspects that influence research and therefore are essentials to include in the data collection process.

3.1.2 Epistemological considerations

Natural and social science is conducted differently and that is due to different aims and objectives. What is regarded as acceptable knowledge is also divided and this issue is called epistemological considerations (Bryman, 2012, p. 27). Epistemology is, as stated in Bryman (2012) a theory that contains different considerations of what passes as acceptable knowledge (p. 710). The strategies for natural and social science are very different and methods of data analysis are crucial aspects when conducting research. In other words, numbers and words provide meanings but in different ways.

Positivism and interpretivism are two positions within epistemology. According to Bryman the former a position that uses methods of natural science and is normally used in quantitative research, while the latter position aims to interpret others actions and meanings from their point of view (2012, pp. 712,714). This research is interpretivist in epistemological

orientation because the objective of this research is to understand people's point of views about impacts and interpret their meanings. To be able to interpret other people's behavior and thinking it is crucial to acknowledge the subjective meaning of social action. All knowledge has a context and it is crucial to have in mind that the researcher will never be able to fully understand and present the informants' meanings and actions. Interpretations are subjective and how the local population considers their social situation will firstly be interpreted and secondly analyzed by the researcher.

3.1.3 Ontological considerations

Ontological considerations also influence the research conduction. Ontology is a theory about existence and what entities exist or can be said to exist (Bryman, 2012, p. 714). This theory consists of two main positions; constructivism and objectivism. The latter, objectivism is an ontological position that separates social phenomena and social actors. It asserts that social phenomena and their meanings exist independently from social actors. However, constructivism asserts almost the opposite. It is a position where "social phenomena and their meanings are continually being accomplished by social actors" (Bryman, 2012, p. 33). This research is based on the latter position, constructivism, and believes that people continually construct and reconstruct their meanings and view on the social world. Such as Strauss et al. and Becker argue in Bryman, there is a pre-existence of culture and social order however, these elements contribute to shape one's perceptions and behavior. As stated in Bryman (2012) people understand the reality through interaction with other social actors and creation of categories (p. 34). In other words, the local populations' understanding of the impacts from the Cheves project is based on a combination of personal experiences and interactions with other social actors. This understanding is a continually changing process and therefore the group's answers may also change over time. How people see the social world is influenced by several elements such as culture, personal values, and other members in a limited society, and thus by using this ontological consideration affects the conduction of the research. The researcher sees the reality as a construction of the social actors that are involved and develop conclusions and reflections based on the groups' perceptions of the social world.

3.2 SAMPLING APPROACH

The sampling approach that was used in this research is called purposive sampling. This means that the selection of units was not random, but chosen purposively. This form of sampling was used because it was essential that the informants possessed relevant data about Cheves project. The sampling strategy was to interview two different sampling groups; current or previous employees at any of the involved actors of the construction of the hydroelectric plant and people living in the directly impacted communities. Nevertheless, local population was the main focus of this study because their experiences laid the foundation of the examination of the project. The sampling approach was sequential which is used when the units are not established, but evolves during the research process (Bryman, 2012). Before travelling to Peru the units were not decided or established, however an overview over the most effected and often mentioned villages based on reports and news articles was made in order to plan where to travel and conduct interviews.

Interviewing people that was differently impacted and involved by Cheves was done in order to provide variety in experiences, reflections, and quality of the research. The units were asked to participate in the research because of their relevance to the research questions and the main objectives of the research. People were differently impacted by the project and 18 people living in four different rural communities nearby Cheves HPP were interviewed in order to present these differences. According to a social management plan developed by SN Power (2010b) there were 14 rural communities directly influenced by the project, either by the construction of the power plant or by the high voltage pylons that were set up for transmission of the energy (p. 9). The selection of units according to criteria was crucial to answer the research questions. Because the aim of the research was to examine the socio-economic impacts, the main criterion for the sampling units was therefore that they had to live in one of the 14 communities that were listed in SN Powers mentioned plan. This was in order to analyze if there were any significant impacts, and if so, the level of socio-economic impacts. Additionally were three employees at companies involved in the project interviewed and these were considered as key informants. Interviews with both local population and employees from related companies was done in order to gather different points of view and to collect general or in-depth information about Cheves. It is natural that Statkraft Perú or SN Power employees were impacted differently than local residents, but it was useful to use them as key informants, because they provided information about relevant approaches, policies and strategies. An employee at Statkraft Perú was one of four key informants because he

possessed knowledge about planned and unplanned outcomes that impacted the local societies. Additionally, he contributed with general information Cheves and the local communities nearby, and provided explanatory and additional information before and after interviewing the locals.

3.2.1 Sampling approach before Peru

Before travelling to Peru it was important to gather information about the project itself and the people involved. This was in order to create a broader picture of the process of the project, the actors involved and the most significant data. This phase of data collection was also done in order to gather contact information of people living in Peru that was or still is impacted by the Cheves project. This section will present the sampling approaches completed before travelling to Peru and before conducting interviews.

Due to no ties to potential informants in Peru it was necessary to search for people via the internet before travelling. Several messages were sent to people that had been engaged in the construction of the power plant through Facebook. By engaging with a group on this social media site it was possible to contact several persons that had worked with EGE CHEVES, during the construction period. The use of Facebook was important in order to establish contact with people that could either participate with relevant information or suggest others. Authors of blogs and other internet sites that had written about the project were also contacted, but unfortunately no one responded.

Additionally, Norfund was contacted before travelling to Peru to inform them about my thesis and asked for a meeting. The intention was to obtain more knowledge about their role as investors and their responsibilities throughout the process. There are many actors involved in this project and therefore it is necessary to understand Norfund's participation and responsibilities. To understand Norfund's role would clarify which specific issues and areas that are necessary and relevant to evaluate when in Peru. The researcher explicitly informed that this was not a request for interviews, but a wish to collect general information about Norfund's involvement in Cheves from the overall project manager. After months of calling and sending emails, Norfund scheduled a meeting. Unfortunately, they only replied with general information about their investments and no details about specific projects. It was made clear that they could not give any information that is not published on the internet; apart

from the annual reports about Norfund's business in general, the rest is confidential. Unfortunately, there is close to no material about this specific project on Norfund's own website and this made it difficult to comprehend their current role in Cheves. The fact that Norfund provided little or no information regarding the Cheves project has, to some degree, influenced this thesis. As a result, the research had to be conducted without the insight into what could be considered a primary source on this matter, yet this in itself functions as a valuable observation to the research project. Norfund might possess enlightening or explanatory information about the project that is not accessible for the researcher to include in the evaluation or known by the informants. Before collecting data from primary sources it was therefore necessary to ensure information from other involved actors such as SN Power.

The researcher contacted SN Power as well because Norfund invested together with Statkraft in Cheves through this joint venture. The aim of the meeting was to collect data that was not provided in the meeting with Norfund. A meeting with SN Power was also to obtain more general knowledge about the hydropower plant itself. One of the employees became a key informant because she provided very much useful information about the history of SN Power and their involvement in Peru. Statkraft also has an office located in Peru's capital Lima and because the aim was to gather data from primary sources the researcher contacted Statkraft Perú and asked for interview with employees involved in Cheves project. A conference call was conducted to describe the study's main objectives one of the employees confirmed that they would contribute with information and interviews. The aim of an interview with Statkraft Perú was to get a better understanding of role distribution between SN Power and Statkraft Peru, achieve more knowledge about the hydropower plant and to gather contact information to other potential informant units.

To learn more about hydropower plants it was considered useful to visit Hammeren Kraftverk in Oslo. Hammeren is a small scale hydropower plant that is situated in Maridalen in Oslo. It was built in 1898 and currently provides electricity to approximately 800 households (E-co, 2016). Due to contacts and network it was possible to get a guided tour around and inside the power plant. The visit to Hammeren was conducted in order to understand terms and concepts that would be used when talking about Cheves. The visit contributed with useful information and the researcher obtained basic knowledge about how hydropower plants function.

3.2.2 Sampling approach in Peru

To collect the necessary information during the time in Peru it was necessary to use a strategy that is called snowballing. Snowball sampling is a type of purposive sampling technique. Data from people that have been or are influenced by the project is the most important criterion and as stated in Coleman in Bryman (2012) when discussing snowballing is that it can be "recommended when networks of individuals are the focus of attention" (p. 424). Because the time in Peru was limited it was crucial to use the time effectively and collect relevant and needed information. Once arrived in Lima Statkraft Perú was contacted, and because of previous correspondence an interview was arranged within few days. The researcher talked with Head of Corporate Social Responsibility, Land and Permits for Statkraft Perú and he became the second key informant. This interview is where the snowball started to roll, now referring to the type of sampling approach; he suggested contacting the owner of a hostel situated in Churín that is a village close to the power plant. In this hostel is where employees of SN Powers slept before, during and after the construction of Cheves. The owners of the hostel were very familiar with Cheves HPP and possessed much information about the construction process, people and companies that were and are involved, local opinions, social impacts among many other things. They contacted two drivers that used to transport Cheves employees during the construction period for them to take the researcher to the different villages. The villages that had been affected by the Cheves project were situated approximately one hour from the hostel, and because there were no public transportation it was necessary to hire a driver. They knew the routes and people that could provide relevant information.

3.2.3 Sampling approach after Peru

After collecting data in Peru, there were several issues that were considered valuable to discuss with Norfund and SN Power. The aim was to discuss my findings and clarify several topics that were still unclear. The researcher contacted the same people as before travelling, but unfortunately no one had time for another meeting. Because it was not possible to arrange a meeting, several emails were sent with the most relevant questions attached. Norfund answered very fleeting about their current percentage of ownership of Cheves and referred to their website for other information, and unfortunately are there many unanswered questions about participation, distribution of roles and evaluation of the project.

3.3 METHODS OF DATA COLLECTION

A flexible method of data collection was used in order to collect most relevant information as possible. It was important that the informants could speak open about their experiences and the wide range of possible answers resulted in interview guides with open-ended questions. People's understandings of their realities are different and semi-structured interview was therefore chosen. As stated in Bryman (2012) this method of interviewing is done in order to give the interviewees possibilities to present their personal points of view and discuss other topics that are not mentioned by the researcher. This type of interview also allows the interviewer to emphasize and focus on new or unknown topics that the informants mention (p. 741). Unfamiliar or unidentified topics that may be presented by the informants will allow the research worker to adjust the interviews alongside the process. Bryman (2012) suggest that the researcher should consider what is necessary to know to be able to answer research questions when discussing semi-structured interviews (p. 473). Certain topics and themes was therefore written in the interview guides and also mentioned during interviews in in order to answer the thesis' objectives and research questions. The interview guides were inspired by Ian Scoones' analytical framework *Sustainable Rural Livelihoods* because of its relevance and connection to the overall theme of this thesis. Because opinions and perspectives are personal and the informants could have contrary or contradicting points of view, it was crucial to not ask leading questions or be perceived as biased during the interviews. This method of data collection was also useful because it provided more leeway, both for the interviewer and the interviewees, something this approach allowed for.

It was necessary to hire a driver that could bring the researcher to the relevant villages and conduct interviews. Nothing was prepared before departure because of no form of contact possibilities, and when arriving at the different villages it was necessary to approach people in the streets. The aim of research and the researcher's role was explained, and everyone was very helpful by answering all questions and contributing with personal experiences. Between four to seven interviews were done in each village and the length of the interviews varied for two different reasons; level of personal impact and people participating. The average interview lasted 15 minutes, but some informants had much to say because they had been greatly impacted by the construction of Cheves, both positively and negatively. Another factor that affected the duration of the interview was the number of people participating in it. The interviews were mostly conducted in the streets and a few times passing people joined the conversation on their own initiative, and then the interviews became longer. Another variation

between the interviews was the level of active participation; it depended on the informants if it was necessary to ask many or few questions, but fortunately most of the informants talked openly about their experiences and the interviews resulted in in-depth conversations about the project.

Certain criteria were important when looking for informants and the focus was to have a variation in occupation, gender, and age group. It was a crucial to collect data from different social groups in order to find out if Cheves impacted differently within the same village because the local societies around Cheves HPP have tendencies of traditional roles and habits. The young men would therefore know more about impacts on the agriculture and farming sector while the women possess more knowledge about educational programs for the children implemented by the involved companies. Equal gender distribution and occupational variations were criteria's that were achieved as this information was carefully noted during the process.

3.4 DATA MANAGEMENT

Data collection and data analysis was done simultaneously and this parallel management made it possible to interpret meanings and adjust the research process along the way. For example was it necessary to add topics to the interview guide because new information was given in one village became relevant to the other villages. When finishing interviews in one village it was necessary to return to the hostel in Churín. Notes from what the informants had said and a brief analysis of the collected data was administered the same day as the interviews and this made it possible to get an overview over the most common and relevant concepts. Due to the recorder it was possible to write down in English what the informants had expressed in Spanish. Analyzing data before everything was gathered was done because of two main reasons: firstly, to use time efficiently when in Peru and to be able to follow up on specific questions and discover new or unknown topics that were considered relevant. Secondly, to become aware of repeating and relevant information to either ask about this in other interviews or try to find similarities between informants or villages.

When analyzing the results during the process, a clear pattern became visible and these findings laid the foundation of the analytical framework. The use of different resources influenced the villages differently and it is possible to state that based on the findings there is

a clear difference between positive and negative perspectives. Villages were either pleased or negative with how SN Power and Statkraft Perú had impacted their lives. Consequently, different aspects became more studied and included in the research. The use and focus of livelihood resources became evident when analyzing the data and this will be discussed in more detail in chapter five.

3.5 ETHICS

The interviewer used a recorder device during the interviews. This was done in order to not lose useful information, and to focus on what the informant express and not on taking notes. Consent to interview and record were always done before starting the interviews. It was explained that the recordings were only for private use and that the material would be deleted after transcription. The recorder was only turned on after the interviewer explained the main objectives of the thesis, the purpose of the interview and after the informants gave their consent to record the conversation. Everyone in the villages accepted that the interviews were recorded. The interviewees' identities are kept confidential in order to not do any harm and additionally, the names are irrelevant in this study. Even though this research is not very sensitive or hazardous it presents personal perceptions about how external influences have impacted their lives. Although the informants did not seem to have strong opinions about being anonymous, Cheves HPP has had negative outcomes and resulted in social conflicts, it was considered appropriate to anonymize the locals by not mentioning their names in the field notes, recordings or the thesis.

For some informants the device was considered as a disturbing element, but the majority of the informants got used to the device or forgot it shortly after initiating the interviews. There were a few incidents were useful and relevant information was given when the recorder was shut off and probably given because it was not recorded. Unfortunately, this information cannot be included as data in the thesis because of lack of consent. As stated in Norwegian University of Life Sciences (NMBU) ethical guidelines shall students "root their work in a fundamental respect for the value of human life, the integrity, freedom and co-determination of human subjects, and the requirement for informed consent" (University Board, 2015, p. 2). Information that was given to the researcher in confidentiality will not be included in this research to not harm and respect the informants. The people that provided necessary

information should only benefit from helping with the research, and their integrity is respected.

3.6 FIELDWORK CHALLENGES

Personal experiences and values shape how one perceive reality and this influence method use and analysis (Bryman, 2012). To achieve a better understanding of the context the researcher studied theories and approaches deriving from 'sustainable development' and outcomes from Cheves project before conducting the interviews. Bryman (2012) state that "our experiences and our interest frequently have some influence on the issue we research" (p. 7). Reports about the project and literature about sustainable development approaches contributed to not only in-depth knowledge about theories and approaches, but also influenced the researcher's perspectives on the related topics. However, it is evident that the theoretical and analytical frameworks that are used in this research contain numerous elements, and using these frameworks as a lens to analyze and discuss socio-economic aspects in an unfamiliar context is a complex task. There are numerous external and internal factors that influence and form the reality and becoming aware of the complexity of these issues contributed to narrow down the focus and broaden personal opinions, and therefore personal values did not influence the research findings.

During the process of writing this thesis there were several hindrances and challenges that the researcher faced. Limited timeframe influenced the data collection process and the discussion. Conducting interviews was sometimes challenging because face-to-face communication is very personal. Even though the topics discussed during the interviews were not sensitive it was difficult to gather information about specific issues. Cheves project impacted many people and when aiming to obtain information about negative outcomes the interviews became challenging. Due to lack of experiences from this activity sometimes it became difficult to not ask leading questions or be perceived as disrespectful towards the informant. Concern about being disrespectful or impolite is referred to when it was considered necessary to ask follow-up questions and discuss negative outcomes with Statkraft Perú that were explained by the locals. The researcher stated other people's arguments in order to clarify issues and it was considered complicated to be perceived as impartial. To investigate more carefully specific incidents or unsolved conflicts it was difficult to be perceived as neutral, and this also refers to interviews with the local population. Even though my role as an independent investigator was explained before initiating the interviews, it was sometimes

possible to believe that the informants questioned my function. When there were unsolved conflicts between the companies and the informants, both parties argued from their points of view, and it was necessary to stress my role as a neutral investigator. The only way this influenced the research was that more information was given and it is possible to state that this did not affect the trustworthiness of the data, it actually added depth.

Another challenge regarding data collection process was personal behavior. It is possible to believe that it is close to impossible to be emotionally impartial when collecting data about people's feelings. To remain objective and not reveal or demonstrate one's opinions is however possible. Because it was necessary to gather much information in order to interpret the informants' realities it was challenging to not become too engaged in the conversations by showing non-oral communication, such as facial expressions, and consensual comments. SN Power impacted many peoples' socio-economic aspects which are vital elements in their lives, and Statkraft Perú is still working to solve ongoing complicated conflicts between the company and several of the affected communities. It is crucial to not influence the informant's answers and remain in the role of the interviewer, and thus one argues that the researcher did not affect the data because of personal influence for this thesis.

3.7 A CRITICAL REVIEW OF METHODS USED

This last section presents an evaluation of the used method. During the process it was necessary to change elements and it is useful to explain these changes and justify decisions. The reason why qualitative method was used will be explained first.

3.7.1 Evaluation of data collection methods

The aim of this thesis was to gather perspectives and thoughts about how SN Power has impacted lives through the construction of Cheves HPP and interviews were conducted to interpret their meanings and look for tendencies. Through interpretivism and constructivism it is possible to analyze the meaning of the units' perspectives through their points of view and within their reality, and that is why qualitative research method was chosen. To interpret various units and their points of view it was useful to be able to ask necessary follow-up questions and get an understanding of the context. Moreover, face-to-face communication allows both parties involved in the conversation to reveal or discuss the most relevant information that is related to the research. Personal communication may prevent

misunderstandings or other confusions that may lead to false conclusions and misinterpreted reflections.

The answers and experiences varied greatly and the informants revealed new and unexpected information. Even though very much information about the project and its outcomes was studied before conducting the interviews, some of the answers were not written about anywhere and was therefore unknown to the researcher. This would have affected the thesis if used quantitative method; certain topics and themes would not have been asked about in surveys and therefore not revealed as answers. This discovery added richness to the findings. Personal opinions among the local Peruvian people towards SN Power's construction of Cheves are many and unique, and need to be considered in its context in order to understand *why* the local people think what they do. It is easier to understand how people reason through personal communication because it is possible to ask them to elaborate. It is possible to state that the decision both to visit Peru and talk personally to the interviewees improved the overall research because it contributed to in-depth and relevant data. Nonetheless, it would have been possible to used mixed methods; qualitative and quantitative research method. This would also have contributed to a thorough research and it would have been possible to cross-check the information. To collect data through interviews and surveys increases the overall credibility and trustworthiness of the research; however, due to timeframe and work capacity this was not done.

In villages where people were unsatisfied with how SN Power had impacted them, specific negative outcomes often became the focus of every answer and it was challenging to lead the conversation towards new topics or other outcomes. Many of the informants were also unfamiliar with certain concepts and terms, for example 'sustainability' ('sostenibilidad' in Spanish), and this led to some communication problems. Concepts and terms were altered to a small degree to create mutual understanding in order to improve the communication throughout the interview.

The reason why semi-structured interviews were chosen, instead of structured interviews, was because of the aim; the informants could talk as freely as possible about their experiences. Peoples' realities are different and a set of questions may not reveal relevant and useful information. Lack of private settings to conduct the interviews may have influenced the interviews positively and negatively. On one hand, many perspectives were shared in the

group interviews. Informants introduced opinions and experiences that others had forgot or did not know about. There were no hostels or hotels which made it complicated to sleep there, but more time in each village could maybe result in more interviews (more data) and maybe longer interviews to obtain more information and more understanding of the interviewees' reasoning.

There were two interviews that are not considered as valid and useful; one of the recordings was damaged by the sound of wind and due to very poor quality it was impossible to duplicate the data and use the information from this specific interview. Because everything was recorded notes were not taken during the interviews. Another interview was considered not valid because other people commented on how the informant should answer and reminded the informant about negative impacts that were not mentioned.

Before conducting the interviews, pilot interviews were conducted. People that have heard about the project, because of this thesis, helped out by answering as if they were the real informants. These pilot interviews were conducted in Spanish in order for the researcher to make sure the use of concepts and formulations were appropriate. During these pilot interviews it was also possible to test the recorder device. Sound and interview testing was very useful. Even though concepts needed to be changed during the process, and one recording was damaged by the wind, it is considered that the pilot interviews had advantages; the recorder settings were changed to improve audio quality and structure of questions were adjusted.

3.7.2 Evaluation of conceptual framework

Literature review about sustainable development was studied before conducting the interviews and it became very useful because relevant concepts were included in the interview guides in order to collect necessary data. However, some of the concepts were sometimes too academic or unfamiliar for the informants, and that resulted in misunderstandings or communication failure. It is possible to state that it was challenging to not ask leading or complex questions. In the first interviews, some of the units did not understand the questions and it became necessary to rephrase sentences and use examples to make sure the informants understood the topic. For example 'human resources' needed to be explained with examples. Another reason to change the questions was to ensure that everyone in the interviews referred

to the same meaning of a concept or an activity in order to be sure that relevant and valid data was collected, and that the answers would contribute to answer the research questions.

3.7.3 Evaluation of data management

To write down what the informants said from the recordings proved to be very useful, first of all it was easy to access the findings. It cannot be considered as transcriptions, because of two main reasons; it was written directly in English and not Spanish which means that their words were not copied, and because not every utterance and words were written down. The notes are copies from the interviews, but not duplicates. Repeated opinions or phrases, and unnecessary or random expressions were not written down. To translate from Spanish to English when transcribing after the interviews made it possible to be more efficient when analyzing more thoroughly. When aiming to demonstrate the informants' perspectives and explain the context it was helpful to have everything written. The process was to some extent time consuming, however, having to listen to the recordings when wanting to find specific phrases or topics would be more time consuming. Another reason that it proved to be useful is that it made it possible to became aware and learn about repeating concepts or feelings. Sometimes relevant data was not identified during the interviews, but became apparent when putting the interviews into written, and certain patterns or concepts were then explored in the following interviews.

CHAPTER 4: STUDY AREA AND COMMUNITIES

4 INTRODUCTION

14 rural communities were directly affected by construction of Cheves HPP. The power plant is situated 245 kilometers northeast of Lima and the main construction site are located more than 12 kilometers from the communities' residential areas (SN Power, 2010b, pp. 1, 10). SN Power defines the 'directly affected areas' as sites where the construction takes place and areas that are used as support where materials are deposited and camps where workers lived during the construction (pp. 9-10). This chapter will present general information about socio-economic aspects in the communities where the interviews were conducted and brief information about each community. First it is worthwhile to explain the reasons for why the specific communities were chosen.

One reason why these were chosen is because these were mentioned in the interviews with Statkraft Perú when discussing affected areas, and it is also mentioned in the SN Power report on social impacts (SN Power, 2010b). In the first interview with Statkraft Perú the interviewee talked about social support programs, such as agriculture and education programs, that were implemented and provided by SN Power. This generated interest in to study the impacts and outcomes from these programs. The other reason these specific communities were chosen is because the researcher read news articles about social unrest and negative impacts as a result of construction of Cheves HPP. Before travelling to Peru local Peruvian news articles, reports and blogposts were studied in order to obtain local points of view. Information about protests due to crops contamination and land cracks also generated interest (Revista Síntesis, 2013a, 2013b).

4.1 ABOUT THE COMMUNITIES

The communities that were visited to collect information are called Liple, Naván, Andajes and Huacho Sin Pescado. According to the informants are all the communities situated over 2 300 meters above sea level and house between 100 and 200 active residents in each community. The term 'active resident' (translated from 'comuneros activos' by the researcher) refers to inhabitants that permanently live and work in the villages and related agriculture land. The communities are situated in the northern region of Lima and Oyón is the name of the province. Liple is a village that politically belongs to Naván district, and Andajes and Huacho Sin Pescado are independent districts. Below is a map (figure 3) of Lima region, and the

yellow illustration on the right hand of the photo demonstrates where this region is situated in Peru. The red square on the map is the area where Cheves is situated and where the interviews were conducted.

Figure 3: Peru road map. Source: Modified from Fernandes, 2010

Because the communities are too small in size to appear on this map, it has been edited to demonstrate where the communities are situated. The second photo (figure 4) is a cropped and enlarged version of the red square in the upper photo. Churín is where the researcher stayed during the interviews and the red circles represent the communities. These circles are self-made and do not indicate their exact location or size. Andajes is the upper circle and Naván and Liple are the others on the left side (when looking at the map) of the river "Río Huaura" and the red circle on the right side of the river under Churín is Huacho Sin Pescado.

Figure 4**:** Peru road map. Source: Cropped from Fernandes, 2010

Walsh is a Peruvian company that study social and environmental aspects in bigger construction projects and they have developed an executive summary about impacts from Cheves HPP. This resume state that none of the communities are considered as 'indigenous', but because Cheves HPP is located in the Andes the population have ancestral roots and particular cultural characteristics and social institutions, and thus performance standards that correspond to indigenous populations are applied. The report also state that in the directly affected communities secondary schooling is the predominant educational level with 19 percent and that higher education is only 5 percent (Walsh, 2010, p. 8). Additionally there is lack of labor opportunities in these communities. Consequently, many young people migrate to more urban areas, such as Churín or Lima in order to study or work. The resume also state that due to limited capacity to purchase electricity, inadequate education and sanitation practices, and reduced public transport there are multiple cases of child malnutrition and sexually transmitted diseases. The water for human consumption comes from natural sources, but poor or absent water treatment systems and domestic sewage are other causal factors of health problems. "Rio Huaura" which is visible on the map above is currently the recipient of wastewater from urban centers and therefore only used for agriculture (p. 8).

Agriculture is the main industry in the communities that were visited and they produced mostly fruits and vegetables except from one community where cheese production is the main income source. Due to dry climate only certain types of products are possible to use and the

communities are therefore also dependent on irrigation. Avocado and peach are the most common cultivated crops and according to the informants, mainly sold to Lima. The researcher sent emails to Statkraft Perú for more detailed information about the communities visited, such as sex ratio and poverty rates, but unfortunately did not get any response. Below is brief information about each society which was provided by the informants during the visits and reports that are published on the internet.

Liple is a small community in Naván district and according to the informants are there approximately 150 active residents. Liple`s main income source is peach agriculture and their products are sold to Lima, the capital. The picture below is taken by the researcher when I left the village to visit Naván. The green vegetation is peach trees.

Figure 5: Picture of Liple. Source: Østensen, 2016a

Comunidad Campesina de Naván is located approximately 45 minutes from Liple by car. According to SN Power's social management plan are there 280 active community residents in Naván (2010b, p. 15). The vegetation in Naván was very green because the landscape is flat and it is a high-altitude village which makes the climate more humid. The photo below is from Naván (figure 6) and demonstrates the poor quality of roads, and poor infrastructure was prevalent in all the visited communities.

Figure 6: Picture of Naván, Source: Østensen, 2016b

Comunidad Campesina de Andajes is located on top of one of the three mountains that surround Churín and the town is the capital of the district. The village is located a two hours' drive from the power plant. Their main income source is cheese production and there are 154 active residents. Comunidad Campesina de Huacho Sin Pescado is located close to Churín and according to SN Power's social management plan there are 100 active community residents in this community (2010b, p. 12). Due to insufficient employment opportunities many of the inhabitants work in Churín's tourism sector, such as Baños de Tingo, which is a natural hot spring retreat that belongs to the community Huacho Sin Pescado.

SN Power's social management plan (2010b) presents an index of shortcomings for several of the directly affected communities. This table reveals that 96 percent in Andajes and 76 percent in Naván, including Liple, lives without access to toilet services. Additionally it demonstrates that 26 percent of the population in Andajes and 21 percent in Naván suffer from chronic malnutrition for children between 6 to 9 years old. The table also reveals illiteracy rates of woman under 15 years; 26 percent in Andajes and 8 percent in Naván. Additionally, 41 percent of the population in Andajes and 8 percent in Naván do not have

access to electricity (p. 24). Based on these numbers and the information about socio-economic characteristics that was presented in the executive summary by Walsh is it possible to state that these communities will benefit significantly from social support from SN Power. It is worthwhile to mention that this index is from 2006, but it is possible to believe that the numbers have not changed significantly.

CHAPTER 5: A SUSTAINABLE DEVELOPMENT PERSPECTIVE ON THE SOCIO-ECONOMIC IMPACTS FROM CHEVES HPP

5 INTRODUCTION

The main objective of this research was to examine the socio-economic impacts from Cheves HPP in a sustainable development perspective. In this chapter the findings will be presented and discussed in the perspective of theoretical framework (sustainable development) and analytical framework (sustainable rural livelihoods). The frameworks function as structures in order to answer the research questions and discuss the findings using relevant data. Because the research has two research questions; "what are the most significant socio-economic impacts on the local population from the Cheves project?" and "how has SN Power, through Cheves HPP, impacted local population's livelihood resources?" the results will be presented and discussed accordingly. Each part will end with concluding remarks and the chapter will conclude with a critical discussion about 'sustainable development' that is based on the results and related literature.

Before initiating the discussion is it worth knowing that there are two major reasons as to how the communities were impacted; as a result from the construction process and SN Power's acquisition of land areas. It is also worth to mention that the data collected indicates that SN Power impacted several socio-economic aspects in the local communities, varying in form, level and outcome. Additionally, all informants were familiar with Cheves HPP, the most central companies involved in the Cheves project and everyone except for one person that were interviewed, had strong opinions about the project. However, having opinions about the project did not imply that the person had been directly impacted. The link between opinions and impacts will be explained in more detail in this chapter.

It is noteworthy to clarify that 'Cheves project' is referred to as the process of the construction of Cheves and that all involved actors, such as SN Power and Statkraft Perú, is referred to as 'the companies'. To keep the anonymity of the informants their names have been changed to 'participant' A to R.

5.1 MOST SIGNIFICANT SOCIO-ECONOMIC IMPACTS ON LOCAL POPULATION FROM CHEVES PROJECT

This section will present the most significant socio-economic impacts on the local population from the Cheves project. The findings are presented based on type of impact from all four communities and is discussed from a 'sustainable development' point of view. The informant's opinions will be presented first because the reason why people developed positive or negative opinions about the project is related to *how* the project impacted their socio-economic aspects. Explanations about their opinions are useful because being positive towards the project due to for example implementation of educational projects in exchange for land is valuable information for the companies' evaluation and future investments.

It is worthwhile to reveal that the informants living in the same community shared almost the same opinions and perspectives about Cheves, and they were either positive or negative towards the project. Three of four visited communities expressed negative opinions and the informants gave similar explanations for their opinions, using the same expressions of why they were negative towards Cheves project. For example, all the people in Andajes that were interviewed expressed that they felt "deceived" (table 5 in appendix 1) by the companies, while all the informants in Naván were pleased. The data imply that the answers were similar because particular impacts became prominent in the villages, and because the communities are small negative opinions can transmit. Small rural communities can be vulnerable to changes and external influences that have negative outcomes on the local population became a much discussed topic in the visited communities.

Table 1 demonstrates the number of people that were positive, negative or neutral towards Cheves project in each community. The final row demonstrates the overall opinion among the units.

Table 1 Opinions gathered about Cheves

Community	**Number of people interviewed**	**Positive opinions**	**Negative opinions**	**Neutral opinions**
Liple	3		2	1
Naván	6	6		
Andajes	5		5	
Huacho Sin Pescado	4		4	
Total	**18**	**6**	**12**	**1**

Source: Own fieldwork, 2016

The table above demonstrates three relevant aspects that is worthwhile to point out; the amount of interviews in each village, distribution of people's opinions in each village, and that there are twice as much negative opinions about Cheves' than positive (last row). It also demonstrates that there was little or no variety of opinions among the inhabitants living in the same community. Tables of the most significant impacts for each community were also created to answer the first research question. This data is discussed throughout the research, but the tables are presented in the appendices.

The diagram on the next page (figure 7) was developed to display the opinions between the villages in a different way. The color coded diagram demonstrates the diversity of opinions between the visited communities.

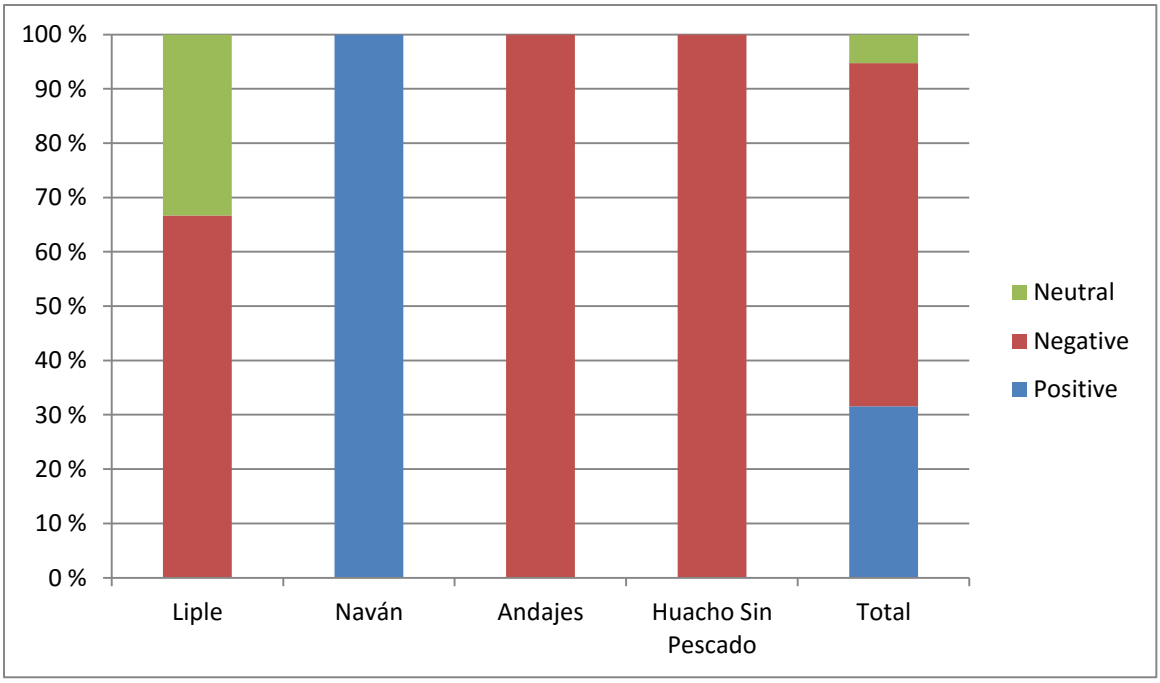


Figure 7: Color coded diagram about opinions

The colors represent opinions; neutral, negative and positive. In Liple there was one male that was more or less neutral to the construction of Cheves. He was not directly affected by the project and his response was not characterized by strong negative or positive opinions. The blue color represents positive opinions towards the project and the diagram clearly demonstrate the difference between the asked people in the communities; everyone interviewed in Naván were very pleased with the project, but no one in Andajes and Huacho Sin Pescado.

As seen in the diagram above (figure 7) 66 percent of the informants expressed negative opinions about Cheves project and the main actors involved. Norfund has a long portfolio of development projects abroad and the organization possesses many experiences about challenges that arise when working in new cultures. Norfund also has "the largest specialized team in Norway for investment in developing countries" (Norfund, 2015, p. 12), yet, over 65 percent of the informants had an overall negative opinions about SN Power and Statkraft Perú. The reasons for why they have these opinions are different, and even though the construction is finished there are still unsolved conflict between the companies and the communities.

It is crucial to consider the context when analyzing social impacts. All communities are different and social structures form and shape peoples way of life. Frank Ellis (2000) from School of Development Studies in UK has written the book *Rural Livelihoods and Diversity in Developing Countries* and he states that "livelihood strategies are dynamic; they respond to changing pressures and opportunities and the adapt accordingly" (p. 40). SN Power is not an organization that is primarily focused on implementation of sustainable livelihood approaches, however, one can argue that based on the findings they might benefit from use of these types of strategies. This is because of the high level of negative response and because they work impact rural communities. The socio-economic impacts from Cheves exist because of SN Power's work, and thus it is crucial that these impacts benefit the locals, both in the present and in the future. These communities bear the costs of the construction and should not be worse off than before SN Power decided to invest.

5.1.1 Loss of land

SN Power needed to buy land from communities in order to construct the powerhouse, tube lines, tunnels, dams and power lines, and according to SN Power's report on social impacts it was expected that 8 900 people would be directly affected by the project (2010b, p. 2). There are numerous positive outcomes from Cheves project, such as increased employment and energy, but according to the informants SN Power's acquisition of land has not only been successful. All the visited communities sold or traded parts of their land, and three of four communities expressed negative opinions that were land related.

Informants in Liple expressed negative opinions because of a conflict with the district's capital Naván (table 3 in appendix 1). Naván sold land that is situated in Liple area to SN Power. The land politically belonged to Naván, but was considered Liple's due to its geographical situation and Liple was not informed about the trade and did not receive anything from the trade. The trade between Naván and SN Power has created conflicts between the two communities. Participant A and B stated that Naván sold the land too cheap and it would have been better to rent the land to SN Power in order to have a frequently income for a longer period of time. Additionally, Naván received several social support programs as an exchange for this land. Even though SN Power followed the formal regulations, the informants from Liple stated that they lost their land and that it was unfair that Naván received the benefits.

Cheves HPP consists of approximately 17 kilometers of tunnels and one of the tunnels passes land that belongs to Huacho Sin Pescado. To build the tunnel it was necessary to drill in the ground under to their cultivating soil, and during this activity fissures appeared. These cracks are 30 to 40 centimeters deep and prevented water to reach the other part of their cultivating plots because the water flowed down the cracks. The consequence of this is dry land and destroyed crops (table 6 in appendix 1). Participant O was affected by the land deformations and in 2012 he wrote a letter together with the community president to inform the company about the fissures. He stated that Statkraft Perú denied that the cracks were their responsibility and the community needed to involve El Organismo de Evaluación y Fiscalización Ambiental (OEFA) which is the Agency for Assessment and Environmental Control for them to investigate. OEFA concluded that the fractures were result of the construction of the tunnel and participant O stated that the resolution demonstrated that it is evident that SN Power was responsible. Nonetheless, Statkraft denied their responsibility and the results from OEFA. Statkraft Perú appealed to the supreme court of environment and participant O expressed concern that they will lose a possible case against the company because they are big, powerful and rich. All the informants expressed resentfulness towards the project and the involved companies because of how they have treated the community and handled the problems and the aftermaths. There is less harvest in this community now and many of the farmers have lost their plants and, and as a result, their income. Participant Q said he had lost his land and explained that many of the farmers were forced to move to the highland with their livestock as a consequence of the land cracks.

This issue was also mentioned during the meeting with Statkraft Norway in November 2015 and it became clear that this conflict is complicated. After talking with Statkraft Perú and the informants from Huacho Sin Pescado it became evident that the issues related to the land cracks is still not clarified. Statkraft Perú argued that OEFA is not an appropriate organization to evaluate this issue and that he wanted another organization that is more dedicated to geology to evaluate the land fissures. This conflict itself will not be discussed more in detail because the explanation for the formation of the land cracks has not been finally confirmed yet and the researcher's lack of knowledge about geology makes it difficult to create a useful discussion. Nevertheless, it is worthwhile to mention it because land issues have had significant impact on the local population in this community, and because it is an unsolved conflict with Statkraft Perú it is worth mentioning as an ongoing consequence of the

construction of the power plant. Table 6 in appendix 1 presents other findings in Huacho Sin Pescado and it appeared that the positive impacts were insignificant or forgotten by the impacts of the land fissures. The researcher was informed by people from other communities about positive impacts in Huacho Sin Pescado, however, these were not mentioned before it was asked specifically about this.

Many aspects are interrelated in small communities such as framing production, income, social relations, labor etc., because their livelihoods come from their plots, and farmland is closely linked to several other aspects in their lives. The communities that were visited for this research are based on agriculture production and therefore dependent on arable land. Their land is used to cultivate and sell products such as fruits and vegetables or to provide nourishment for their livestock. Consequently, loss of land results in loss of income.

The reason why the participants from Andajes had negative opinions about Cheves project was because they sold part of their land to SN Power in exchange for money and social support programs (table 5 in appendices). Unfortunately, this trade resulted in negative outcomes for the people in Andajes; the money was not distributed equally and the social programs have not been implemented. In order to obtain necessary land to construct the power plant SN Power offered social support programs. They organized meetings where they explained their work and each village could make a list of wishes. Participant J from Andajes stated that "We have applied for several things, approximately around 16-17 requests, but the company has executed absolutely nothing". When the researcher asked about the process of social support programs he answered that "the community has based the applications based on the prioritized work from meetings about what is necessary. And these have been sent to the company. And maybe 3 or 4 of the 14 requests could be developed, but nothing" (translated from Spanish to English by the researcher. Interview 10.02.16). From a 'sustainable development' perspective is it possible to state that SN Power' should use other means than money when they buy land. Improvement of farmland may contribute to improve socio-economic aspects for this and future generations, and based on the response from Andajes implementation of social support would have better outcomes.

5.1.2 Loss of income

Several of the informants in this research revealed that they lost income due to Cheves project. The cause of lost economic income was as mentioned related loss of arable land, but also consequences of the construction. The most significant impact in Liple was the consequences of contaminated peach crops (table 3 in appendix 1). One of the informers, participant A, a middle aged woman that has lived her whole life in Liple explained that crops were damaged due to air contamination that was caused by construction of a tunnel nearby Liple. The air that passed by parts of Liple's plots was described as thick greasy brown powder. She explained that SN Power did not react to their complaints about the dust for several months and the inhabitants started protesting. After many protests and no response, a few of the residents broke one of SN Powers' antennas, and after this incident the engineers visited the affected area and recognized the problem. She stated that because SN Power reacted late, this prevented the crops to mature and between six or seven farmers that owned the affected plots lost their products and therefore the income of sale. The construction took place in the beginning of the cultivation season and the powder covered the crops as a layer during early stage of the growing process. One of the informants estimated this loss to be around 10 000 Peruvian Soles, which is approximately 25 000 Norwegian Kroners. Harvest of fruits and vegetables is the source of income for Liple's farmers and lost crops means less income and farmers in Liple are dependent on this. Due to the climate it is possible to harvest more than once a year, but loss of one harvest have significant impacts. Participant A stated that there was not given economic compensation for the financial losses by SN Power, but they disinfected the contaminated trees and provided fertilizers as compensation.

The informants from Huacho Sin Pescado stated that numerous of residents have lost their income due to the land fissures. Several plots are dried out because the plants do not receive water due the cracks, and because they were dependent on sweetcorn production many have now lost their primary income source. The informants stated that most of the residents have been forced to work in different sectors, such as tourism in the neighbor community. Even though SN Power's main aim was not to primarily reduce poverty in these communities, one can argue that the company should not increase poverty or reduce income.

5.1.3 Loss of control over resources

SN Power's framework from 2010 state that the company would encourage local population to express complaints in order to take action and solve conflicts as fast as possible (2010a, p. 16). Unfortunately, the data collected indicates that the most significant socio-economic impacts in two of four communities are still unsolved conflicts. When initiating projects or initiatives that influence people's livelihoods it is crucial to include them. Unfortunately, informants from Liple, Andajes and Huacho Sin Pescado revealed that they felt ignored or deceived by the companies involved (table 3, 5 and 6 in appendix 1). The findings imply that if SN Power had reacted to the local voices before, during and after the process the locals perhaps would have had more positive opinions about their work.

Inclusion of local population in problem-solutions may benefit both the locals and the involved companies. It is possible to believe that ignoring the impacted will increase the power gap between the context's most vulnerable part (local rural population) and the powerful part (organizations and companies). Because both companies that constitute SN Power are governmental are there certain responsibilities ascribed. It is possible to argue that because Norfund's investments "are conducted in accordance with the core principles of Norway's development cooperation policy" (2015, p. 2) they must take responsibility for all negative outcomes even if they are unexpected and complex. SN Power possesses many resources that may benefit the local population and they should not ignore the vulnerable voices that sold land for them to develop a profitable business. Several of the informants expressed that they felt deceived and believed they would benefit from selling their land. Participant A from Liple stated that "I expected some positive changes, such as lower electricity prices, better infrastructure or improved water access. They fooled us practically" (translated from Spanish to English by the researcher. Interview 09.02.16).

There are many unanticipated events that may occur during comprehensive projects such as Cheves. However, it is important to include local population and be able to adjust approaches along the way. On one hand can unforeseen impacts can be challenging to handle because no definite action plan has been made, but on the other hand was SN Power aware of the possibilities of air contamination. A framework developed by SN Power in 2010 present the company's objectives, requirements and responsibilities regarding health, safety, environment and social management. It demonstrates that the company considers numerous important aspects, possible outcomes, and includes environmental and social elements in their strategies.

It states that “air quality will also be subject to impacts that come from the construction phase due to the generation of particles and combustion gas emissions” (2010a, p. 12). The framework demonstrates that SN Power knew that the construction could impact the air, yet, they did not react to the complaints. The informants in Liple expressed most negative opinions about the reaction time, not the contamination itself.

5.1.4 Social support programs

SN Power has been in Peru since 2003 when they bought the Peruvian hydropower company Cahua. Local knowledge and experiences from the area are especially useful for international investors when developing projects because they may be unfamiliar with host culture. As mentioned in the chapter on ‘theoretical framework’, Scoones considers the local population to be very valuable when aiming to develop strategies. They possess knowledge about resources that can contribute to improve their livelihoods. The companies visited the directly affected communities and offered social support programs by asking what they needed or wanted for the communities as an exchange for land. Residents of a restricted area or community know more about available resources, possible solutions and needs, than investors from another country. As mentioned in the chapter on ‘research methods’ about ontological orientations; “social phenomena and their meanings are continually being accomplished by social actors” (Bryman, 2012, p. 33). The locals’ reality is a construction of their participants and they develop conclusions and reflections that are based on own perceptions of the social world. Only they are familiar with their reality and because the social actors are continuously involved in constructing their lives and livelihoods, communities, inhabitants, are aware what they need and what they will benefit from. Even though the informants revealed mostly negative impacts, this initiative had only positive response among the informants.

SN Power collaborated with different organizations and institutions in Peru and initiated programs to improve educational and agricultural sectors. All the visited communities receive free school supplies for the children enrolled in primary school and Statkraft Perú visits and gives backpacks, pencils and notebooks every summer or Christmas, depending on the village (table 3, 4, 5, 6 in appendix 1). SN Power’s social support programs were unfortunately only successfully implemented in Naván, and all the informants in this community had positive opinions about the construction of Cheves HPP (table 4 in appendix 1). SN Power with IPAE, a private business institute in Peru, has developed programs for teachers in the affected

communities. Every last week in the month a teacher from IPAE stayed in Naván to help the local teacher to improve teaching methods and the overall education. The teacher stayed for one week and helped with writing and literacy. This program lasted for one year and in the end the children were tested and the results demonstrated great improvements in different subjects, writing and reading knowledge and behavior. Participant D, a mother of two children, said that she has noted improvement in her children's behavior and was very pleased with everything Cheves has done for the community. She said that "we have not any negative impacts, only the conflict with the population in Liple. We would like to have a new hydropower plant" (translated from Spanish to English by the researcher. Interview 09.02.16).

SN Power and Statkraft provided measures to improve Naván's agriculture and farming industry through tree grafting training and cows (table 4 in appendix 1). Agriculturists visited Naván and explained grafting of trees which is a technique where part of the tree is attached in the tree trunk to improve the fruits and increase the amount of crops. This was another successful program that is now used on peach, avocado and apple trees. Many of the residents of Naván learned how to graft and teach others to do it as well. SN Power also gave three purebred cows for the cattle to increase and to improve the breed. This has also resulted in improvement of milk and meat.

No financial capital was used by SN Power as measure to acquire land in Naván and all the informants were very pleased with Cheves project. Comparing the positive response in Naván with how the other communities have been impacted is it possible to state that the results indicate that focus on human and natural resources in development approaches are more successful than providing money.

5.1.5 Concluding remarks

SN Power possesses experiences and knowledge about local impacts from previous projects, and the company owns nine hydropower plants in Peru. Nevertheless, based on what the informants explained is it possible to argue that the company could have succeeded better at a local level. As presented, are several of the socio-economic impacts negative consequences for the local population, but the results indicate that their use of human, social, and natural capital had exclusively positive socio-economic impacts. Their projects are of large scales therefore are there high risks of several side effects. The research indicates that it is important

to develop appropriate macro and micro approaches; the macro level approach is to construct hydropower plant, and create positive outcomes for the local communities that are directly affected is the micro level approach. Nevertheless, outcomes of impacts may vary because societies function and operate differently.

As Scoones (1998) points out, there are many socio-economic differences within any sites (p. 11), and it is possible to state that all these differences and experiences should lay the foundation of the development of strategies. As mentioned in chapter one Norfund is funded and owned by the Norwegian Ministry of Foreign Affairs and received 1.23 billion Kroners in 2014 via the national development assistance budget (Norfund, 2014, p. 2; 2015). One can argue that strategies targeting local's livelihood aspects are equally important as the construction itself because the company uses money from the Norwegian development assistance budget. This is a fund reserved for aid activities and is financed by the government through the state budget. On one hand, it may be challenging for SN Power to have complete overview of conflicts or unsuccessful outcomes because EGE Cheves and Statkraft Perú are now operating the power plant, but, on the other hand it is crucial to evaluate thoroughly every project because it may contribute to improve the company's performance and understanding in the future. Analysis of own work is valuable for the company's reputation and everyone involved in their projects. The studies and reports that were presented prior to the construction of Cheves HPP demonstrated that there are several social aspects that need improvement. Low schooling level, poor sanitation conditions, child malnutrition, and illiteracy are challenges that are crucial and essential to improve in order to develop sustainably. Next section will analyze and discuss how SN Power impacted the locals' livelihood resources.

5.2 SN POWER'S IMPACT THROUGH THE CONSTRUCTION OF CHEVES HPP ON LOCAL PEOPLE'S LIVELIHOOD RESOURCES

This section will analyze how SN Power impacted the locals' livelihood resources through the creation of Cheves HPP. Even though the extent of influence varied, several of the informants answered that Cheves project influenced their livelihood resources. How SN Power impacted the local livelihood resources depended on which measures or resources were used by the involved companies. To answer the second research question "how has SN Power, through Cheves HPP, impacted local population's livelihood resources?" is it therefore useful to look at the means that were used by SN Power to pay for land or handle unplanned impacts.

Scoones' Sustainable Rural Livelihoods Framework is used as a tool to analyze the findings and answer the second research question.

The table on the next page presents the most significant impacts on the locals' livelihood resources, and these resources are based on Scoones' categorization; natural, human, social and financial capital. The second column from the left present how SN Power or Statkraft Perú impacted livelihood resources, and the column to the right present the different means that were used by the involved organizational actors. In the column far to the right, present the different types of livelihood resources. There are a few empty fields, and this is because Statkraft Perú had not done any measures at time of the interviews. The measures are considered as a type of capital and this categorization is based on Ian Scoones' Sustainable Rural Livelihoods Framework (1998).

Table 2 Impacts on the local livelihood resources			
Community	**Impact on livelihood resource**	**Measures done by SN Power**	**Type of used resource**
Liple	Improved irrigation system	Provided water tubes	Natural capital
	Contamination of peach crops	Provided fertilizers	Natural capital
	Loss of income due to contamination of peach crops		
	Loss of land	Payed district capital for purchase of land	Financial capital
Naván	Improved education	Provided teacher traning programs	Human capital
	Improved peach, avocado and custard apple crops and increased production.	Provided agriculture traing programs	Human capital
	Improved breeds	Donated cows	Natural capital
	Increased milk and meat quality	Donated cows	Natural capital
	Increased amount of cows	Donated cows	Natural capital
	Increased labor oportunities	Offered employment at construction site	Human and social capital
Andajes	Loss of land	Purchased of land	Financial capital
	Skewed distribution of money	Payed the community president for purchase of land	Financial capital
Huacho Sin Pescado	Loss of plots due to land cracks		
	Expansion of hot springs	Offered earmarked money	Financial capital
Source: Own Fieldwork, 2016			

This data demonstrate both positive and negative impacts on the local populations' livelihood resources, but indicates that there is a difference between planned and unplanned actions. SN Power and Statkraft Perú carried out measures because of agreements with the community such as acquisition of land (planned) and due to an unexpected event (unplanned) such as land cracks or conflicts within communities. Table 2 demonstrates several impacts that were caused by accidental events and several of the incidents have still not been solved. Unforeseen events can be challenging to handle, but how obstacles or conflicts are solved play a crucial role when aiming to contribute to sustainable development and create successful projects.

5.2.1 Social conflicts

The findings demonstrate that the construction of Cheves HPP resulted in disagreements and conflicts among the communities' residents and between the communities and Statkraft Perú. People had been impacted differently. However, the source that consistently created negative impacts and then negative opinions was the use of financial capital as a resource. This was one of the main findings that became visible early on in the data collection process. The data collected from Andajes indicates unjust distribution of money when SN Power purchased land for construction. Money was given to the community's president, but according to the informants there are still missing part of the total amount to distribute and the distribution was not equal among the residents. Skewed distribution has influenced the social structures in Andajes; residents feel deceived by the company and the president (table 5 in appendix 1). Some of the informants believed SN Power made a deal with the president that only benefited a few of the residents, while others criticized the president for being corrupt. Participant J argues that "We always supported the project with much respect for the arrival of the project and we behaved as a community should. But the company has used us and they have bought authority. There is a contract between the company and the community, but this contract was done behind the community. […] The former president of the community worked alongside the company. The former president betrayed the community and was displaced by the community" (translated from Spanish to English by the researcher. Interview 10.02.16).

During the interview with a former president of Andajes, participant K, he stated that they agreed to sell the land for 360 000 Peruvian Soles in exchange for implementation of a social program and projects to improve thermal baths situated in Churín. Churín is a tourist attraction because there are several out and indoors natural thermal baths located around the town, and Baños de Fierro is one of the hot spring facilities that belong to Andajes district. However, the inhabitants of Andajes have not received the requested programs or improvement of the facility. When the former president was asked about the trade he answered that the companies involved "are not meeting the agreements they have with the villages, they are ignoring us and based on all this, do the village feel resentful with the company. So it is a company that has arrived to deceive" (translated from Spanish to English by the researcher. Interview 10.02.16). Additionally the informants explained that people from SN Power and Statkraft Perú told them to sign a contract in order for them to receive 1 000 Soles. Participant J, explained that 90 percent of the people that signed the contract have not yet received the money, and that they were told that of they didn't sign, they would lose

the money. When the researcher tried to talk to the current president of Andajes he refused to do an interview or comment on the money issue.

SN Power's impact on social relationships between the residents in Liple and Naván has also been negative because Naván traded land with the company. Protests and sabotage in Liple is another example of social conflict as a result of SN Power's construction. The inhabitants felt ignored by the company until they damaged the company's satellite. Scoones emphasizes on institutions and organizations because they are important parts of social structures within a society. According to Davies in Scoones (1998) institutions are "the social cement which link stakeholders to access to capital of different kinds to the means of exercising power and so define the gateways through which they pass on the route to positive or negative [livelihood] adaptation" (p. 12). SN Power's work influence many people and it is essential that they do not damage or aggravate the social capital in the communities they affect. Even though SN Power invests to enhance Peru's energy which will benefit the country's population, their activities play an important role. SN Power needs to take care that they do not worsen personal relations within the communities. They should use their potential to create opportunities for the locals. One can argue that international investors such as SN Power must improve the locals' livelihood resources for them to have more capabilities that benefit their living standards. In order for SN Power to develop successful projects are there many aspects that will need to be evaluated, not only the power plant itself.

5.2.2 Increased capabilities

It is worthwhile to mention people's capabilities when analyzing livelihood resources because it is essential in the understanding of 'sustainable livelihoods'. The data collected indicates that there is a clear link between SN Power's use of capital and the local population's capabilities. For examples, SN Power used no financial capital in Naván and people's capabilities and assets improved and their responses about Cheves' impacts were only positive. The informants from Naván had positive attitudes about SN Power's work because they improved their possibilities to sell more products, facilitated their labour tasks, and created more opportunities. According to the informants did SN Power's impacts in Naván corresponded with the essence of sustainable livelihood; including local population, using available resources and assets in order to improve their means of living. Additionally, this was done without compromising the nature's ability and will benefit future generations. The social

support programs that were implemented in this community increased the opportunities of Naván's residents to improve natural, social and human capital. Naván is the only community where all the informants were positively impacted and none of the used measures were financial capital. Increased livelihood resources (human, natural, social and financial capital) and capabilities (new and more labour and activity possibilities, better education, healthy and more food etc.) became evident. These attributions increased Naván's capabilities and abilities.

As mentioned in chapter on 'theoretical framework' are there five key elements in Scoones' definition of 'sustainable livelihood' and all these elements were strengthened or improved in Naván (1998). The findings imply that the outcomes of SN Power's social support programs in Naván resulted in increased labour and opportunities for labour through improved education and working with the Cheves construction. Improved and increased amounts of assets make the community less vulnerable to shocks and stresses and may increase their income from trade, and all these outcomes contributed to improve the local's well-being and capabilities using only available and sustainable resources. Cheves project improved all the different types of livelihood resources in Naván through their social support programs. Another finding that demonstrates the effect of increasing people's capabilities is the findings from Liple. Between six or seven of Liple's residents lost their incomes due to contaminated crops and they were not compensated with financial capital, but with fertilizing products, and the data demonstrate that the only focus among the informants was the contamination itself and SN Power's reaction time, not the type of used resource. To provide natural capital for the residents to improve their future crops gives them the capability to produce better, faster and more fruits. Nevertheless, the people that actually lost their income were not interviewed and therefore are their opinions about this procedure not included and their opportunities are only the researcher's assumptions. The data from Liple imply that people's possibilities and access to assets is a favorable form of development.

5.2.3 Use of financial capital worsened social capital

The construction of Cheves HPP impacted several livelihood resources in all the communities that were visited, but social capital was especially influenced in the communities that expressed negative opinions about the project. As presented in the section 'social conflicts',

Cheves project has impacted several social relations between and within several communities and the companies.

As mentioned did SN Power use financial capital to obtain land in Andajes and this worsened the resulted in conflicts among the residents. Even though they gave financial capital to the residents, the informants had not used the money to increase their capabilities, create new assets or means of living. Although the money they received was used individually on personal necessities, there was no evidence that it contributed for the community to develop sustainably and collectively. The informants expressed negative opinions because they wanted social support programs that are only based on natural, human and social capital. Participant J stated that "the community never asked for money, we applied for projects" (translated from Spanish to English by the researcher. Interview 10.02.16). On one hand, several small portions of money can contribute to create sustainable livelihoods for the entire community, but, on the other hand, it might be more challenging to arrange without external force. Nonetheless, SN Power's report demonstrated in 2010 that 96 percent of the population Andajes lived without access to toilet and 41 percent without electricity access (p. 24). It is possible to claim that the sum of the money that was given to the inhabitants could have improved the sanitation conditions significantly. Instead of financial distribution of the sum it could have been spent on upgrading the educational system or infrastructure. Krantz (2001) stated that sustainable livelihood approach (SLA) is a "holistic view on what resources, or combination of resources, are important to the poor, including not only physical and natural resources, but also their social and human capital" (p. 4). SN Power possesses possibilities to improve the communities' human, natural and social capital through existing and available resources or financial capital. One can argue that because of their extensive influence and aim to contribute "to economic growth and sustainable development" (SN Power, 2014, p. 15), they should use strategies that correspond theoretically and practically with their goals.

5.2.4 Livelihood diversification

SN Power's projects are constructed in developing countries and hydropower plants are usually built in rural areas because of geological reasons. Rural areas in developing countries may be vulnerable because of the consequences of climate change, poor infrastructure, limited resources, market competition or poverty among many other possible factors. Because the visited communities are rural and vulnerable to shocks and changes it is worthwhile to include

‘livelihood diversification’ in this chapter. Diversification of livelihoods may improve rural households because it is a result of increased possibilities and capabilities which was discussed previously. Increased portfolio of activities and income sources makes rural households less vulnerable and this is the essence of Scoones’ definition of a ‘sustainable livelihood’.

The communities around Cheves are dependent on agriculture of specific fruits or vegetables because of the climate. In Ellis (2000) vulnerability is defined as “a high degree of exposure to risk, shocks and stress; and proneness to food insecurity” (p. 62). Due to little rain and cold nights the villages cannot vary in what they cultivate and this makes them vulnerable to changes or shocks. Poor infrastructure and lack of public transportation makes it challenging and time consuming to leave the villages often. There was also need for human capital in the villages because most of the work was done manually. Because the communities are vulnerable the consequences of climate change could impact these communities severely. The informants affirmed that the weather has been more unstable the previous years and that this year has been drier than normally. Social structures changes continuously because of internal and external influences and therefore are strategies that consider these shifts important. Scoones (1998) state that “it is this dynamic element, evident in the composition and recomposition of livelihood strategies, which is important to examine, especially in the context of assessing the sustainability of different options” (p. 10). Various well-functioning or stable livelihood resources will make a village less vulnerable because the residents will have different income sources, knowledge about diverse activities, and better access to basic needs or more assets. Scoones (1998) refers to three main outcomes when he discuss livelihood strategies; “agricultural intensification/extensification, livelihood diversification and migration” (p. 9). SN Power contributed to intensify Naván’s agriculture, and increased their livelihood resources. The construction of Cheves HPP also resulted in migration and this will be discussed later on. Livelihood diversification in Naván also resulted in improved social and human capital such as improved knowledge skills, ability to labor, new networks, social relations and associations.

Having a bigger livelihood portfolio contribute not only to better chances for improved living standards, but also to a sustainable development as it is defined in the Brundtland Report; it makes it possible for local population to meet their needs, using available resources, without endanger or decrease the ability for future generations. Scoones (1998) define ‘livelihood’ as

‘sustainable’ when “it can cope with and recover from stresses and shocks, maintain or enhance its capabilities and assets, while not undermining the natural resource base” (p. 5). Climate change is already influencing the local population’s livelihoods, and therefore it is crucial that SN Power consider these factors when they create strategies. The Brundtland Report was published for almost 30 years ago and United Nations created 17 sustainable development goals as a plan of action (United Nations, 2016b). Sustainable development has been put on international and national political agendas and one can argue that all strategies should include human and natural aspects. SN Power’s implementation of social support programs contributed to increase the amount of assets and strengthen Naván’s capabilities, nevertheless, it is not possible to confirm that the residents now are able to recover from shocks, such as droughts or torrential rains.

Migration is another outcome of livelihood diversification. Several of the residents in the directly affected communities were offered employment in the construction of Cheves, and during this period they learned new skills and obtained new personal connections. On one hand this is positive because they develop new skills and may result in more employment opportunities. Social and human capitals, such as reading and writing skills and new social networks, are valuable resources when aiming to develop. When the construction of Cheves HPP finished, several of the employees were offered work in construction sector. Temporal or permanent labor migration may provide higher incomes than in the communities and therefore the migrant can support families financially from distance. Capacity building contributes to empowerment and creates opportunities to improve private and common livelihood resources. The informants stated that the workers gained more money in the construction of Cheves than in the plots and this result in more opportunities for the migrant and his or her family. On the other hand, several of the locals left the communities to work with other construction projects. A young man, participant H, said that his cousin now works with a mining company because of the learning skills and personal connection he developed during his time at Cheves. This results in less manpower in the village and labor force is essential in these communities. Because of the lack of machineries migration is likely to result in increased work for the village residents in activities such as harvesting and maintenance of soil.

5.2.5 Concluding remarks

There are several learning outcomes from this research and based on Scoones' framework can Naván be used as a successful example. Based on the answers from the informants in Naván is it possible to argue that this process has benefited the local population there and contributed to a sustainable development. SN Power obtained land from Naván in exchange for several social support programs to improve their livelihood resources, and the results demonstrate that the residents were very pleased and grateful. They provided natural and human capital to improve Naván's social and economic aspects. They intensified Naván's agriculture and improved the community's education through capacity building. The informants explained that fruits and livestock increased which resulted in more income, the meat and milk got better, it contributed to better health, the children learn more in school, and their social network increased which has resulted in more labor opportunities. Scoones stresses the importance of understanding the "social structures and processes through which sustainable livelihoods are achieved" (pp. 11-12) and data collected from Naván and Statkraft Perú illustrate that this has been done; SN Power became familiar with the context, created strategies based on available resources to improve their capabilities in order for the community to develop in a sustainable way. Scoones divide the outcomes in two; 'livelihood' and 'sustainability', and the findings from Naván indicate that SN Power and Statkraft Perú accomplished much of what Scoones suggest to achieve these outcomes. The companies contributed for the population to meet "the needs of the present without compromising the ability of future generations to meet their own needs" (Brundtland et al., 1987, p. 41). Data from this research indicate that the best outcomes for the local population is when the original aims of the concept 'sustainable development' are reached; increased equalities and capabilities, using available resources that are renewable and not damage the environment. Use of financial capital as a resource do not correspond either the roots of the concept 'sustainable development' or to Brundtland's definition, and had exclusively negative impacts in this research.

5.3 MAJOR FINDINGS

The major findings contain much valuable information that can be presented and analyzed from various perspectives looking at different aspects. To present the data in a broad perspective and not each community individually the major findings are presented in the following bullet points:

- Everyone the researcher talked to were familiar with Cheves HPP and its involved partners
- SN Power's use of resources as a means to buy land to construct the power plant play a crucial role for the local people's opinion
- All the informants in Naván expressed positive opinions about how SN Power and Statkraft Perú impacted their community
- All the informants in Andajes and Huacho Sin Pescado expressed negative opinions about how SN Power and Statkraft impacted their communities
- 66 percent of the informants felt either deceived by or resentfulness towards SN Power or Statkraft Perú
- When SN Power used money as a resource instead of natural or social capital to obtain land, it created conflicts
- Even though the people who weren't personally impacted by the construction itself, had negative opinions about the project because of still missing social support promised to the community, such as people in Andajes and Huacho Sin Pescado. They had negative opinions because of the lack of measures that they were promised when they gave up their land for the construction.

Sustainable development is a complex issue, and based on the findings and its importance is it worthwhile to discuss this topic from a critical perspective.

5.4 CRITICAL DISCUSSION ABOUT SUSTAINABLE DEVELOPMENT

Based on literature presented in 'theoretical framework' in chapter two and the results from this research is it worthwhile to discuss 'sustainable development' from a critical perspective. There are several learning outcomes from this research, but the diverse outcomes from using different capitals are noteworthy. The data demonstrate that the most significant socio-economic impacts in the three communities that expressed negative impacts, money was the

source. Therefore, based on this research, is it possible to state that financial capital cannot be considered as an appropriate resource when aiming to develop sustainably. Natural capital was used as a means in Liple for lost financial capital and according to the informants was this received positively. Even though it would have been possible to calculate the total amount of lost income, SN Power gave fertilizers to the famers that owned the contaminated crops, and the informants did not express discontent about this strategy. This specific data implies that use of natural, human and social capital had better impact on the local communities than use of financial capital. Although this data is limited, it is worth to question the use of financial capital as a resource. Seen from 'sustainable development' point of view money itself is not renewable; it does not restore itself such as renewable energy and once it is spent it is not possible to reuse. Nevertheless, money is essential in order to develop, but these results indicate that use of financial capital is not the most appropriate method to support sustainable development.

Climate change is evident and its consequences will have severe effects in both rural and urban areas. However, rural communities, such as Liple, Naván, Andajes and Huacho Sin Pescado are vulnerable to changes and therefore can adaption be challenging. Livelihood diversification contributes to diverse income sources and due to climate change this is crucial for these communities; if specific types of crops become permanently unusable or destroyed due to extreme weather, it will be necessary to find new ways to live. The economic market also plays an important role; price competition and international trade agreements influence agricultural sectors worldwide and for small communities with limited resources are approaches that contribute to 'sustainable development', as perceived in the 1970s, crucial. From the researcher's understanding economic growth is not the main objectives for these communities. Therefore approaches that look beyond economic growth and emphasise on human and natural aspects will be more appropriate to these communities. Improvement of already existing livelihood resources and increased activities portfolio will benefit the local population for the present and future, without compromising natural resources. However, approaches and strategies that do not include economic growth as a wanted outcome are not very common.

Because economic growth has become standardized in most enterprises strategies and the driving force in decision-making, fundamental social changes are needed to achieve sustainable development as it was wanted when the concept was developed in the 1970s.

Reduced inequalities and careful use of natural resources is contradicting with economic growth. Exploitation of natural resources is done in order to meet the demand and this result in financial gain for the supplier. One can argue that climate change and inequalities drown in the undertow of high level consumption and economic growth. Professor Shanmugaratnam from the Norwegian University of Life Sciences (NMBU) state that "new accounting systems are needed to measure actual costs and benefits, and that not all costs and benefits can actually be measured" (2011, p. 68). The positive response about improved well-being and increased capabilities in Naván is difficult to measure, nevertheless, the it is only community that SN Power's work seemingly has contributed to sustainable development.

Is sustainable development a utopia? Because people perceive 'sustainable development' differently the answer to this question will be different. *Webster's New World Dictionary* defines 'utopia' as "any idealized place of perfection" (Agnes, 2003). Furthermore 'utopia' can be understood as something that is presented as more perfect than the reality. Based on literature and the reality it is possible to argue, on one hand, that, yes, sustainable development is idealized and present a development or reality that is more perfect than possible. On the other hand, if 'sustainable development' is perceived as 'development that sustains' is it possible argue that no, it is not something that is portrayed as more perfect than reality. Due to technology and knowledge many societies worldwide are developing, now referring to human and economic development. History has demonstrated that a capitalistic economic system maintained inequalities and contributed in damaging the earth's ecosystem. Climate change and poverty are not results of utopia. Due to globalization societies worldwide are somehow connected and embedded neoliberalism shapes industries, policies, governments, and laws. In order to achieve a sustainable development it is therefore necessary to change the fundamental structures that cause inequality, climate change, and resource depletion. One can argue that sustainable development is utopia, too good to be true, as long as capitalism is the hegemon. The global capitalistic system influences policies and development approaches and capitalization of resources makes sustainable development a utopia. Nature and humans are inseparable because the nature itself provides the necessary resources for humans to live and it is the humans' habitat. To commodify natural resources will eventually culminate because of the socially produced system of production and trade (Shanmugaratnam, 2011). If sustainable development is not a utopia, and therefore possible to obtain, it is essential to look at the strong and powerful forces that aims to gain financially and shapes world system. New ways to measure development and growth are therefore crucial in

order to achieve the objectives that laid the foundation for the concept when it was created in the 1970s.

The Brundtland Report introduced and put 'sustainable development' on the political agenda in 1987 and the United Nations (UN) has now tried to revive the term by creating 17 sustainable development goals (SDGs). The SDGs are created for all countries to promote politics and strategies that contribute to sustainable development. The goals include three aspects that are considered as essential when aiming to achieve 'sustainable development'; human, nature and economy. The goals have many different objectives, such as reduce inequality, improve food security and develop peacefully without depleting natural resources. The goals are set out to be achieved within 2030 and function as frameworks for national and international policies. Nevertheless, UN's sustainable development goals are not legally binding and each country is responsible to follow up the process and implementation of the goals (United Nations, 2016a). The extent of how much UN's goals influence decision-makers and shape policies is therefore the remaining issue.

One can argue that the concept has lost its importance or influence because it is used often but with different meanings. Oxford Dictionaries define 'sustainable development' as "economic development that is conducted without depletion of natural resources" (2016). One can argue that inclusion of economic aspects in the concept's definition is contradicting. Constant economic development will eventually deplete natural resources because many profitable resources are not-renewable and will deplete, such as petroleum. Additionally, extraction of non-renewable resources releases so much greenhouse gases that the consequences of this activity deplete other natural resources. Climate change and high level of economic activities will eventually deplete natural resources. Journalist and author Naomi Klein (2014), state:

> Our economy is at war with many forms of life on earth, including human life. What the climate needs to avoid collapse is a contraction in humanity's use of resources; what our economic model demands to avoid collapse is unfettered expansion. Only one of these sets of rules can be changed, and it's not the laws of nature (p. 21).

One can argue that economic growth and sustainable development is a zero-sum game, only one can win, and this is because capitalism is the hegemonic system and shapes the fundamental structures in today's social system. Sharachchandra Lélé has a Ph.D. in energy and resources and he argues that 'sustainable development' has become a watch-word for

NGO's and a jargon for government and business strategies because of inconsistency in the concept (1991, p. 613). One can argue that the concept has become vague, lost influence, and therefore it is necessary to clarify the concept's meaning and develop strategies and approaches that correspond. If the Norwegian government aims to invest to contribute to sustainable development it is crucial to look beyond economic growth and measure results based on other indicators, such as nature and humans capabilities and well-being, without depleting natural resources and harming environment.

CHAPTER 6: CONCLUSIONS

6 CONCLUDING REMARKS

This research was set out to examine socio-economic impacts from SN Power's work with Cheves HPP in Peru. The findings are based on interviews with local population living nearby the power plant, and analyzed and discussed in a sustainable development perspective using related literature. As a conclusion to this study this chapter is a summary of the research's main objective, how the research was set out. But before answering the research questions, it is worthwhile to present the research's trustworthiness in light of the findings. This is because it is crucial to have in mind that this study is not representative for all the rural areas in Peru that has been impacted by Cheves HPP; the results cannot generalize a wider population and the findings are not sufficient to conclude all socio-economic impacts from Cheves project. Additionally, there may be impacts that have not yet occurred or become visible at the time of the research. The findings are based on informants' points of view and their reality at the time of the interviews. This study is based on an interpretivist position and the researcher believes that people continually construct and reconstruct their meanings and views on the social world. All knowledge has context and the researcher will never be able to fully grasp each informant's story. Nevertheless, the findings presented are representations of what the informants have expressed as experienced consequences of the Cheves HPP project.

However, because the main objective of this research was to examine the socio-economic impacts it was necessary to present perspectives and opinions from people living in the affected communities. Qualitative research aims to gather information about participants' points of view and obtain contextual understanding, and travelling to Peru provided local perspectives and thoughts about SN Powers construction of Cheves HPP. Semi-structured interviews with interview guides and two narrow research questions contributed to collect relevant and necessary information to answer both research questions. Flexible method of data collection gave the researcher and the informants certain leeway; it made it possible for the interviewees to talk freely and this revealed more information about specific aspects and topics that were unknown for the researcher. Personal communication contributed to comprehend *why* the informants reasoned the way they did. Recording the interviews and analyzing data simultaneously allowed the researcher to adjust the interviews along the process and follow up on specific issues that were relevant to the study. To see the communities and talk to people living in these societies provided more in-depth data than

literature published by the involved companies and contributed to a better understanding of the importance of SN Power's resource use. Scholarly reviews about 'sustainable development' contributed to comprehend relevant aspects and different approaches that are used and studied when aiming to achieve sustainable development.

As seen throughout this thesis the concept 'sustainable development' is complex; people have perceived 'development' differently that the last two centuries. Nevertheless, looking beyond economic growth and include human and environmental elements in approaches and strategies is not new ways of thinking. In the late 1970s many people started to question economic growth when inequalities did not decrease as much as expected and it became evident that human activities resulted in resource exploitation. High level of consumption and population growth contributed to increased focus on 'conservation' instead of 'exploitation' of natural resources. The watershed in the history of 'sustainable development' occurred when scientists proved that too much CO_2 emissions caused global warming and climate change and thus became a part of development studies. The Brundtland Report introduced several new concepts and approaches in 1987 and put 'sustainable development' on the political agenda. The report called for action and strategies corresponding with climate change as a global challenge. Concepts and strategies that emphasize on the environment and humans' well-being exploded, and consequently, influenced national and international politics and policies. Today there are numerous perceptions and understandings of what the 'sustainable development' is and how it can be achieved. As a result, organizations, companies, politicians and researchers refer to different strategies and outcomes when operating with this concept and inconsistent use has affected the concept's influence. It is possible to state that lack of clear practical and theoretical framework has weakened the concept's significance.

Ideas for further research on this topic could be to examine the long-term outcomes from implementation of social support programs in the light of consequences related to socio-economic issues. It would also be interesting to conduct follow-up interviews with the informants in a couple of years to see if their perceptions change over time, and to examine whether or not SN Power make up for the losses experienced by the local communities affected by Cheves HPP. Development without money as the main source benefits the world's ecosystem and people as it maintains greater equality and promotes development that is sustainable to humans as well as nature.

Access to energy is crucial when aiming to develop and billions of people are still living without or with limited access to energy, and Norfund has an abundant portfolio of projects within renewable energy and the amount of their investments has increased annually over the last six years. The current government has also increased the capital supply to Norfund because of the increased understanding of the importance of sustainable development. Evaluation of SN Power's projects is crucial because their projects impact many people and increased supply from the Norwegian government means increased activity. It is also useful to evaluate local outcomes from Norfund's investments because it can be difficult to see or understand the effects in international projects as details can easily be overlooked. Additionally, the communities that were directly affected by Cheves HPP are vulnerable to changes and suffer from health related issues, lack of energy access, and education and labor opportunities. Consequently, it is crucial that SN Power do not impact these societies negatively. In order for these rural societies to develop and meet their needs in the future increased capabilities and improved livelihood resources are essential.

This research was set out to answer; "what are the most significant socio-economic impacts on the local population from the Cheves project" and "how has SN Power, through Cheves HPP, impacted local population's livelihood resources?". The construction of Cheves HPP impacted many people, and SN Power's acquisition of land resulted in both positive and negative impacts. Four of fourteen directly affected communities were visited and all these are based on agriculture production. The local population's opinions and perspectives were for the most part the same within each community and three out of four communities expressed almost exclusively negative opinions about how Cheves project had impacted their lives. The next sections will answer the first research question by summarizing the most significant impacts.

The most significant negative impacts were loss of income, land, and social conflicts. Promises and agreements were not accomplished by the company and the population felt deceived. People in Andajes are still waiting for social support programs that they were promised in exchange for their land. This community only wanted support programs to improve their resources, but SN Power has only given money to the community's president. This money was not distributed equally between the residents and did not contribute to resource improvement. The trade did, however, result in social conflicts among the residents and resentfulness towards the company. Andajes has an extremely high percentage of people

living without access to toilet and electricity and it is possible to argue that SN Power must act as a responsible investor by maintaining the agreement and follow the locals' wishes to improve their infrastructure. Unsolved conflicts between the involved companies and the directly affected communities have resulted in many negative socio-economic impacts.

As stated in chapter one, it is possible to consider Cheves project as a controversial project; Peruvian news articles presented several incidents of social unrest among the residents in the directly affected communities. People in Liple protested for months and felt forced to damage SN Power's equipment in order to be heard. Construction caused contaminated crops and because the company did not react to complaints it resulted in destroyed crops and therefore also loss of income for several residents. Inhabitants in Huacho Sin Pescado did also feel deceived by the company and protested against the project; land cracks had resulted in destroyed plots and lost income. Families have been forced to move and change labor due to these cracks. Even though the Peruvian agency of environmental control (OEFA) concluded that the land fractures were caused by the construction of Cheves HPP, Statkraft Perú denied their responsibility. Unexpected events during the construction process may be challenging to handle because there may not exist determined plans or strategies, but ignoring local population will not result in positive outcomes. These communities are based on agricultural production, and it is crucial that SN Power consider people's livelihoods. SN Power's projects influence numerous societies in diverse developing countries and in order for them to develop successful projects it is essential that the local population do not lose control over own resources, or lose livelihoods. Even though SN Power not was established to improve rural livelihoods, the company possesses resources to benefit the societies that sell land that the company needs to accomplish their investment.

Naván was the only community where SN Power did not use money to buy land, and this resulted exclusively in positive impacts. Several different social support programs were implemented and the most significant social and economic impacts were improved education, agriculture and cattle, and increased production and employment opportunities. The outcomes from SN Power's resource use in Naván underpin the idea that new accounting systems are needed when evaluating development; improved well-being and increased capabilities cannot be measured using only quantitative indicators such as wages or school grades, but must benefit both nature and human in a long-term perspective. Focus should be on using natural, social, and human friendly resources that benefit future generations' possibilities without

compromising today's resources and environment. These impacts contribute to sustainable development and must be valued in projects such as Cheves HPP because they benefit the society in a broader perspective and the results are not shown instantly. Data from Naván prove the importance of contextual knowledge, inclusion of local people, and demonstrate that using financial means on human and social capital should contribute exclusively to improved living standards and sustainable development.

In order to answer the second research question it was necessary to focus on SN Power's approaches; the company impacted the local people's livelihood resources differently based on the company's use of means to purchase land or to handle unplanned issues. When the company implemented programs in exchange for land it increased and improved Naván's livelihood resources. The outcomes from this community reveal certain trends and patterns that correspond to Ian Scoones' framework; inclusion of local population and use of livelihood resources in strategies to create sustainable livelihoods outcomes proved to have successful effects on the local societies.

SN Power also impacted human, social and natural capital negatively by not handling conflicts and using financial capital as a resource to buy land. SN Power ignoring farmers in Liple resulted in loss of financial capital and six or seven farmers lost essential livelihood resources. Air pollution was predicted as a possible outcome of the construction, yet the company ignored protests. There are still unsolved conflicts between the company and two of the four visited communities and this has resulted in worsened social relations. Andajes is still waiting for the social support programs they were promised and Huacho Sin Pescado is hoping for a resolution concerning the land cracks. SN Power and Norfund possess experiences and resources to develop extensive and profitable projects, but in order to have a good reputation to continue their business is it essential that they do not abuse their power by throwing local communities into a downward development spiral when they are, in fact, funded to do the opposite.

The data collected from this research indicate that SN Power's projects would have had more positive outcomes on the local population if they did not provide financial capital as a resource when purchasing land. Money was the source that worsened social capital in Andajes and if the company had used the total sum on support programs, as the community asked for, one can assume that the opinions and outcomes would have been more positive. These

communities should benefit from selling their land to SN Power and based on the negative outcomes and ongoing conflicts, is it only correct that the company finish what they started.

Based on this research it is evident that improvement of existing resources or creation of new sources of income is the most appropriate form that will benefit these societies. As seen in Liple for example, none of the informants questioned or complained when the company provided natural capital (fertilizer) and not financial capital, as compensation for lost financial capital. All communities function differently due to diverse social structures, culture, and history, and adopting approaches according to local needs is essential in order to not negatively impact areas where investments are done. That only positive outcomes from these communities are based on social support programs indicates that successful projects are achieved using many of the elements that are described in Ian Scoones' sustainable rural livelihood framework. Scoones' framework also benefits the environment, which is a crucial aspect to consider when developing strategies. Climate change is considered to be the biggest human threat today and rural societies in developing countries can be extremely vulnerable to the changes that are consequences of the developed world's greenhouse gas emissions. Because Norfund invest in projects in developing countries it is crucial that their influence contribute to make the affected societies less vulnerable. This can be achieved through livelihood diversification, increased capabilities, assets, and diverse and reliable livelihood resources. These findings also correspond with the perception of 'sustainable development' being a process that focuses on human's well-being and capabilities without compromising the nature's ability.

7 REFERENCES

Adams, W. M. (2001). *Green Development: environment and sustainability in the Third World* (2nd ed.): Routledge.

Agnes, M. (2003). *Webster's new world dictionary*: Simon and Schuster.

Brundtland, G., Khalid, M., Agnelli, S., Al-Athel, S., Chidzero, B., Fadika, L., . . . de Botero, M., M., . (1987). Our Common Future (\'Brundtland report\').

Bryman, A. (2012). *Social research methods*: Oxford university press.

Creech, H. (2012). Sustainable Development Timeline. Retrieved 2016 04.03 from http://www.iisd.org/library/sustainable-development-timeline-2012

Cronin, R. P., & Pandya, A. (2009). *Exploiting Natural Resources: Growth, Instability, and Conflict in the Middle East and Asia*: Henry L. Stimson Center.

Du Pisani, J. A. (2006). Sustainable development–historical roots of the concept. *Environmental Sciences, 3*(2), 83-96.

E-co. (2016). Hammeren Kraftverk. Retrieved 2015 11.11 from http://www.e-co.no/Norsk/Forside/Virksomhet/Kraftverk/Hammeren_kraftverk/

Ellis, F. (2000). *Rural livelihoods and diversity in developing countries*: Oxford university press.

Fernandes, D. (2010). Peru Road Map (6). In 5012874903_d694519286_o (Ed.), *Flickr Creative Common* (Vol. 2508x2933). Flickr.com: Douglas Fernandes.

Hopwood, B., Mellor, M., & O'Brien, G. (2005). Sustainable Development: Mapping Different Approaches. *Sustainable Development, 13*, 38-52. doi:10.1002/sd.244

Informant from Norfund (2016, 08.04.16). [Email about Norfund and Cheves HPP].

International Institue for Sustainable Development. (2016). Sustainable Development. Retrieved 2016 13.10 from http://www.iisd.org/topic/sustainable-development

Krantz, L. (2001). The sustainable livelihood approach to poverty reduction. *SIDA. Division for Policy and Socio-Economic Analysis*.

Lélé, S., M., . (1991). Sustainable development: a critical review. *World development, 19*(6), 607-621.

Løvoll, A. (2012). Cheves Hydropower Project Andean design challenges: Norconsult

Morse, S., Acholo, M., & McNamara, N. (2009). *Sustainable Livelihood Approach: A critical analysis of theory and practice*: University of Reading.

NASA. (2016a). Causes. Retrieved 2016 20.04 from http://climate.nasa.gov/causes/

NASA. (2016b). Evidence. Retrieved 2016 20.04 from http://climate.nasa.gov/evidence

Norfund. (2014). *2014 årsrapport*. Retrieved from Oslo: http://www.norfund.no/getfile.php/Documents/Intranet/Presentations%20Norfund%20weeks/2014_%C3%85rsberetning%20og%20regnskap_endelig.pdf

Norfund. (2015). *2014 Report on Operations*. Retrieved from Oslo:

Norfund. (2016a). About Norfund. Retrieved 2015 13.11 from http://www.norfund.no/about-norfund/category296.html

Norfund. (2016b). Active ownership. Retrieved 2015 17.10 from http://www.norfund.no/active-ownership/category345.html

Norfund. (2016c). Business plan. Retrieved 2015 17.11 from http://www.norfund.no/business-plan/category342.html

Norfund. (2016d). Due Diligence. Retrieved 2015 17.11 from http://www.norfund.no/due-diligence/category343.html

Norfund. (2016e). Exit. Retrieved 2015 17.11 from http://www.norfund.no/exit/category346.html

Norfund. (2016f). Investing for development. Retrieved 2015 17.11 from http://www.norfund.no/investing-for-development/category326.html

Norfund. (2016g). Investment process. Retrieved 2015 17.11 from http://www.norfund.no/investment-process/category302.html

Norfund. (2016h). Risk capital. Retrieved 2015 13.11 from http://www.norfund.no/risk-capital/category298.html

Oxford Dictionaries. (2016). sustainable development. Retrieved 2016 16.04 from http://www.oxforddictionaries.com/definition/english/sustainable-development?q=sustainable+development

Peet, R., & Hartwick, E. (2009). *Theories of development: Contentions, arguments, alternatives*: Guilford Publications.

Piketty, T. (2014). *Capital in the twenty-first century*: Harvard University Press.

Regjeringen. (2015). Prop. 1 S (2014–2015) Retrieved 2016 15.12 from https://www.regjeringen.no/no/dokumenter/Prop-1-S-20142015-/id2005471/?ch=1&q=

Revista Síntesis. (2013a). Comuneros bloquean carreetera frente a obra del proyecto Cheves. Retrieved 2015 08.10 from http://revista-sintesis.blogspot.no/2013/02/comuneros-bloquean-carretera-frente.html

Revista Síntesis. (2013b). Fiscalía de Prevención en materia ambiental inspeccionó Comunidad de Liple por denuncia sobre contaminación. Retrieved 2015 08.10 from http://revista-sintesis.blogspot.no/2013/02/fiscalia-de-prevencion-en-materia.html

Scoones, I. (1998). Sustainable Rural Livelihoods: A Framework for Analysis *IDS WORKING PAPER 72*. Brighton, UK: Institute for Development Studies.

Scoones, I. (2016). More Information. Retrieved 2016 04.02 from http://www.ianscoones.net/More_Information.html

Shanmugaratnam, N. (2011). *Sustainable Development and Social Justice - Theoretical Challanges and Responses*. In D. J. Kjosavik & Vedeld P. (Eds.), *The Political Economy of Environment and Development in a Gloablised World* 67-91. Trondheim: Tapir Press.

SN Power. (2010a). *Health, Safety, Enviromental and Social Framework for Construction*. Retrieved from ifcext.ifc.org: http://ifcext.ifc.org/ifcext/spiwebsite1.nsf/0/C28428AEB5D97251852577AF006781B4/$File/G%20ESHS%20Framework%20Cheves%20September%202010.pdf

SN Power. (2010b). *Plan de Manejo Social Integrado*. Retrieved from ifc.org: http://ifcext.ifc.org/ifcext/spiwebsite1.nsf/0/C28428AEB5D97251852577AF006781B4/$File/H%20Integrated%20Social%20Management%20Plan%20Cheves%20September%202010.pdf

SN Power. (2011a). *Annual Report 2011*. Retrieved from https://www.unglobalcompact.org/system/attachments/20187/original/SNP_AR_2011_complete_publish_tcm82-20283.pdf?1359471637

SN Power. (2011b). *The Power of Water: Annual Report 2010*. Retrieved from https://www.unglobalcompact.org/system/attachments/10562/original/SN_Power_ann_report_2010_final.pdf?1306872108

SN Power. (2014). *Annual Report 2014. Powering Development*. Retrieved from Oslo: http://www.snpower.com/getfile.php/Filer/Financial%20reporting/2014---annual-report.pdf

Solesbury, W. (2003). *Sustainable livelihoods: a case study of the evolution of DFID policy*: Overseas Development Institute London.

Statkraft. (2016). About Statkraft. Retrieved 2015 06.10 from http://www.statkraft.com/about-statkraft/

Statkraft Perú. (2016). Generación. Retrieved 2015 08.10 from http://www.statkraft.com.pe/statkraft-en-peru/statkraft-en-el-mercado-electrico-peruano/negocio-de-generacion2/

Sustainable Development Knowledge Platform. (2016). Energy for Sustainable Development. Retrieved 2015 08.10 from https://sustainabledevelopment.un.org/topics/energy

TVPeru (Producer). (2015, 14.10). Hidroeléctrica Cheves está lista para su inauguración. *Informa Nacional*. [News] Retrieved from http://www.tvperu.gob.pe/informa/nacional/hidroel-ctrica-cheves-est-lista-para-su-inauguraci-n

United Nations. (2016a). The Sustainable Development Agenda. Retrieved 2016 25.04 from http://www.un.org/sustainabledevelopment/development-agenda/

United Nations. (2016b). Transforming our world: the 2030 Agenda for Sustainable Development. Retrieved 2015 09.10 from https://sustainabledevelopment.un.org/post2015/transformingourworld

Ethical guidelines for NMBU, Retrieved from https://www.nmbu.no/sites/default/files/pdfattachments/160111_new_ethical_guidelines_nmbu_approved_26_11_12015.pdf (2015).

Walsh. (2010). *Resumen ejecutivo*. Retrieved from http://ifcext.ifc.org/ifcext/spiwebsite1.nsf/0/C28428AEB5D97251852577AF006781B4/$File/EA%20EIA%20Integrado%20del%20PCH%20Cheves%20November%202008%20Resumen%20Ejecutivo.pdf

Østensen, C. (2016a). Picture of Liple. In C. d. Liple (Ed.): Østensen, C., .

Østensen, C. (2016b). Picture of Naván. In C. d. Naván (Ed.): Østensen, C., .

Østensen, J. (2016). [Conversation about energy use].

8 APPENDIX 1

Table 3 Impacts in Liple		
Community	**Impact**	**Cause**
Liple	Loss of income	Plant contamination from tunnel construction
	Increased school supplies	Yearly Christmas gifts from Statkraft Perú
	Conflict with Naván	Land in Liple that politically belongs to Naván was acquired by Statkraft
Source: Own Fieldwork, 2016		

Table 4 Impacts in Naván		
Community	**Impact**	**Cause**
Naván	Increased school supplies	Yearly gifts from Statkraft Perú
	Improved primary education	Educational program
	Improved peach, avocado and custard apple crops, and increased its production.	Agricultural training program by SN Power
	Improved cow breeds	Breed project
	Improved meat and milk	Breed project
	Increased cattle	Breed project
	Increased employment	Construction work at Cheves
Source: Own Fieldwork, 2016		

Table 5 Impacts in Andajes

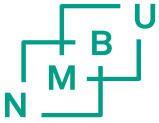
Community	**Impact**	**Cause**
Andajes	Feeling deceived by Statkraft	No implantation of social programs they were promised
	Increased school supplies	Yearly gifts from Statkraft Perú
	Feeling mislead by Statkraft	Need to sign contract to receive 1 000 Nuevo Soles
	Feeling betrayed by former community president	Money from sold land to SN Power was not distributed
	Feeling resentful	Statkraft is not meeting the agreements

Source: Own Fieldwork, 2016. The impacts were sometimes expressed in feelings and what lead to these impacts are presented under "cause".

Table 6 Impacts in Huacho Sin Pescado

Community	**Impact**	**Cause**
Huacho Sin Pescado	Increased school supplies	Yearly gifts from Statkraft Perú
	Loss of plots, production and income	Land cracks created by tunnel construction
	Feeling indigent by Statkraft	Geographical study sanction Statkraft, but is ignored by Statkraft
	Expansion of the hot spring Baños de Tingo	Land acquired by Statkraft Perú

Source: Own Fieldwork, 2016. The impacts were sometimes expressed in feelings and what lead to these impacts are presented under "cause"



Norwegian University
of Life Sciences

Postboks 5003
NO-1432 Ås, Norway
+47 67 23 00 00
www.nmbu.no