

HUMBOLDT-UNIVERSITÄT ZU BERLIN

Faculty of Life Sciences

Albrecht Daniel Thaer-Institute of Agricultural and Horticultural Sciences

“Transition processes, natural resource management and impacts on
livelihoods: A case study of energy management in Myanmar”

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Submitted by: Caron Pomp

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Abstract

Myanmar, where the amount of natural rainforest is still high and the amount of economic activity is still low, really is one of the last countries that can be considered 'empty' in our 'full world'. But the country currently undergoes deep transition processes. These processes are not only of social, but also of economic and ecologic nature. Such changes pose opportunities and also threats to society as well as the ecosystem. Particularly energy management is an important issue: In areas where level of electricity is often below thirty percent, producing energy and improving electric infrastructure is crucial to increase the standard of living, especially in a low-income country. But do the current energy projects benefit the local people while at the same time maintaining the further existence of the surrounding ecosystem?

In order to show the opportunities and threats that occur during the transition of Burma towards democracy, I will assess the impacts of energy management and electrification, namely a coal power project in the Mon State and hydropower in the Shan state, on local livelihoods. I will use the methodology of institutional and resource economics as well as the knowledge from Southeast Asian area studies to analyze, energy policies, governance structures and the social situation that play a role in recent energy projects. Finally, I will advocate the strengthening of the local civil societies to play a greater role in deciding on energy policy to avoid societal and environmental negative outcomes of energy management in this country of deep transformation.

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Acronyms/ Abbreviations

Important acronyms are listed here. Nonetheless, acronyms will be explained in the text as well for better legibility.

AFPFL	Anti-Fascist People's Freedom League
BSPP	Burma Socialist Programme Party
EGAT	Electricity Generating Authority of Thailand
EIA	Environmental Impact Assessment
HURFOM	Human Rights Foundation of Monland
IFI	International financial institutions
MEENET	Mekong Energy and Ecology Network
MOA	Memorandum of Agreement
MOEP	Ministry of Electric Power or Ministry of Electricity and energy
MOU	Memorandum of Understanding
NGO	Non-governmental Organization
NLD	National League for Democracy
SES	Social-Ecological Systems
SHRF	Shan Human Rights Foundation
SIA	Social Impact Assessment
SLORC	State Law and Order Restoration Council
SMEC	SMEC Holdings Limited, formerly Snowy Mountains Engineering Corporation
SPDC	State Peace and Development Council
TERRA	Toward Ecological Recovery and Regional Alliance
TTCL	Toyo-Thai Corporation Public Company Limited
USDP	Union Solidarity and Development Party

Notes on Terms and Language

At this point I may give some explanations for important terms used in this thesis.

Institutions

This term is not to be confused with organizations. Instead, following the definition of NORTH, institutions are the formal rules, the informal constraints, and the enforcement characteristics of each, the “rules of the game” in human society (NORTH: 1990).

Myanmar/Burma

Throughout my thesis, I will mostly use the official English term as introduced in 1989, Myanmar. When referring to the colonial era up to 1989 I will use the term Burma instead. I decided to do so after consultation with Ven. Nyarneinda, since there are disputes over which term suits better. Personally, I associate Myanmar with the military junta, while Burma is a colonial term, so both are challenging.

Salween River

Salween River is also called Saluen, Thanlwin, Than Lwin or Nu. This is rather due to geographic or linguistic reasons, so I decided to use the term Salween.

As for the use of names and places, I used local transcriptions, although the Latin alphabet is insufficient for languages spoken in Myanmar.

1 Introduction

Myanmar, formerly known as Burma, is a country that currently undergoes deep transition processes. After gaining its independence in 1948, the country's democratically elected government under Prime Minister U Nu was not able to establish democratic structures and at the same time failed to build a functional economy, which led to a military coup in 1962 (CHARNEY 2007, 107). A long period of military rule, communism and civil war began, which, after years of conflict, eventually led to the “road map to democracy” in 2003 and first nationwide elections in 2010. Still, the power of the *Tatmadaw*, Burma's national army, remained high due to the anti-democratic 2007 constitution and the fact that the 2010 government under Thein Sein consisted mostly of military personnel. In 2016, the first civilian government was elected and took office recently, but doubts that the *Tatmadaw* will give up all of its power still remain. At the same time the last years under the Thein Sein government meant an economic opening-up and led to many investments from outside the country.

While many aspects of economic change are important benefits to Myanmar's population, that has suffered from the political-economic isolation and the agricultural mismanagement during military rule, there are also many concerns about the nation's rich natural resources and ecosystems, which are currently threatened by deforestation and land use change (UNEP: 2013, 7). Especially the electrification projects and energy management in rural areas, where electrification rates are mostly below ten to twenty percent (UNDP MYANMAR: 2013, 4), is an important issue: While a working electrical infrastructure surely benefits the rural population and the livelihoods in general, there are high concerns by pro-democratic NGOs as well as local people that the impacts of external effects, namely flooding and resettlement in the case of hydropower and pollution in the case of coal power, will be unevenly distributed among the stakeholders and will finally result in the depletion of natural resources and have negative impacts on local livelihoods, while at the same time the energy produced will be used for industrial use and export to neighboring states.

To understand the concerns regarding energy projects in Myanmar, this master thesis aims to analyze the state's energy policy and the underlying institutional arrangements and governance in rural Myanmar by applying a multidisciplinary approach that includes concepts of institutional economics and political economy, environmental and resource economics and Southeast Asian area studies. Following research questions shall be answered: How does the state implement large-scale energy projects regarding governance structures and decision processes, what (supposed) impacts on livelihoods do they have, and how do the stakeholders central state, energy companies and local people behave towards each other.

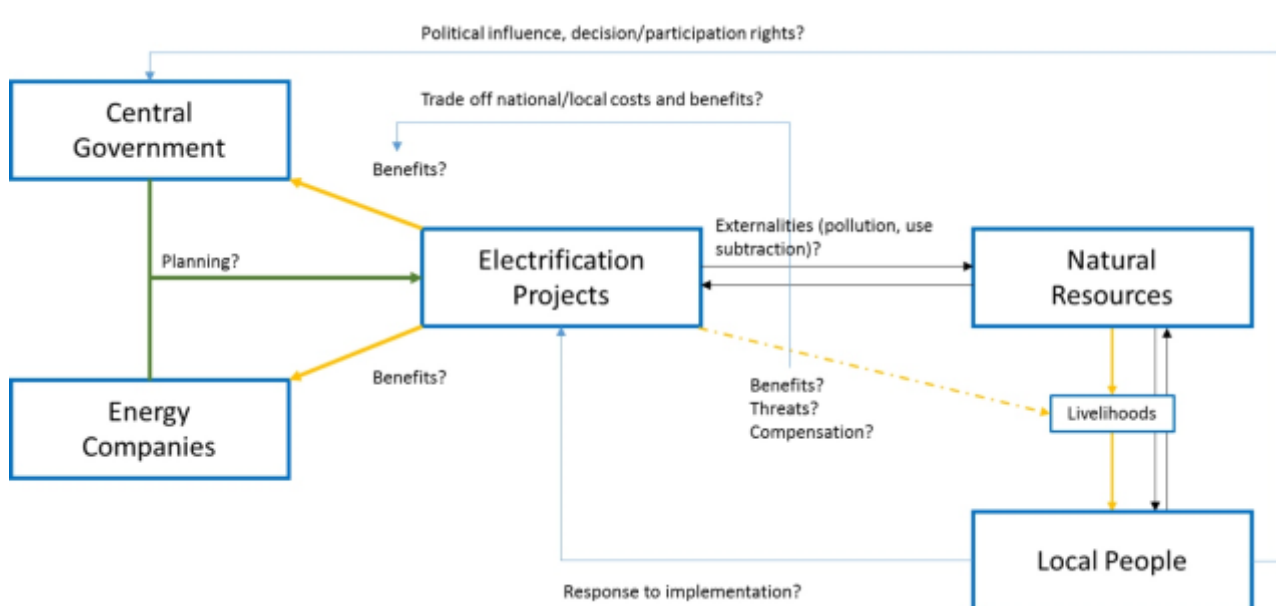
As a case study, I have selected a planned dam project, the 7,100-megawatt Tasang Dam in Mongton, Shan state (MACLEAN: 2015) and a planned 1280-megawatt coal power plant in the Mon State (SNAING: 2015) near Andin, Ye (see Figure 2). In both cases, local people as well as NGOs heavily oppose further

progress of these projects, and public protest on the one side had resulted in state interventions on the other side. The conflicting approaches of governance, a central top-down concept that evolved over the past fifty years of military rule versus a local bottom-up concept of self-governance as favored by the local people, as well as the general political conflict between the Tatmadaw-dominated central government and the periphery, and the impacts of these conflicts on the management of resources, the electrification process and their ecological outcomes shall be examined, backed up by Ostrom's Political Economy of Institutions and Decisions, Daly's Ecological Economics and important theories of Southeast Asian area studies that help us to understand the multi-level conflict.

In the following chapters, I will start with an overview on natural resource issues, mainly based on the theses of HERMAN DALY and JOSHUA FARLEY. I will then examine theoretical approaches that consider governance and cooperation related to such large-scale energy projects, by looking at Elinor OSTROM's "Governing the commons" and then continue with summarizing literature on hydropower and coal energy in South and Southeast Asia that is relevant to both cases, to provide an overview of similar problems and concerns related to such energy projects in the region. As a third part of the theoretical background I will present a historical overview of Myanmar by focusing on theories and developments that explain the deep rooted potential for conflict accompanying the two selected electrification projects.

The case study section of the work focuses on the projects itself. I will use my own ex-ante framework as a guide to answering the research question (see figure below).

Figure 1 Ex-ante framework used as a guide to answering the research question



After introducing the methodology for analysis, I will present the results of a) an analysis of newspaper articles, NGO reports and international reports, b) an analysis of expert interviews conducted in Bangkok and Yangon in March 2016, and in the case of the Andin coal-fired power plant c) a field trip, including photographic material and interviews with locals, conducted in March and April 2016. After presentation of the results in text form, I will create a graph framework following Ostrom's framework for analyzing social-ecological systems (Ostrom: 2009, 420) in order to illustrate the results.

Finally, I will advocate for a stronger development of local self-governance and a promoted involvement of local stakeholders in large-scale energy projects and in the process of the political-economic transformation in order to protect not only the rights of rural people but also to ensure the richness of Myanmar's ecosystems and a sustainable use of its natural resources in the years to come.

1.1 Case Study – Country Overview

Myanmar, more precisely the Republic of the Union of Myanmar, covers an area of around 676,552 square kilometers with a population of about 50 million people (UNEP: 2013, 4). Despite being rich of natural resources, due to the economic failure of past regimes the country became one of the least developed countries worldwide, lacking adequate infrastructure in terms of railways, highways and electric infrastructure (UNEP: 2013, 4). Its economy is still widely dominated by agriculture and forestry.

The country is one of the least greenhouse gas emitting countries, the high deforestation rates are alarming though and stem mainly from logging, land use change, fuelwood collection and development for energy infrastructure (UNEP: 2013, 7).

Figure 2 GIS Map of Myanmar with Mongton and Ye

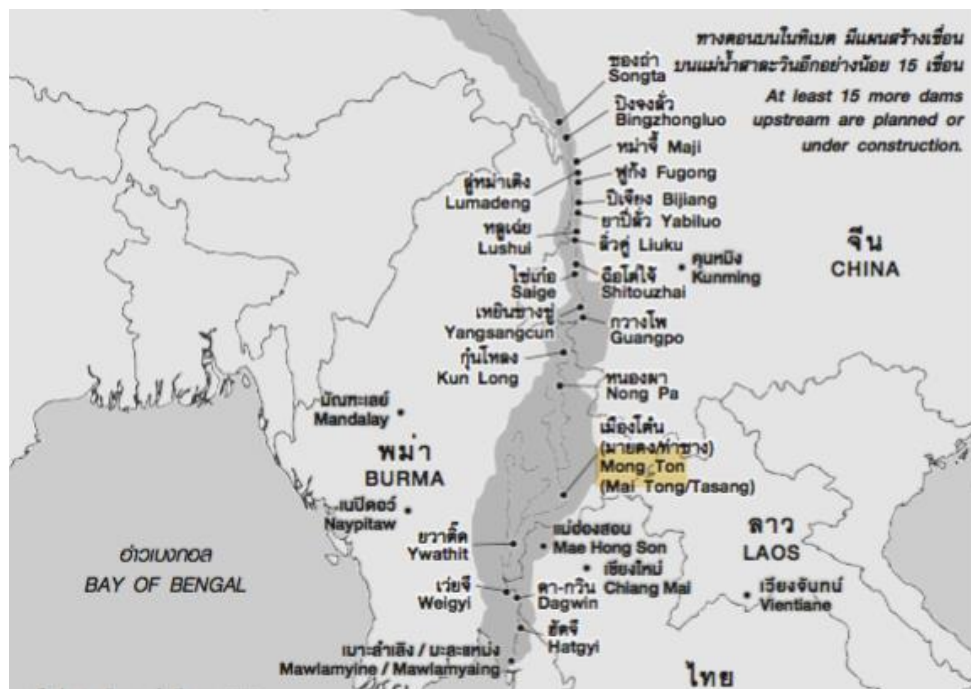


Myanmar's electrification rate is said to be between around 30 percent (SNAING: 2016) and 50 percent (WORLD BANK: 2016) and in the rural context electricity is mostly used for lighting only, while more than 70 percent of households still rely on firewood for cooking (SNAING: 2016). Further development is strongly advised by international organizations, as “notwithstanding some of the best natural gas, hydroelectricity, and solar resources in the Asia-Pacific, Myanmar has an energy access crisis, [...] some of the lowest reported levels of access across the entire region, as well as the highest energy investment needs as a share of the country's GDP” (UNDP:

2013, 26).

The selected cases are located in Shan State in the northern part of the country and in the Mon State in the South. Both Shan State and Mon State are connected to the Salween River catchment area. The river network is the most important one in the country and the region, besides the Irrawaddy and the Mekong river. Along the Salween, 7 major dam projects are currently being planned or in construction, while at least 15 more projects are proposed (SALWEEN WATCH COALITION: 2016), see Figure 3.

Figure 3 Proposed dam projects along the Salween (SALWEEN WATCH COALITION: 2016, 2)



The Shan state or Shan State is the biggest region in Myanmar, covering around 25 % of its total landmass, 155,672 square kilometers, and is populated by around 5.8 million people of different ethnicity (UNDP: 2015, 1-5). Agriculture, mining and forestry play an important role in the state's economy (UNDP: 2015, 12-13). The Mongton Dam itself is located near the township Mongton or Mong Ton, populated by around 70,000 people (UNDP: 2015, 10). Formerly the dam was planned near Tasang at first, but the proposed site was moved nearer to Mongton, and “the dam site and reservoir will stretch 870 kilometers along the Salween and Pang Rivers, its main tributary in Central Shan State” (SALWEEN WATCH COALITION: 2016). The floodplain of the dam is said to be around 670 square kilometers (HOPKINS: 2015), while the installed capacity after construction is said to be around 7,110 MW (SALWEEN WATCH COALITION: 2016).

Mon State covers an area of 12,297 square kilometers, the (predominantly Mon) population is estimated at 3,165,000 people (UNHCR: 2014, 1). After a ceasefire agreement between the central authority and the New Mon State Party (NMSP) in 1995, “[...] the local economy and markets [...] and a variety of industries have advanced in recent years” (UNHCR: 2014, 7). At the same time, “most sectors remain underdeveloped und socio-economic indicators suggest there are considerable development needs in the state” (UNHCR: 2014, 7).

The proposed coal-fired power plant site is located on the seashore in Andin Village, which belongs to the Ye township in the southern part of Mon State. The plant is supposed to produce 1,240 MW in total (LONE: 2015). The coastal area where the site is located is referred to as Pharlain (“pha-linn”) by locals, named after the Pharlain mountain range and includes Andin and six other villages (PHARLAIN STUDY: 2016, 3). The cultivation of betel nuts, rice paddy fields and fishery contribute the most to the local

economy (PHARLAIN STUDY: 2016, 3). Around 30,000 ethnic Mon inhabit the area (PHARLAIN STUDY: 2016, 3), earning a total annual income of estimated 7,240,499,650 Kyat (PHARLAIN STUDY: 2016, 3), around 5,960,850 US\$.

2 Review of relevant literature

2.1 Natural Resources – boundaries of our global Ecosystem

Since the emergence of the ecological, environmental and resource economics, new ideas arose that influenced not only economists, but also policy makers around the world. In short, the awareness that there is a limit to the earth's capacity of providing natural resources on which all, but not exclusively human life depends upon implies that there is a limit to the scale of human economic activity, a need to become more efficient and frugal regarding the use of our natural resources and the services of the ecosystems, and a dictate of reason to allocate and distribute resource use in a way that serves both intragenerational and intergenerational justice.

In this chapter all the relevant ideas and theories behind ecological, resource and economics shall be presented in order to explain the social physical aspects of resource management and its impacts, in our case in the Shan State and Monland.

First, let us begin with a brief summary of the main ideas behind ecological economics, as they focus more on the global scale of human environmental interaction. One of the most famous publications on ecological economics so far is “Ecological economics: principles and applications” by HERMAN E. DALY and JOSHUA FARLEY. The authors describe economics as “the study of the allocation of limited, or scarce, resources among alternative, competing ends” (DALY AND FARLEY: 2003, 3). Despite the prevailing paradigm today, that considers an increase of welfare for humans via economic growth as the final desirable end (DALY AND FARLEY: 2003,4), ecological economics see a limit to growth. This difference between the schools of thought in neoclassical economics vis-a-vis the ecological economics stems from the idea that the earth has a finite ability to provide ecosystem services such as providing natural resource and absorption capacities, and economic growth that is based on an increase of material use and waste or throughput will thus finally lead to a collapse of our global ecosystem. That led to the idea that we need a “calling for an end to growth” (DALY AND FARLEY: 2003, 7). Here lies also the difference to environmental economics, as it is seen as a part of neoclassical economics that recognizes “that welfare also depends to a large extent on ecosystem services and suffers from pollution, but is still devoted to efficiency”. (DALY AND FARLEY: 2003, 5).

One main way of explaining this urgent need to end economic growth in terms of throughput is the concept of empty world versus full world. As we increase our economic activity or economic service in order to produce more welfare, more and more waste absorption capacities and ecosystem services have to be utilized and some day one or both of this main functions of the world's ecosystem will not be feasible any more. This is due to two main factors, first the fact that the only additional input that enters the world is solar radiation, and second the law of diminishing marginal utility and the law of increasing marginal cost (DALY AND FARLEY: 2003, 19). At the time where extracting any resource (such as coal for providing energy) needs more energy than the actual energy potential of this resource and we have

produced so much waste that the only option is to shoot it up into space, we will have reached the status of a completely “full world”.

Figure 4 Empty World (DALY AND FARLEY: 2003, 18)

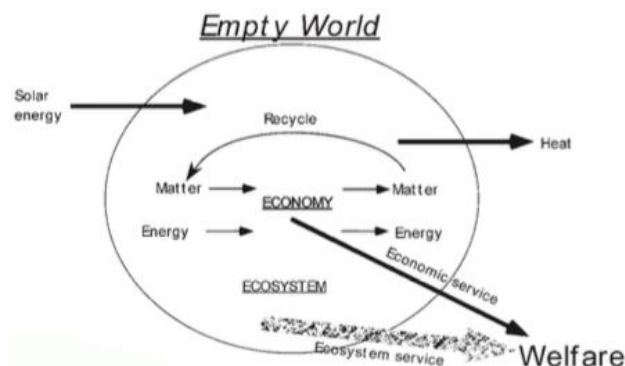
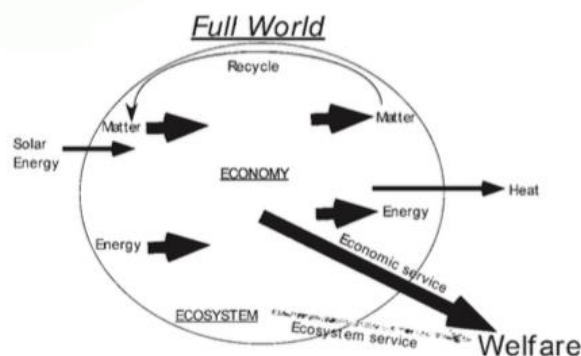


Figure 5 Full World (DALY AND FARLEY: 2003, 18)



Neoclassical economists tend to neglect the fact that the ecosystem is not a subsystem of the economy, but rather the opposite is true: Our economy is a subsystem of our ecosystem, therefore the ecological economists are calling for a paradigm shift (DALY AND FARLEY: 2003, 21).

The clash between the supposedly never-ending growth of the world economy and the finite resources of the world itself can also be explained in terms of energy flows and entropy.

“The Second Law of Thermodynamics states that entropy never decreases in an isolated system. Although matter and energy are constant in quantity (First Law), they change in quality. The measure of quality is entropy, and basically it is a physical measure of the degree of “used-up-ness” or randomization of the structure or capacity of matter or energy to be useful to us. Entropy increases in an isolated system. We assume the universe is an isolated system, so the Second Law says that the natural, default tendency of the universe is “shuffling” rather than “sorting.” In everyday terms, left to themselves, things tend to get mixed up and scattered. Sorting does not occur by itself.” (DALY AND FARLEY: 2003, 32)

The earth as a planet can be described as a more or less closed system. Solar radiation is the only main additional source of energy that enters the atmosphere, all other sources of matter and energy are

already there on earth: “The Earth [...] is a materially closed system, in which radiant energy can enter and leave, but for all practical purposes, matter does not.” (DALY AND FARLEY: 2003, 68). Each time we use energy, we actually do not use it up, as energy cannot be lost in a system due to the first law of thermodynamics, but rather transform energy from low-entropy energy, or ordered, useful available matter energy, into high-entropy energy, or unavailable matter energy, for example heat. Assuming that transforming solar radiation to a more useful state of energy also consumes an increasing amount of energy, over time more and more low-entropy energy will be used up and transformed into high-entropy energy. At one point, all useful low-entropy energy will be already consumed and only high-entropy energy is left over, the result will be the collapse of the earth's ecosystem. Again using the pictures of an “empty world” and a “full world”, in the first one there is a lot of potential to use low-entropy energy, in the latter most of the useful low-entropy energy will be consumed and transferred to a less useful state of high-entropy energy.

Thus, all consumable energy on earth is more or less finite. Energy from non-renewable energy sources such as coal or crude oil is finite, as the exploitation of non-renewable sources will become more difficult over time and at one point will not be feasible any more, and even the sources of “renewable energy” are finite, as we have to use technology to utilize solar radiation or hydropower by transforming it into a state of useful low-entropy energy, which will also become more difficult over time, even with technological innovation. At some point our global ecosystem will be completely “full” and it depends on the scale of utilization of the earth's resources and sinks when this point will be reached.

Regarding these insights of Ecological Economics, what implications do they have on the two electrification projects discussed here?

Myanmar is one of the 'least developed countries' in the world (TRAUTWEIN: 2014). After decades of mismanagement under the past military juntas, the country has fallen behind the economic development of most of its neighboring countries in the sub region of mainland Southeast Asia. Recently there has been an economic opening up due to the political transition and the country is truly at crossroads. From a social-economic point of view, there is much to be done: Myanmar is in great poverty with incidence of poverty ranging from 11.4 % in Kaya State to 73.3 % in Chin State (UNDP MYANMAR: 2014, 10), there is a lack of infrastructure, malnourishment among great parts of the ethnic minorities especially in the peripheral mountain regions, missing education, and so on.

The country's state of development is also visible when examining the electrification rates, as already mentioned in chapter 1.1. In 1996, Myanmar had an electrification rate of 15 percent compared to 10 percent in Cambodia, 18 percent in Laos, 98 percent in Thailand and 30 percent in Vietnam (Yu: 2003, 1224; World Bank: 1999). In the period of 2011-2015, Cambodia has now an electrification rate of 31 percent, Laos around 70 percent, Thailand 100 percent and Vietnam 99 percent (WORLD BANK: 2016), whereas Myanmar has an official electrification rate of 52 percent according to the World Bank statistics

(WORLD BANK: 2016), but the actual electrification rate is supposedly much lower. According to the paper “Accelerating energy access for all in Myanmar” by the United Nations Development Programme Myanmar the electrification rate in 2011 was only 13 percent in general and “[i]n the rural context, the national power grid network covers only 7 percent (4,550 villages) of the country’s 65,000 villages, meaning millions of people are deprived of access to electricity services for enhancing their livelihood requirements” (UNDP MYANMAR: 2013, 4). The goal of an electrification rate of 60 percent by 2010 clearly failed (SOVACOOL: 2013, 307). In a 2014 inquiry, “only 32.4 percent of respondents cited electricity as their main source of energy for lighting. Almost 70 percent of respondents said firewood was their primary source of energy for cooking, well ahead of electricity, at 16.4 percent” (SNAING: 2016). Therefore, a great increase of resource utilization in order to improve the country’s economy and especially its electric infrastructure is to be expected in the future.

Under the aspect of ecological economics, Myanmar could thus be called an “empty country” in our “full world”. A lot of natural resources and absorption capacities of the ecosystem are still not utilized by humans, nevertheless this may change at fast pace, especially since the increase of foreign investors now pouring into the economy of Myanmar.

Let us now take a look at the implications of resource economics on Myanmar's energy projects, represented by the two selected cases. Here we encounter two important considerations relating to Resource Economics: First, the problem of resource extraction over time and second, pollution regarding diminishing marginal utility of resource extraction and increasing marginal costs of pollution. These issues have been analyzed by Daly and Farley in “Ecological Economics”, as well as by PERMAN et al. in “Natural Resource and Environmental Economics” and in the “Handbook of Natural Resource and Energy Economics” by KNEESE AND SWEENEY. Another important work in German to be mentioned is “Die Ökonomie natürlicher Ressourcen. Eine Einführung” by ENDRES AND QUERNER. So, what insights can we draw about the selected cases from the perspective of these scholars?

The coal power plant in the Mon State seems to be a classic case of resource extraction and pollution issues, see Figure 6 and Figure 7. An optimal path of resource extraction that serves the urgent need of an increase of social and economic development now as well as the needs of future generations on the one hand, and on the other hand an optimum level of local emissions of coal energy that also considers the impacts on the other natural resources in the Ye area, where most livelihoods depend on access to unpolluted land, forest and water, plus the increase of overall emissions on a global scale, have to be found.

Figure 6 Social optimum path of extracting a non-renewable resource for 2 periods (see ENDRES AND QUERNER: 2000, 30)

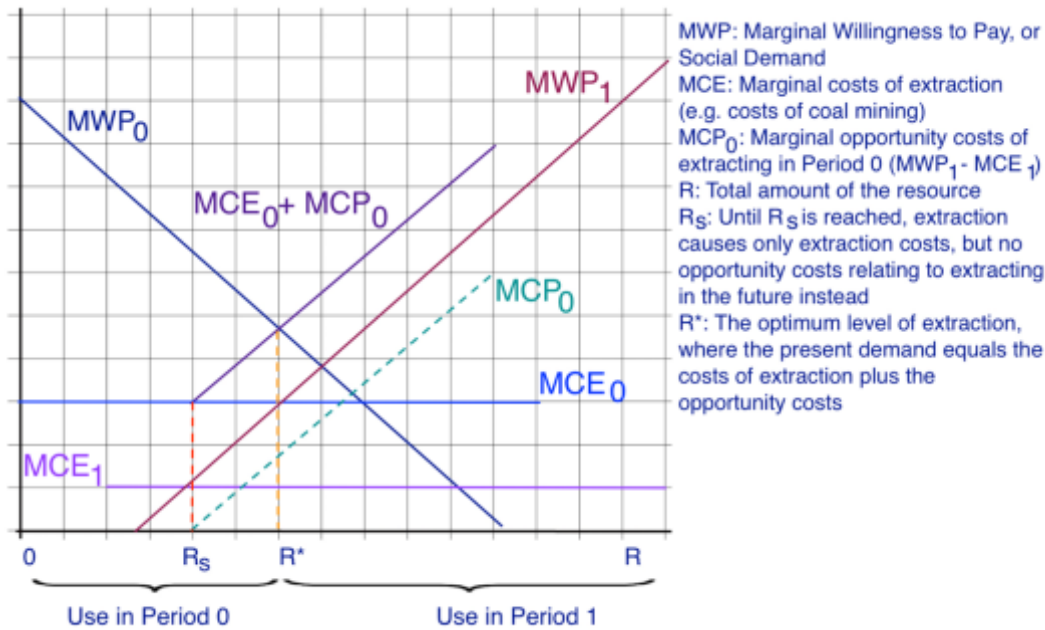
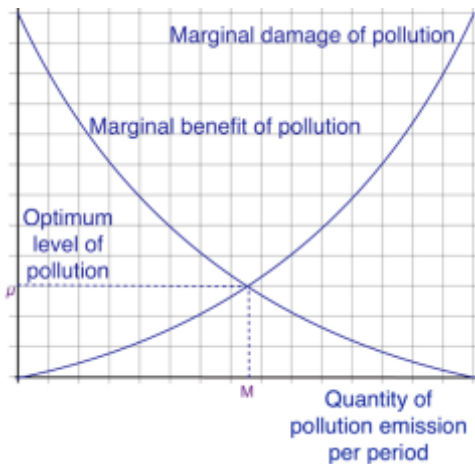


Figure 7 Optimum level of pollution (see PERMAN et al.: 2003, 172; DALY AND FARLEY: 2003, 177)



The actual situation somehow differs in the case of the Andin Power Station. Myanmar has some natural gas resources (SIMPSON: 2014, 16), but no large coal resources, thus the coal for the planned power station “will be imported from Australia, South Africa and Indonesia” (SNAING: 2014). This in a way externalizes the problem of at least the private optimal resource extraction path to foreign countries and investors, but on the other hand poses the question whether energy security can be guaranteed in a situation where coal prices may vary on the world market, in addition the increase of coal prices in the long term may lead to a point where coal power will be uneconomic for a country like Myanmar and coal power plants thus will become a sunk investment. The possibility of coal energy becoming uneconomic can be derived from the law of diminishing marginal utility and the law of increasing marginal cost. “Marginal costs [of resource extraction] increase while marginal benefits decrease,” (DALY AND FARLEY:

2003, 19) and naturally the increasing costs of extraction will lead to higher market prices, especially in the case of producer surpluses when demand is higher than supply:

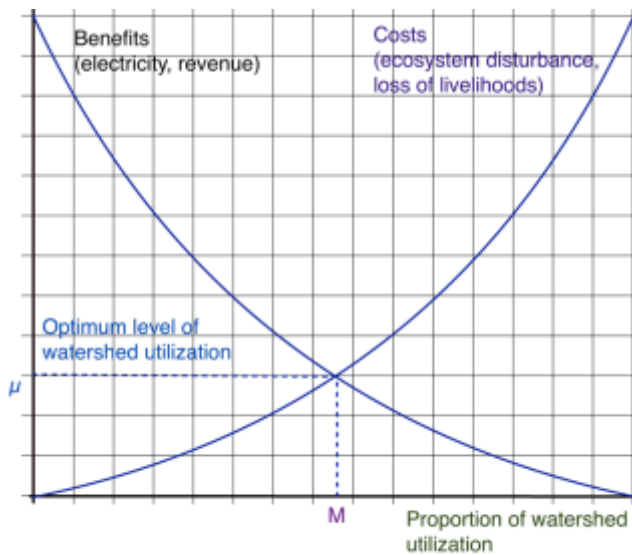
“The price of coal will be equal to the marginal cost of the most expensive coal that can be sold. That marginal coal will come from the worst, leanest, most inaccessible coal mine. But the coal from the rich easy to dig coal mines will sell at the same high price (equal to marginal cost at the worst mine)” (DALY AND FARLEY: 2003, 145).

Therefore, the optimum of level pollution (see Figure 7) in our case depends on several factors. The benefits of pollution caused by building and operating the coal fired plant depend on the revenue for the investing company as well as the benefits for the state and benefits for the local community. These benefits will vary from a monetary aspect, as coal prices and energy prices are fluctuating. The damage or costs of pollution caused by the coal plant include the impacts on livelihoods on the social side and the degradation of other natural resource plus ecosystem functions on the physical side, both of them are of course strongly interconnected: Groundwater pollution for example will affect the terrestrial and marine ecosystem negatively, at the same time crop yields and fish harvest will also be affected in terms of quantity and quality, which will affect livelihoods. The actual predicted impacts will be discussed according to the results of my research.

The second energy project being examined is a dam, utilizing hydropower to produce energy. At first sight, such projects seem to be a much “cleaner” alternative to non-renewable energy sources such as coal. Especially since there is no pollution in terms of greenhouse gases, and in addition a river will never run out of water.

Unfortunately, both assumptions are not accurate here. The benefits of utilizing the Salween river's watershed to produce energy generates a benefit, namely electricity and revenue. The costs of constructing and operating a dam include not only direct costs (for example operational costs), but also negative spillover effects when creating the floodplain for the dam, such as loss of habitat for animals and the necessity to resettle humans, destruction of river ecosystem and thus loss of fish species, loss of income sources for farmers and fishers, and else.

Figure 8 Optimum level of watershed utilization, in analogy with Optimum level of pollution



These factors have to be considered when planning hydropower, especially when planning more than one dam, as it is the case with the Salween River, see Figure 8. The fact that the Salween is a transnational river poses additional challenges to the management of its basin: more dams will lead to more scarcity of water along the river.

From the viewpoint of ecological and resource economics, both projects have similar goals but different approaches, one using a non-renewable energy source and the other using a renewable source. Both energy projects were designed to utilize natural resources to generate benefit, for investors as well as for the population, given the urgent need to improve Myanmar's electric infrastructure. And both projects will have negative effects as well, as both will lead to disturbances of local ecosystems and societies. In Mongton as well as in Ye the implementation of the planned energy projects will cause a shift in the use of land and water, or speaking in economic terms, the allocation of available natural resources will change.

The implications of this problem of shifting resource use and the tradeoff between costs and benefits are that there must be a reconciliation of interests of different groups of people involved and that this reconciliation calls for cooperation of these people.

2.2 Natural Resources and governance

With the implementation of large-scale energy projects in Myanmar the country is supposed to develop at a faster pace, as building an electric infrastructure and increase access to secure energy is crucial for further economic development. At the same time, these projects will have an impact on local communities: The availability of income sources will change, there may be pollution of land and water, people will have to be resettled and habitats may be lost, and more. This has led to protest by local villagers in surrounding areas of many energy projects in Myanmar, but particularly in Mongton and Ye. Before examining the actual predicted impacts in both cases we will examine theoretical approaches that consider governance and cooperation related to such large-scale energy projects, mainly ELINOR OSTROM'S theory on governing the commons, before proceeding with summarizing relevant literature on large-scale energy projects in South and Southeast Asia as a basis of comparison.

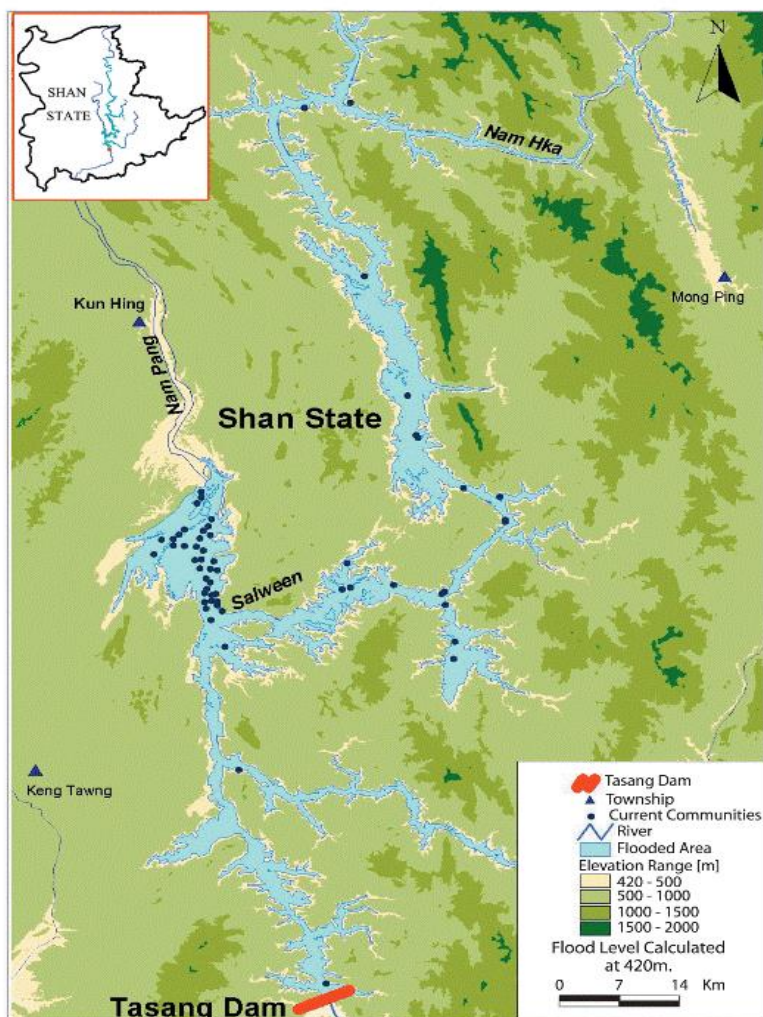
Why are these theories relevant for our cases? The protests against the implementation of dams and coal plants and supposed negative impacts on environment and society reveal two challenges: First, there must be some collective action problems, as shown by the local protests. Second, in both selected cases there are common pool resources affected by the electrification plans, mainly land and water. Both challenges are linked to the threat of "the tragedy of the commons", the problem of resource overuse and depletion when individuals use a scarce environmental resource in common (OSTROM: 1990, 2).

To clarify the term common pool resource and if it is applicable for the cases of Mongton an Ye, a brief definition shall be used:

"Common-pool resources share two characteristics. First, the resource is so large that it is costly (but not impossible) to exclude potential beneficiaries from obtaining its use. Second, the supply is limited; consumption by one user reduces its availability to others. These two characteristics are sources of collective-action problems in many common-pool resources." (TANG: 1991, 42)

In the case of Mongton the prominent affected resource is the Salween catchment area and in addition the land area to be flooded for the dam. Here the definition of a common-pool resource seems applicable. The river system is so large that it is nearly impossible to exclude people from appropriating parts of it, even when assigning clear property rights to the land around the river, as the boundaries of the catchment area are not definable. At the same time the use of the river basin or river system is rival, if an area is utilized for hydropower the river system will transform upstream and downstream, which will cause a change in availability of fish and other species in the river eco-system and eventually increase the flood risk downstream.

Figure 9 Tasang Dam in Mongton and predicted floodplain (SHAN SAPAWA ENVIRONMENTAL ORGANIZATION: 2009, 16)



account.

Figure 10 Marine and terrestrial area affected by the power plant (PHARLAIN COMMUNITY: 2014, 43)



The Coal will be shipped to the plant, therefore a jetty has to be constructed, which will cause rivalness between coal unloading and the coastal fishing grounds. Other spillover effects could include land degradation and decreasing crop yields and non-point source pollution that may enter the Sanint Krate river system. As it is the case with dams along the Salween, the implementation of a coal project would subtract from other uses of the land around the power plant and eventually threaten the livelihoods of locals.

While Ostrom first considered resource systems such as “fishing grounds, groundwater basins, grazing areas, irrigation canals, bridges, parking garages, mainframe computers” (OSTROM: 1990, 30), both cases are also reflected in the "Digital library of the commons" that was established under the Vincent and Elinor Ostrom Workshop in Political Theory and Policy Analysis in 2009:

“Land Tenure and Use – Includes: arid regions; boundaries; communal lands; customary land law; enclosure; land degradation; land economics; landowners; property rights; public lands; smallholder, etc. [...]

Water Resources – Includes: canals; coastal management; coral reefs; dams; dyke management; groundwater, huertas; irrigation systems; marine policy; river management; riparian rights; sea tenure; watersheds; water pollution; water scarcity, etc.” (INDIANA UNIVERSITY: 2009)

If we assume that the Mon people in Ye and the Shan in Mongton respectively had established a somewhat stable set of institutions to utilize the natural resources in their reach sustainably, the growing power of the state over the past decades led to a conflict of natural resource governance between state and ethnic minorities due to underlying differences in institutions. Particularly since the military coup in 1962 the state took more efforts to gain control over peripheral regions, as explained in the following chapter. The proposed solutions to govern natural resources in the peripheries in the same fashion as in the central plain of Myanmar were that of a strongly centralized, authoritarian state, which is referred to as “Leviathan” by Ostrom and others:

The presumption that an external Leviathan is necessary to avoid tragedies of the commons leads to recommendations that central governments control most natural resource systems. HEILBRONER (1974) opined that “iron governments,” perhaps military governments would be necessary to achieve control over ecological problems.” (OSTROM: 1990, 9)

However, due to the circumstances of civil war and failure to incorporate all areas into the central state, the military junta was not successful in legitimating its governance instruments, let alone establishing sustainable uses of natural resources at all.

After intensifying cooperation with foreign states and investors such as China and Thailand, which are at the moment accelerating at a fast pace due to the political and economic opening, the state allowed privatization of its natural resources, in our case by letting TTCL buy land for building its coal plant (SNAING: 2014) or assigning companies the right to build dams via joint projects (NYEIN: 2015). It is likely

that this process of privatization of natural resources will increase in the future, but there are two main concerns from the common-pool resource perspective. First, privatization itself as a solution to sustainable resource use is doubtful: Ostrom states that assigning property rights to resources owned in common would lead to a game against nature rather than a game against others, or with other words privatization does not protect a user from environmental risks, and in addition “even when particular rights are unitized, quantified, and salable, the resource system is still likely to be owned in common rather than individually” (OSTROM: 1990, 13). This is indeed the case in Myanmar, agreements between the state and private companies to establish energy projects affect only certain rights to use natural resources, but the resource system itself is still owned by the public. The second concern to further privatization in the field of natural resources is again rooted in the country's history of authoritarian rule: Assigning property rights to companies often means ignoring the property rights claims of local people which leads to social conflict, as shown later on.

To solve both issues, the possibility of resource overuse as well as conflicts among user groups, Ostrom's solution to govern commons sustainably could provide a guideline for electrification projects in Myanmar: Centralized solutions as well as privatization solutions alone are not the best way to govern natural resources, as these provide mainly oversimplified schemata for governance.

“Many policy prescriptions are themselves no more than metaphors. Both the centralizers and the privatizers frequently advocate oversimplified, idealized institutions – paradoxically, almost “institution-free” institutions. An assertion that central regulation is necessary tells us nothing about the way a central agency should be constituted, what authority it should have, how the limits on its authority should be maintained, how it will obtain information, or how its agents should be selected, motivated to do their work, and have their performances monitored and rewarded or sanctioned. An assertion that the imposition of private property rights is necessary tells us nothing about how that bundle of rights is to be defined, how the various attributes of the goods involved will be measured, who will pay for the costs of excluding nonowners from access, how conflicts over rights will be adjudicated, or how the residual interests of the rights-holders in the resource system itself will be organized.” (OSTROM: 1990, 22)

For the past governance structures in Myanmar the oversimplified solutions criticized by Ostrom is indeed true, as the technocracy of the military regime could neither contribute to better economic development nor establish a political consensus among ethnic groups, thus hindering socially accepted and environmentally sustainable governance.

After studying game theory as well as empirical cases, Ostrom came to the conclusion that a balanced “third way” between centralized system and private-property system would be the best way to cope with resource use issues: “Institutions are rarely either private or public - “the market” or “the state.” Many successful CPR institutions are rich mixtures of “private-like” and “public-like” institutions [...]” (OSTROM: 1990, 14). She then built a framework for design principles of sustainable institutions that help to develop a successful common-pool resource governance structure.

Table 1 Design principles illustrated by long-enduring CPR institutions (OSTROM: 1990, 90)

<p>1. Clearly defined boundaries</p> <p>Individuals or households who have rights to withdraw resource units from the CPR must be clearly defined, as must the boundaries of the CPR itself.</p>
<p>2. Congruence between appropriation and provision rules and local conditions</p> <p>Appropriation rules restricting time, place, technology, and/or quantity of resource units are related to local conditions and to provision rules requiring labor, material, and/or money.</p>
<p>3. Collective-choice arrangements</p> <p>Most individuals affected by the operational rules can participate in modifying the operational rules.</p>
<p>4. Monitoring</p> <p>Monitors, who actively audit CPR conditions and appropriator behavior, are accountable to the appropriators or are the appropriators.</p>
<p>5. Graduated sanctions</p> <p>Appropriators who violate operational rules are likely to be assessed graduated sanctions (depending on the seriousness and context of the offence) by other appropriators, by officials accountable to these appropriators, or both.</p>
<p>6. Conflict-resolution mechanisms</p> <p>Appropriators and their officials have rapid access to low-cost local arenas to resolve conflicts among appropriators or between appropriators and officials.</p>
<p>7. Minimal recognition of rights to organize</p> <p>The rights of appropriators to devise their own institutions are not challenged by external governmental authorities.</p>
<p>For CPRs that are parts of larger systems:</p> <p>8. Nested enterprises</p> <p>Appropriation, provision, monitoring, enforcement, conflict resolution, and governance activities are organized in multiple layers of nested enterprises.</p>

At present the political transition in Myanmar will eventually induce changes at all levels of governance, so the country is truly at crossroads in every issue, from social to political to environmental ones. This will lead to institutional change “[...] that is mainly property rights regimes and governance structures,

[which] can be understood as a response to technological (or biological) and economic factors, on the one hand, and societal and political influences, on the other,” (HAGEDORN et al.: 2002, 4) determining the future power structures and roles of different actors in the country. It is crucial that these new institutional settings are accepted and thus legitimized by all involved actors. Thus providing a framework for a more sustainable use of natural resources could satisfy the needs of local communities, as well as allowing further economic development. Using Ostrom’s design principles for long-enduring CPR institutions as a basis for governance and policy in the future could resolve social conflicts and ensure better protection of natural resources at the same time.

2.2.1 Energy projects in South and Southeast Asia: Impacts and Governance considerations

Examining other large-scale common pool resource issues, the governance structures and their effectiveness in mainland Southeast Asia could provide more helpful solutions relevant for Myanmar.

Especially for the case of the Salween, a look at the Greater Mekong subregion may be helpful. Here we encounter lots of literature that focuses on dam projects related to the Mekong river system, the cooperation struggles and the trade-offs between hydropower development and the conservation of fish species that are relevant for environment and livelihoods. However, the focus of available literature is less on general considerations regarding the implications of institutions and governance structures, but more on case-specific impacts. Still the literature can give an overview over common issues of large-scale energy projects.

The first work to be presented “Hydropower vs. fisheries conservation: a test of institutional design principles for common-pool resource management in the lower Mekong basin social-ecological system” by VILLAMAYOR-THOMAS et al. is an exception, as it does focus on common pool resources. The study aims to assess the relevance of Ostrom’s design principles in the lower Mekong Basin (LMB) as a large-scale CPR system (VILLAMAYOR-THOMAS et al.: 2016, 1). It is apparent that in the case of the Mekong, there are cooperation struggles among riparian countries and a general issue of trade-offs between hydropower development, here represented by the Xayaburi dam in Laos, and protection of fish species that provide at least 25% of income in communities along the Mekong (VILLAMAYOR-THOMAS et al.: 2016, 2,5). One big issue is the heterogeneity of interests among the riparian countries, which led for example to protests by Cambodia and Vietnam against the Xayaburi dam, in addition the hegemonic position of China exacerbates cooperation (VILLAMAYOR-THOMAS et al.: 2016, 7). Another interesting finding is the analysis of collective choice arrangements, which is quite similar to the case of the Salween river: The collective choice arrangements of the Mekong riparian nations is clear, in contrast to the national level. Here the study recognizes that although the Mekong River Commission (MRC) advocates for stakeholder representation in the decision making process, “official participatory procedures have tended to include communities and stakeholder groups that were rather supportive of governmental projects,” which in turn resulted in resistance and protests by those communities left out (VILLAMAYOR-THOMAS et al.: 2016, 8). This procedure of inclusion and exclusion of stakeholders could as well explain public protests

against electrification projects in Myanmar and will be examined in detail. After analyzing the case of the LMB as a large-scale common pool resource, the authors conclude that:

“If the plan to build 11 dams in the mainstream Mekong River is implemented, the total losses in fish resources will amount to a projected 26–42%, and many species will be lost forever (ICEM 2010). The unilateral stance of Laos in the Xayaburi conflict shows some incapacity of the MRC to promote cooperation among the riparian countries. [...] Our study demonstrates that CPR theory (i.e., design principles and other cooperation factors) is helpful in explaining the system outcomes. The international support for economic cooperation and hydropower investments, combined with heterogeneous interests among the countries, deficits in the involvement of local users, and the lack of a clear cost-benefit ratio of cooperation, all contribute to the increasing trade-off between hydropower development and fisheries conservation in the region. [...] In closing, our study illustrates the relative importance that governance systems such as the LMB’s count on firm boundaries, clear assessments of the costs and benefits of cooperation, and sanctioning mechanisms.” (VILLAMAYOR-THOMAS et al.: 2016, 10, 11)

Other studies on natural resource issues focus less on institutions, but rather on general impacts of large-scale energy projects in the region, as stated above.

“The Don Sahong Dam - Potential Impacts on Regional Fish Migrations, Livelihoods, and Human Health” by Baird for example states that the Don Sahong Dam would cause a loss of the fish species with a yearly worth of US\$200 million and in addition having negative effects on food security, human nutrition, and poverty alleviation, as fish is the main source of protein in rural communities (BAIRD: 2011, 226). Regarding the assessment of the impacts of the dam projects, he is sure that “accurately predicting most impacts is presently impossible, as the interactions between large numbers of species and multiple and complex environments make fully understanding systems extremely difficult” (BAIRD: 2011, 228).

An actual prediction of dam impacts on the Mekong river is done by ORR et al. The authors focused on the agricultural impacts of fish protein loss linked to the dams along the Mekong and evaluated two scenarios, one that includes only the large-scale dam projects, the other one including small-scale hydropower projects as well, resulting in a total of 88 dam – the first scenario would lead to a reduction of 16 % in fish resources, the second one ranging from 23 % to 38 % of fish resource losses (ORR et al.: 2012, 927). The resulting necessary dietary shift would lead to an increased water footprint in the Lower Mekong Basin of at least 4 % and to a 29 % (Cambodia) and 42 % (Laos) increase in pasture use under scenario one when switching to livestock production to replace the lost protein calories, having a great socio-economic impact (ORR et al.: 2012, 930). These numbers give a hint of the situation of our two cases, as fishing will be affected heavily in Mongton as well as in Ye. The authors conclude that assessing impacts on ecosystem services from constructing hydropower dams is crucial to deciding whether and where to proceed with planned projects. “Such development would incur severe impacts on fisheries with extended implications, not to mention great social costs” (ORR et al.: 2012, 931).

The necessity to evaluate impacts of hydropower projects on ecosystems is also a point made by WINEMILLER et al. The study “Balancing hydropower and biodiversity in the Amazon, Congo, and Mekong” evaluated proposed dam sites in the three largest river basins and came to the conclusion that at current, impact assessment in these basins, which hold around one-third of the global freshwater fish species, mostly ignores cumulative impacts on hydrology and ecosystem services (WINEMILLER et al.: 2016, 128). Taking ecosystem services and biodiversity conservation into account “would ensure that societal objectives for energy production are met while avoiding the most environmentally damaging projects” (WINEMILLER et al.: 2016, 129). However, at the moment the authors doubt that “rural communities in the Amazon, Congo, and Mekong basins will experience benefits of energy supply and job creation that exceed costs of lost fisheries, agriculture, and property” (WINEMILLER et al.: 2016, 129).

Social costs, mostly due to resettlement, and adaptation strategies have been evaluated by another study focusing on a dam project in Laos, “Hydropower resettlement and livelihood adaptation: The Nam Mang 3 project in Laos”. Following a feasibility study from 1993, the project started in 2001 – without prior Environmental Impact Assessment (SAYATHAM AND SUHARDIMAN: 2015, 20). The project induced the resettlement of 151 households, as the floodplain area required for the dam construction was relatively small compared to that of the Mongton Dam in Myanmar, around 1000 hectares (SAYATHAM AND SUHARDIMAN: 2015, 20) or 10 square kilometers compared to approximately 676 square kilometers (Hopkins: 2015). The operating firm EDL paid a compensation to villagers and in addition planned to provide each household with 1600 square meters of land, but was unable to do so (SAYATHAM AND SUHARDIMAN: 2015, 20-21). In short term, the resettled households of three affected villages could increase their income, nonetheless the access to fishery resources and new farm land was not sufficient (SAYATHAM AND SUHARDIMAN: 2015, 23). In addition, some of the villagers engaged in illegal logging and timber trade (SAYATHAM AND SUHARDIMAN: 2015, 26). In general, the authors arrive at the conclusion that the Nam Mang 3 project had different impacts on the affected communities, which varied “with household access to livelihood assets and natural resources, before and after resettlement, and with household adaptation strategies” (SAYATHAM AND SUHARDIMAN: 2015, 29). The most important factor in adapting to the resettlement and loss of income sources was the access to agricultural land (SAYATHAM AND SUHARDIMAN: 2015, 29), as subsistence rice farming still plays a major role in rural communities. Most of the households would not be able to escape poverty due to a lacking microfinance system (SAYATHAM AND SUHARDIMAN: 2015, 28-29). Better policies could improve the livelihood situation of communities affected by hydropower projects in the future, as “policies and programs addressing the inadequate access to alternative livelihood assets would be helpful in providing households with viable opportunities to increase their annual income, improve their food security, and eventually rise above the poverty threshold” (SAYATHAM AND SUHARDIMAN: 2015, 29).

An allegedly “Good practice” example of resettlement and ecosystem protection is presented by Stephen Sparks. He provides a study on the Theun-Hinboun hydropower Expansion Project in Laos, an

enlargement of a dam site via a second dam built upstream. He states that a “full environmental and social impact assessment was undertaken” (SPARKS: 2014, 57) by a Norwegian consulting company, including a resettlement plan for local villagers. In order to compensate for environmental losses, the NGO Wildlife Conservation Society (WCS) was assigned to carry out conservation activities and reforestation in the area. Nonetheless, the study reveals some weaknesses. The actual outcome of these activities vis-a-vis the destruction of land during dam construction and operation is left out by the author. Also it is questionable why Theun-Hinboun Power Company (THPC) decided to delegate conservation to a “a recognized international NGO with extensive experience in conservation management in Laos” (SPARKS: 2014, 59) instead of hiring a local or regional NGO. Alas, the Sparks study does not explain why impact assessment and conservation management are being carried out by international organizations. Another issue is the social plan of the project. THCP built roads and community structures for the resettled villagers, in addition they were provided with land to ensure equal or even better income. Nonetheless, a survey in 2013 shows that not all of the goals of the relocation projects were reached yet, see Figure below.

Figure 11 Development indicator and income monitoring (SPARKS: 2014, 64)

Development indicator	Baseline 2008	Survey results for 2013								Overall target
		Resettlers Zone 6	Hosts	Relocation villages	Zone 2	Zone 3A	Zone 3B	Zone 3C	Zone 3D	
HHs with safe water %	15.6%	87	95	65	67	75	25	23	55	80%
HHs with toilets %	54.6%	100	95	78	81	76	41	14	63	80%
Within 5 km of health centre %	31%	88	79	52	21	75	0	0	62	80%
Road access % of HHs	26%	100	100	51	78	100	38	0	58	50%
Electrification % of HHs	45%	98	90	91	86	73	65	20	84	80%
Diarrhoea in children %	9.2%	7	13	6	5	6	6	3	6	<5%
Women with anaemia %	52.6%	44	37	50	23	53	40	30	50	<30%
Wasting in children %	4.8%	7	5	12	4	14	4	13	3	<4%
Food security % of HHs	58.6%	40	52	54	55	64	76	44	52	80%
Mean income (million kip)	9.5	23.6	14.2	19.9	24.3	48.8	9.3	23.5	17.5/24.1 ^a	
Income target by zone	24.1	24.1	17.5	17.5	24.1	17.5	17.5	24.1		

At the same time, it must be noted that “the loss of riverine fishing along the Nam Gnouang [...] has been compensated for with other agricultural activities, including improved livestock management and raising fish in ponds” (SPARKS: 2014, 61), so the villagers have to adapt to new income sources. This explains the need to further improve income and diversify income sources, at the same time it raises questions about the cultural impact of the resettlement.

Despite these difficulties, the Theun-Hinboun Expansion Project can be seen as a positive example, as the projects was accompanied by activities to ensure ecosystem protection and the generation of livelihood substitution for locals. Or, as the author states, “THPC’s approach has been to move away from a project- specific, cash-compensation approach towards a holistic, development planning approach that draws on concepts from sustainable livelihood development and management of resources for the present and future generations” (SPARKS: 2014, 65).

Such holistic approaches, and their improvement when put into practice, are indeed necessary for further energy development in Myanmar. Before focusing on the country’s specific issues, I will present

three studies focusing on the impact of coal projects as a supplement to the various studies examining hydropower projects in the region.

The first paper presented on the coal issue is a study on the impact of a coal-fired thermal power plant (Dahanu Thermal Power Plant, DTPP) on orchard yields in Maharashtra, India by ARUN et al. The authors examined the reasons for declining yields in the area and came to the conclusion that, among other factors such as the heavy use of pesticides and other agrochemicals (ARUN et al.: 2009, 30), the pollution caused by the DTPP in the area contributes most to agricultural yield losses.

“The coal based Thermal Power Plant of Dahanu is the major large scale polluting industry present in Dahanu. Coal; being the most polluting fossil fuel currently in use, the coal powered thermal power plants are ‘Pandora’s boxes’ of environmental hazards. The serious environmental hazards of coal based thermoelectric plants are well documented [...]. The negative correlation observed between the radial distance from DTPP and the mean decline at different places indicate a possible link between the yield decline and the pollution from DTPP”. (ARUN et al.: 2009, 19)

While the 500 MW power plant uses more than 8000 metric tons of coal, it causes air, groundwater and soil pollution, by emitting Sulphur Dioxide (SO₂), Carbon Dioxide, heavy metals, particulate matter and trace elements, according to the authors (ARUN et al.: 2009, 20-22). They finally conclude that “considering the mounting scientific evidences highlighting the grave environmental consequences of coal combustion, it is unjustifiable to have a Coal based thermoelectric station at an ecologically sensitive location, jeopardizing its sustainability” (Arun et al.: 2009, 31).

Another case study (Environmental Foundation Limited: 2016) on the impacts of coal-fired energy in Sri Lanka presents a very similar case to Ye. The Lakwijaya Coal Power Plant, formerly Norochcholai Coal Power Plant was completed in 2014, it is located directly at the coast and provides about 900 MW (ENVIRONMENTAL FOUNDATION LIMITED: 2016, 3-4). Besides the general impacts of coal power, such as water use, sulphur emissions, lead emissions, arsenic emissions, the authors identify site-specific environmental damages with social implications. First, resettlement of some locals was necessary due to the size of the construction site. During the monsoon period (April until August) coal dust and ash is being driven inland, up to 2 kilometers away from the plant site. In addition, the construction of a jetty to unload the coal has eroded the coast line and led to a change in fish habitats. Fishing and agriculture has been declined due to pollutants on the fields and in the groundwater and due to the presence of the navy, depriving local families of income sources (ENVIRONMENTAL FOUNDATION LIMITED: 2016, 7-9).

The last presented study related to coal is “Coal Power: How coal-fired power plants threaten the health of Thais” by GREENPEACE SOUTHEAST ASIA in cooperation with HARVARD UNIVERSITY. Myanmar’s neighboring country relies on coal power for electricity generation, with current power plants generating more than 5600 MW and planned expansion of additional 7390 MW within the next 20 years (GREENPEACE SOUTHEAST ASIA: 2015, 18). Currently, coal energy contributes to around 21 % of Thailand’s CO₂ emissions. Two plants in Rayong for instance emit more than 22,000 metric tons of NO_x (nitrogen

oxides) and more than 33,000 metric tons of SO₂ (sulphur dioxide) per year (GREENPEACE SOUTHEAST ASIA: 2015, 21). Environmental impacts according to the study include thermal pollution – the plants mostly use sea water as cooling water – of marine ecosystems, pollution due to the emission of toxic chemicals, soil and water pollution caused by coal ash” (GREENPEACE SOUTHEAST ASIA: 2015, 17). The effects of coal power pollution are being described as following: “These coal plants don’t just lead to the premature deaths of thousands of Thai people, they also foul the air, water and immediate surroundings, they displace entire communities, destroy some of Thailand’s most renown tourist destinations and contribute to global warming (GREENPEACE SOUTHEAST ASIA: 2015, 18). The study finally recommends the termination of further coal plant projects, better monitoring and regulation of air pollutants, environmental impact and health impact assessments of coal-fired energy and finally a promotion of renewable energy (GREENPEACE SOUTHEAST ASIA: 2015, 25-26).

2.2.2 The current state of energy production and energy policy in Myanmar

The demands by Greenpeace regarding coal in Thailand could obviously be similar in the case of Myanmar. Still the country relies on the use of non-renewable energy sources as well as critical hydropower projects, mostly due to the lack of electricity, which hinders economic progress.

The following paper by BENJAMIN SOVACOOOL describes this issue as “energy poverty” and analyzes challenges and possible solutions. SOVACOOOL states that by 2012, only 7 % or 4550 villages in the rural areas were connected to the national power grid, while overall access to electricity was below 30 % (SOVACOOOL: 2013, 306). At the same time, the majority of households has to rely on firewood and kerosene for cooking, heating and lighting (SOVACOOOL: 2013, 306). Regarding the use of wood and the growing population, a shift to other sources of energy is vital to not only improve people's everyday lives, but also in order to protect the country's threatened natural rain forests.

The biggest challenge for further development of the country thus is expanding energy access. Nonetheless, bearing the implications of the limitation of natural resources in mind, sustainability as a political goal should not be neglected. But the strategy of the former (military) governments was investing in “energy infrastructure for export only (to meet international energy needs rather than domestic ones) and to investing in centralized electricity supply rather than off-grid options” (SOVACOOOL: 2013, 308). Investments in energy export counteract the needs of Myanmar's rural population though. Even worse, the military government was blamed for committing human rights violations such as forced labor, murder, and rape in their construction of energy projects such as the Yedana Gas Pipeline and others (SOVACOOOL: 2013, 309). Currently the country cooperates with more than 20 international companies from Australia, Canada, China, France, India, Indonesia, Japan, Malaysia, Singapore, Thailand, the United Kingdom, and United States for gas extraction (SOVACOOOL: 2013, 309). Regarding energy projects, Thailand and China are Myanmar's most important partners, as they are keen to import cheap energy from their neighbor. Even with a civilian government, pressure from outside will lead to a continuation of the current energy strategy.

Another obstacle to improving electricity access is the policy fragmentation. SOVACOOOL elucidates:

“More than a dozen government agencies are involved in Myanmar's energy and electricity planning, and even greater numbers of actors in the private sector and civil society complicate the energy policy landscape. As of 2010, numerous government entities operated in the sphere of energy and electricity: the Ministry of Energy (MOE), Energy Planning Department, Myanma Oil and Gas Enterprise, Myanma Petrochemical Enterprise, Myanma Petroleum Products Enterprise, Ministry of Electric Power No. 1, Ministry of Electric Power No. 2, Myanma Electric Power Enterprise, Yangon City Electricity Supply Board, Ministry of Mines, Ministry of Forestry, Ministry of Science and Technology, Ministry of Education, and the Ministry of Cooperatives. This somewhat convoluted policy environment creates overlapping and at times confusing mandates and poorly coordinated efforts at promoting energy access” (SOVACOOOL: 2013, 310).

Apart from restructuring responsibilities and regulatory authorities under the newly elected government, there are some other opportunities to improve energy access according to SOVACOOOL. He provides micro-financing of off-grid electricity solutions, community mobilization funds, education and awareness campaigns, energy decentralization (allowing communities to decide on implementation of energy projects), participatory private-public partnerships (“5P model”). In addition, SOVACOOOL proposes international solutions as well: Bilateral and multilateral capacity building, ecosystem payment schemes, global carbon credits, technology and intellectual property transfer, grid interconnection along the Mekong. Finally, he concludes that “Though the challenges facing Myanmar are daunting – cutting across poverty and subsistence needs, conflicting priorities, lack of resources, and policy fragmentation – more than a dozen distinct solutions, at both the national and international level, exist to address them” (SOVACOOOL: 2013, 314). Nonetheless, currently large-scale projects and “business as usual” seems to be favored by the new government, with all negative impacts as being described in the case studies in the following chapters.

As an interim conclusion of the chapter, it is obvious that especially in large-scale electrification projects in Southeast Asia the priority is given to energy development. Coal projects as well as dams cause distinct environmental disturbances and lead to displacement of households, reduction of protein in terms of fish catches, changes in income sources and more. The most crucial issue, that is similar in all mainland Southeast Asian countries, is that affected communities often seem to be completely excluded from decision making and monitoring of such energy projects, which has to change in the future. From an institutional perspective there is much potential to increase the overall environmental and social sustainability, intensifying studies on common pool resources in the greater Mekong region could provide helpful information that could influence governance positively. Especially under the influence of the current political transition towards democracy in Myanmar, the new authorities could learn from Ostrom's principles of sustainable CPR-institution and adjust future governance in the environmental sector accordingly.

3 Political Transition in Myanmar and historical background

In order to understand the various conflicts that occur during Myanmar's political transition, in particular regarding environmental and resource management issues, it is necessary to look at the unique history of the country.

In past decades military rule and civil war were key political issues of concern both to Myanmar's citizens as well as to international politicians and also scholars. During the 2000s the 'roadmap to democracy' and the elections in 2010, the first nationwide elections for twenty years, gained international attention. Eventually in 2016 the first civilian government since over 50 years took office. The country is still struggling with its political transition and the full implications are still unknown. In particular, one big issue in this multiethnic country, that also plays a key role in the conflicts over resource use and especially energy projects, is still the many center-periphery conflicts, and in fact these conflicts even existed long before the nation-state 'Myanmar' even existed.

This chapter is divided in three sections that will present theoretical background to Myanmar's political history, I will focus on important issues that play a role throughout recent and past socio-political transformations. The first issue is 'state evasion' (SCOTT: 2009), a practice by which most of the so called 'hill-tribes' tried to escape the reach of the state-making projects in Southeast Asia's lowlands even before the colonial era and which intensified and finally evolved into ethnic movements and armed insurgencies after Myanmar's independence. The second important issue is the 'authoritarianism' that shaped both polity and politics during the second half of the last century and made the Tatmadaw the main political factor that determines further democratization and institutional change. The third issue is the recent political transition itself, for it led to the point where Myanmar is today: a country at crossroads, where the rules of governance and political interaction are being redefined, influencing not only the socio-economic but also the socio-ecological sphere.

3.1 State evasion and Zomia

Like many other nations, Myanmar is a multiethnic nation. Until this day turmoil and insurgencies against the central state persist. Since gaining its independency the country has suffered from ongoing civil war and a strong division between the *Bamar* (or *Burman*, *Burmese*), the main ethnic group inhabiting the central lowlands, and the many minority groups located in the peripheral uplands. In the past two decades the military government had managed to sign more and more ceasefire agreements with most ethnic groups (HLAING: 2012), nonetheless, disputes over land rights, local autonomy and many others have not been fully settled yet.

In his book "The Art of Not Being Governed – An Anarchist History of Upland Southeast Asia", author JAMES SCOTT gives an explanation for struggles between Bamar and ethnic minorities, that are deeply rooted in Myanmar's history. Hence I will give a short overview over his theses that help to understand today's conflicts.

Scott argues that the division between *hill* and *valley* in mainland Southeast Asia is not only a geographical distinction, but marks the historical division between *states* and *self-governing peoples* (SCOTT: 2009, 2-3). While early states evolved in Southeast Asia's lowlands, the periphery of the uplands were as well populated. As the states expanded, concentrating manpower and food production (SCOTT: 2009, 4) however, the periphery became more and more a retreat, where people could escape war and slavery.

“Many, perhaps most, inhabitants of the ungoverned margins are not remnants of an earlier social formation, left behind, or, as some lowland folk accounts in Southeast Asia have it, 'our living ancestors'. The situation of populations that have deliberately placed themselves at the state's periphery has occasionally been termed, infelicitously, secondary primitivism. Their subsistence routines, their social organization, their physical dispersal, and many elements of their culture, far from being the archaic traits of a people left behind, are purposefully crafted both to thwart incorporation into nearby states and to minimize the likelihood that statelike concentrations of power will arise among them. State evasion and state prevention permeate their practices and, often, their ideology as well. They are, in other words, a 'state effect'. They are 'barbarians by design'.” (SCOTT: 2009, 8)

This distinct practice of “state prevention” and “state evasion” (SCOTT: 2009, 8) in upland Southeast Asia that evolved during centuries of states rising and perishing formed a geographic region of nonstate spaces that is nowadays referred to as *Zomia* by some scholars. “This great mountain realm on the marches of mainland Southeast Asia, China, India, and Bangladesh sprawls across roughly 2.5 million square kilometers—an area roughly the size of Europe” (SCOTT: 2009, 13-14).

Figure 12 Mainland Southeast Asia and Zomia Location (Zomia area taken from: VAN SCHENDEL: 2005, 283)



While the settlement in this huge area by “a relatively free, stateless population of foragers and hill farmers” (SCOTT: 2009, 19) began long before the occurrence of western colonial expansion and the formation of nation states, the political implications of the valley-hill dichotomy are still present today. It must be noted however that the 'borders' of the valleys and *Zomia* regions are fluid and that there was a strong inter-connectedness of both the valleys and the hills. The political entities had interpenetrating political systems, they were not separate states with fixed frontiers inhabited by distinct populations as stated by Leach (LEACH: 1960, 50). He explains the overlapping of valley cultures and hill cultures as follows:

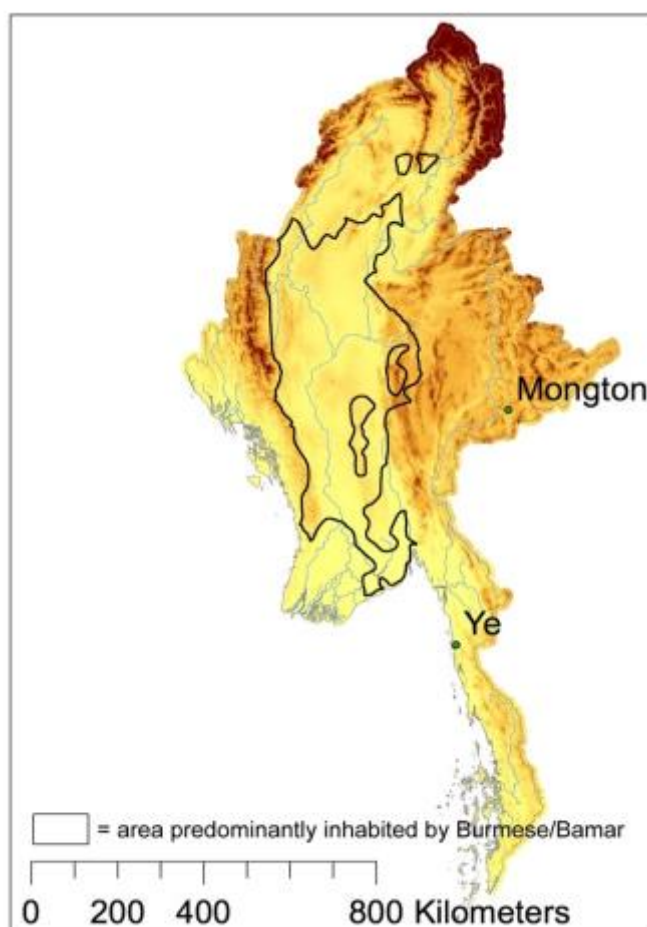
“The political states which we have been discussing have always included elements of both [...] population categories, Hill People as well as Valley

People. The heartland of the state, with the King's capital, was *always* a rice-growing valley inhabited by Valley People [...]. The pattern of development was as follows. The King would first establish authority over his own home valley [...]. He would then spread his authority to a neighboring valley. This might be achieved by conquest or by marriage treaty or sometimes simply by colonization. Finally, the King would claim sovereignty over all the hill country separating the two valley sectors of his total domain. Thus most Hill People were, at least in theory, the subjects of a Valley Prince” (LEACH: 1960, 59).

The fact that most Hill people were only in theory subject of the valley kingdoms, but there was no legitimate reign, is also stressed by SCOTT. He notes that “the hill populations of *Zomia* have actively resisted incorporation into the framework of the classical state, the colonial state, and the independent nation-state” (SCOTT: 2009, 19). This resistance eventually led to anti-state movements in Myanmar after independence.

The dichotomy of the lowlands versus the uplands in the region was and still is marked by distinct agricultural practices. While in the flatlands of the Irrawaddy river and the Mekong Delta the main agricultural practice is irrigated wet-rice (or *padi*) cultivation (SCOTT: 2009, 77), swidden or slash-and-burn agriculture is mostly practiced in the regions of higher altitude in Southeast Asia. As “irrigated padi

Figure 13 Digital Elevation Model of Myanmar including predominantly Burmese/Bamar areas (area taken from: THE BORDER CONSORTIUM: 2013a, 93)



cultivation massively alters the landscape, while hill agriculture appears less visually obtrusive, hill peoples came to be associated with nature as against culture” (SCOTT: 2009, 103). Scott argues that, while shifting cultivation is nowadays seen as barbaric and more primitive than padi cultivation, in fact shifting agriculture techniques in the region have in fact changed more than wet-rice cultivation techniques in the past centuries (SCOTT: 2009, 196-197). Over time, hill agriculture has included more and more crops, that are optimally less labor-intensive, less disease-prone and easy to store. Scott labels such crops as “escape” crops, as they are adapted to the ecological niches of higher altitudes and enable the evasion of raiding (SCOTT: 2009, 199). The fact that even today rice agriculture is practiced less for markets by ethnic minorities in Myanmar and rather for personal use as opposed to “cash crops” such as betel was verified during my field trip in the Mon state (see later chapters).

Figure 14 Examples of crops cultivated in upland Southeast Asia, even including Maize that was brought here by the Portuguese (SCOTT: 2009, 201-202)

Crop	Storability	Labor Intensity	Climate/Soil (Wet/Dry)	Disease Prone	Elevation Bandwidth	Value Per Unit Weight and Volume (Assuming a Cash Economy)	Possible to Store in the Ground?
Taro	Low	Moderate to high, depending on irrigation use	Warm and wet	In 20th century	Grown at low and moderate elevations (0–1,800 meters)	Low	For a short period
Cassava	Low, but can be dried	Low	Hot climate; tolerant of dry soils	In 20th century	Grown at low and moderate elevations (0–2,000 meters)	Low	Yes
Opium	High when processed	High	Tolerant	Yes	Usually grown at high elevations	Very high when processed	No
Maize	Moderate	Moderate	Hot and humid	In 20th century	Grown at very wide range of elevations (0–3,600 meters)	Low	No
Yams	High	Moderate to high	Very wet and hot	No	Grown at low elevations (0–900 meters)	Low	Yes
Sweet potatoes	Moderate (six months at optimal humidity)	Low	Prefers wet	Yes	Grown at low elevations (0–1,000 meters in tropics)	Low	Yes

Regarding the political structure of the valleys vis-a-vis the hills, there were and partly still are some differences, although the absence of a “state” as stated by Scott does not imply a lack of rule. Leach considered two patterns of authority structures as opposed to the “Valley pattern of a semi-divine Prince, surrounded by a harem, and ruling by divine right in his personal capacity” (LEACH: 1960, 63):

“(a) an ideology of rule by aristocratic chiefs. The chief is not endowed with personal charisma but holds his office by hereditary right as senior member of a royal lineage;

(b) an ideology of "democratic" rule by a council of elders. Each elder acts as representative of a particular lineage but no one lineage is intrinsically superior to any other. The elder may achieve his office either by seniority or as a consequence of passing some test of merit” (LEACH: 1960, 63).

Even though they can nowadays be seen as part of *Zomia*, Mon and Shan people reigned their own kingdoms in the precolonial era, so they were in fact not stateless. Still they underwent a process of marginalization during the expansion of the Burmese, and by the times the British arrived Burma, they were already part of the periphery, as THANT MYINT-U, author of “The Making of Modern Burma” states:

“The ‘Shan’, ‘Mon’ and ‘Karen’ were [according to the Burmese narrative] always ‘minorities’, their relative power waxing and waning over periods of ‘Shan dominion’ or the Burmese–Mon ‘civil wars’. [...] By the early nineteenth century, the language and culture of the royal courts were only just pushing south, displacing older traditions centred on the Mon language and memories of autonomous Mon-speaking rule” (MYINT-U: 2001, 9, 25).

Scott even links the displacement of the Mon with escape and a change of lifestyle, from padi cultivation to shifting agriculture:

“[...] Much of the Mon population, previously sedentary, Theravada, wet-rice cultivators, abandoned their padi fields as a consequence of a series of wars [...] in the mid-eighteenth century. Their flight, along with many of their Karen allies, from the chaos and defeat appears to have been accompanied by a retreat to shifting agriculture to protect their food supply as well” (SCOTT: 2009, 198).

While the Burmese had conquered more and more territories, displacing Mon, Shan and other peoples, the arrival of the British and the Anglo-Burmese wars changed the political situation dramatically. By November 1885, after three wars against the British, King Thibaw, the last King of the ruling Konbaung Dynasty resigned and fled into exile – the royal regime and its institutions were destroyed completely (MYINT-U: 2001, 1-3).

During the colonial era, the political and cultural autonomy of the upland peoples, was promoted by the British for whom a “separately administered hill zone was a makeweight against the lowland majorities resentful of colonial rule”. (SCOTT: 2009, 20)

Taking the example of the Shan, THANT MYINT-U gives a deeper explanation of this particular *divide et impera* strategy of the British in Burma:

Figure 15 Colonial Burma (CHARNEY: 2009, 36)



“Even where the British imposed formal control, they still, more often than not, chose to leave day-to-day government in the hands of local elites, landlords or tribal chiefs. In the Shan hills, a peripheral part of Thibaw’s kingdom, this is what the British did. The hereditary chiefs or *sawbwa* were allowed considerable autonomy under the general supervision of a colonial superintendent. But in the Irrawaddy valley itself, the new state imposed bureaucratic control right down to the village level. From the village headmen, through the township officers up to the deputy commissioners and finally the Chief Commissioner, a wholly new framework of government rapidly supplanted existing institutions” (MYINT-U: 2001, 4).

So, while the Shan and other minority groups were able to practice autonomy, the Burmese suffered from British oppression and the breakdown of traditional political institutions. One example is the restructuring of the socio-political system in the rural areas or villages: “[...] Life under colonial rule meant the loss of the village headman as an important mediating buffer between themselves and the state. [...] The village headman was now an appointee of the

government [...]” (CHARNEY: 2009, 7).

Whereas in precolonial times the Bamar and the minorities were interconnected, the imposed institutional separation between lowlands and uplands were not only of administrative, but also of conceptual nature, as the Burmese, Shan, Mon, Karen, and so on were mapped as distinct, unified national groups by the European conquerors (BROWN: 1994, 36). This amplified political division between “Burma proper” (the central regions which were directly administered by the British) and the peripheries had consequences during the emergence of the Burmese-led independent nation state and later on:

“One effect of this classic divide-and-rule policy is that, with a few exceptions, hill peoples typically played little or no role – or an antagonistic one – in the anticolonial movements. They remained, at best, marginal to the nationalist narrative or, at worst, were seen as a fifth column threatening that independence. It is partly for such reasons that the postcolonial lowland states have sought fully to exercise authority in the hills: by military occupation, by campaigns against shifting cultivation, by forced settlements, by promoting the migration of lowlanders to the hills, by efforts at religious conversion, by space-conquering

roads, bridges, and telephone lines, and by development schemes that project government administration and lowland cultural styles into the hills” (SCOTT: 2009, 20).

Recapitulating the chapter, the evolvement of the state evasion as a practice or even life-style as a reaction to the expanding war-waging and slave-raiding states in precolonial times led to a strong political and cultural dichotomy between lowlands and uplands in Southeast Asia. In colonial Burma, this dichotomy was reinforced by the British colonial strategy of divide-and-rule. The preconditions for a unite independent Burma were thus far from being optimal.

3.1.1 Authoritarianism in Myanmar, Military rule and civil war in the 20th century

The time period between World War II and Burmese independence in 1948 marked a first important political transition in the 20th century, insofar as it intensified difficulties between ethnic Burmese and the minorities and at the same time lay the foundations for a strong, Burmese-led military in the country.

When the Japanese invaded Burma in 1942, their collaborators in the country were mostly ethnic Burmese. Aung San, U Nu and Ne Win, three significant individuals in 20th century Burmese history, had all been trained in Japan as part of the so-called “Thirty Comrades” and formed the Burma Independence Army which was burmanized under Japanese rule (HOUTMAN: 2007, 179). But soon, resistance against the Japanese grew and in 1944 Aung San founded the Anti-Fascist Organization (AFO) and later the Anti-Fascist People’s Freedom League (AFPFL) (HOUTMAN: 2007, 179). In 1945 the country was freed from the occupants, but the British military took over control once more. After all, in 1947 the country gained independence with U Nu being elected as President, while national hero Aung San, who outlined the main points for the 1947 constitution (CHARNEY: 2009, 65) was assassinated the same year.

Independence brought first obstacles for the political union of the country. The “Panglong Agreement” in 1947 granted the ethnic minorities in the frontier areas administrative autonomy (CHARNEY: 2009, 66). At the same time, disputes arose among the moderate communist AFPFL and the Burma Communist Party (BCP) as well as the Communist Party of Burma (CPB), and the paramilitary People’s Volunteer Organisation (PVO) left the AFPFL (CHARNEY: 2009, 73-74).

In 1948 the first separatist movements staged ethnic insurgencies: “In November, [...] the KNU [Karen National Union], along with two Mon separatist groups demanded the grant of independence to a Karen-Mon State” (CHARNEY: 2009, 74). Many other ethnic groups followed, while the Shan States still remained under local self-rule. These insurgencies led to repeated promises of autonomy by U Nu (CHARNEY: 2009, 76), but at the same time the Armed Forces under General Ne Win expanded and improved dramatically, finally controlling most of Burma and since 1952 even the Shan territories (CHARNEY: 2009, 77).

The expansion of the Tatmadaw gave Ne Win and his forces the opportunity to take over political control as a 'caretaker government' in 1958, after the construction of a socialist Burma under U Nu became an “economic nightmare” (CHARNEY: 2009, 81) and the AFPFL split up in 1958. After another two years of civilian rule under U Nu, the Tatmadaw finally staged a coup in March 1962 (CHARNEY: 2009, 108). The

era of centralist-authoritarian military rule began with the establishment of a “Revolutionary Council” under General Ne Win, banning all political parties and political dissent (ALAMGIR: 1997, 338).

While the rule of the Revolutionary Council, later the Burma Socialist Program Party (BSPP) and its declared “Burmese Way to Socialism” (ALAMGIR: 1997, 340) had many impacts for the whole population of the country, one is of most interest here: The ongoing civil war. While the Burmese state had become a socialist one-party rule (CHARNEY: 2009, 136) and an isolated, agrarian economy¹ by 1974, the disputes of the central state and the ethnic minorities were never settled, despite the fact that Ne Win's seizure of power was justified with the protection of national unity (ALAMGIR: 1997, 339). Different insurgent groups even unified to demand a federal union instead of a centralist state as proposed by the 1974 constitution (ALAMGIR: 1997, 339), by establishing the National Democratic Front (NDF) in 1976, including Arakan, Chin, Karen, Karenni, Kachin, Lahu, Mon, Pa-O, Palaung, Shan and Wa (CHARNEY: 2009, 143-144) that is still active today². Insurgencies were battled heavily by the Tatmadaw, for instance a counter-insurgency campaign in 1984 finally led to the capture of the KNU base in 1986 (CHARNEY: 2009, 144). The necessity to gain physical control over peripheral territories can be explained as follows:

“[...] Since in agrarian societies the authority of traditional elites is always associated with their control over land, state interventions in land-holding were [...] disruptive of traditional authority. Where the traditional elites were perceived as owners of the land, as with the Shan, their position was directly threatened by the state policies of land nationalization and redistribution” (BROWN: 1994, 56).

However, the military junta was never able to gain full control over the country's peripheries in order to claim authority. The state institutions and organizations thus lacked legitimacy, at the same time the central state did not recognize local institutions and organizations as legitimate. This stalemate of conflicting authorities implies severe obstacles to resource use issues, as both central and local authorities claim to be in charge and a just decision-making process was unlikely or impossible. Seen from this angle, it is worth noting that most of the plans for large-scale energy projects including cooperation with foreign investors such as the Electricity Generating Authority of Thailand (EGAT) were announced in the 1980s already (TERRA: 2006), as since 1977 economic activity started to increase after the “Right to Private Enterprise Law” was passed and the regime wanted more foreign investment in order to help with exploiting natural resources such as oil and gas (ALAMGIR: 1997, 346).

Things did not change much after the pro-democratic uprising throughout the country in 1988, after Ne Win's regime lost its support ultimately, partly due to economic failure (ALAMGIR: 1997, 343). A landslide victory of the National League for Democracy (NLD) in democratic elections in 1990, led by Aung San's daughter Aung San Suu Kyi, was not recognized by the installed State Law and Order Restoration Council (SLORC), later State Peace and Development Council (SPDC) under Saw Maung and since 1992 General

¹Until the beginning of the 1990ies, more than 70 percent of the population was employed in the agrarian sector. In contrast to the industrial sector, most of agricultural production was still in private hands (ALAMGIR: 1997, 342)

²See here for further information: http://www.chinland.org/?page_id=72

Than Shwe (CHARNEY: 2009, 173-179). Changing the country name from “Burma” to “Myanmar” in 1989 represented the continuing ethnic forced-assimilation through the “nation-building” process of the new junta’s vision of “one religion, one language, and one ethnicity” (SAKHONG: 2012, 11). The political strategy of the new regime was to delay the transfer to civilian rule as far as possible and at the same time to impede any political opposition, for instance by suppressing all media or by placing Suu Kyi under house arrest (ALAMGIR: 1997, 344-346).

Nonetheless, 1990 marked a turning point for further transition, as the SLORC started a process of “drafting a new constitution to pave the way for multiparty elections that would guarantee continuing military control over the political process, which they christened ‘discipline flourishing democracy’” (CLAPP: 2015, 2).

3.1.2 The 'road-map to democracy', recent political transition

After the elections of 1990, Myanmar's junta came to the conclusion “that the country’s civilian population was too fractious and undisciplined to participate in governance” (CLAPP: 2015, 3). Thus, the years between 1990 and 2011 and 2011 and 2016 can be seen as a rather long period of political transition, an ‘orderly retreat’ or a ‘praetorian transition’ (EGRETEAU: 2013). In 1993, the drafting process of a new constitution was initiated by forming a National Convention, although there are some serious points of criticism regarding the process, for instance the NLD left the convention in 1996 due to the military suppressing political dissent and again detaining Aung San Suu Kyi (BÜNTE: 2013, 10).

At the same time, a market economy – although still widely controlled by the junta – was officially introduced in the 1990ies, and in addition many ceasefire negotiations and even ceasefire agreements were settled with ethnic minority groups (BÜNTE: 2013, 11).

In 2003, the transition process picked up speed by the announcement of the “roadmap to democracy” and a revival of the National Convention. BÜNTE summarizes the period of 2003 – 2008 as follows:

“In September 2003, the military announced its roadmap to ‘disciplined democracy,’ through which it promised to transfer power to an elected government again. The first step in that process was to reconvene the National Convention to finalize the Constitution’s basic principles, which were introduced at the 1993 National Convention. These principles codified the military’s leading role in the participation of the state. Like the first National Convention (1993–1996), the second was ‘marred by a lack of inclusiveness, heavy restrictions on public debate and little input by the participants into the final product.’ The drafting of the new constitution was finalized in February 2008, and in May 2008 it was formally approved in a nationwide referendum, which was apparently manipulated, since the official results of 94.4 percent in favor, with a voter turnout of 98 percent, no less, lacked any credibility” (BÜNTE: 2013, 11)

While the second National Convention had excluded the NLD, at least some, although ‘handpicked’, representatives of ethnic minority groups had been included – at that point, more than twenty armed ethnic minority groups had accepted ceasefire agreements with the central government (SOUTH: 2004,

236-238). It must be noted however, that not only were the ceasefire agreements reached with individual groups while negotiations with alliances such as the NDF were refused by the junta (SOUTH: 2004, 238), but also that the agreements were in no sense a guarantee for peace and further reconciliation:

“The ceasefires are not peace treaties, and generally lack all but the most rudimentary accommodation of the exinsurgents' political and developmental demands. [...] Ceasefires do not guarantee sustainable peace and development. Major displacements of civilian populations have occurred after ceasefires were agreed between the government and armed ethnic groups in Kachin (1994) and Mon (1995) States. Although armed conflict induced displacement came to an end in these areas, families and communities continue to lose their land and become displaced, as a result of increased natural resource extraction (logging, and jade and gold mining) and infrastructure development” (SOUTH: 2004, 239).

So, while democratic process itself was far from democratic and rather a controlled political transition, accompanied by wide political protests and continuing tensions with ethnic insurgent groups, it eventually led to a new constitution and nation-wide elections in 2010.

On the economic side, the post-1988 junta was still unable to manage better development, thus it can be said that the country suffered from a “resource curse” due to “bad governance, corruption, fiscal irresponsibility, conflict over natural resources” (TURNELL: 2008, 975). Examples are the state control of natural gas exports (TURNELL: 2008, 967), lack of finance in the agricultural sector (TURNELL: 2008, 972) or the construction of the costly new capital Naypyitaw in 2005 (TURNELL: 2008, 973). Despite the economic opening and more foreign investments, the business environment is still in poor conditions, in 2014 the World Economic Forum still ranked Myanmar 134th among 144 countries.

In the 2010 elections, the first elections since two decades, the military was able to maintain power by forming “its own proxy party” (BÜNTE: 2013, 11), the Union Solidarity and Development Party (USDP), led by former General Thein Sein. In addition, the 2008 constitution guaranteed the military 25 % of seats in the national parliament, so that the “armed forces would remain above the law and be independent from the government, and, therefore, would dominate and control the three branches of political power” (SAKHONG: 2012, 12).

Despite the military background of the USDP, political reforms increased in the period 2010-2015. In other words, the Tatmadaw carried out an 'orderly retreat' from the political stage and turned to acting behind the scenes. As opposed to a transition to a fully democratic, federal Myanmar this is probably the second best solution, but not the worst either.

“Since the inauguration of its new civilian president, Thein Sein, Burma can no longer be categorized as a case of direct military rule. Nevertheless, the country remains under military control and the army is the arbiter of power in the country. After coming into office in March 2011, Thein Sein [...] embarked on a series of political reforms that have liberalized the repressive regime. After two years of reforms, we can discern shrinking military prerogatives, strengthened civilian institutions [or organizations] (above all

parliament and the cabinet), and an opening of political spaces: political prisoners were released, media and Internet controls were relaxed, and space for civil society actors broadened; labor organizations and NGOs were encouraged to form, and opposition parties were allowed to register for and participate in the by-elections in April 2012, which were considered relatively free and fair. [...] However, the military has not taken a sole backseat role either. It has actively shaped and defined the whole reform process; it has negotiated political spaces with civilian actors and formulated reformist policies. It has, as laid down in the constitution, actively participated “in the national leadership role of the state.” [...] Given the fact that in the past two decades normal political activities were regarded as “terrorist acts” or as “threatening national security,” these changes have to be characterized as nothing less than revolutionary – at least as a revolution from above” (BÜNTE: 2013, 12).

The implications of the Tatmadaw still being a main political actor despite the NLD voting victory in early 2016 are not easily to foresee. “Odds are [...] that the Tatmadaw will continue to serve [...] in the coming years as ‘moderator,’ a position that has been much criticized for going against the grain of a full transition to civilian democratic governance” (EGRETEAU: 2013). Despite being the first democratic government since decades, doubts remain that the new regime will remove authoritarian structures:

“Burma is still the same militarized state it has been for a half-century. It’s not that the NLD wants to keep the military’s restrictions, say the new government’s supporters, it’s just that it hasn’t quite been able to force the changes through yet. Perhaps. And yet Suu Kyi’s party has made no convincing case that it desires a more progressive approach. [...] Her party must deal with the reality of the military’s continued political power, but it appears to have the ability to advance a legislative agenda that could begin to alter Burma’s entrenched authoritarianism. Yet it is choosing not to” (PRASSE-FREEMAN: 2016).

In addition, the struggle over the decision rights in natural resource cases in the country’s ethnic minority areas may continue under the Aung San government, as indicated by her reaction to the resumption of dam projects along the Salween for instance:

“[Aung San Suu Kyi] is known locally to be elitist and egocentric and brooks no dissent within her party. The border relief agency wrote, ‘You may have read that while campaigning in Kachin State before the election, she said she did not want to comment on the Myitsone dam, as she needed to “study the details of the contract” first! I have no hope at all that she will stand up for communities affected by dams or any other large-scale investment projects, whether in ethnic or central Burmese areas’” (KEMP: 2015, 11).

4 Methods

Before presenting the methods used in this work, let me recall what I am trying to analyze. First, the possible social impacts of both energy projects on the livelihoods of the local people. That includes the local pollution in the case of the Andin Coal plant and the changes of the river system and thus a change in ecosystem services and water supply of the water body in the Mongton Dam area. Second, the role of governance and the circumstances of the current political transition and the related current and future governance and policies. How were decisions on large scale energy projects made during military rule, how did the junta cooperate with the foreign companies and were local stakeholders involved in the decision process? And, now that the political transition towards democracy is likely to improve the rights of local stakeholders, are the projects that were decided on during military rule being reevaluated by the new central government?

The research questions as a summary of the above are as follows: How does the state implement large-scale energy projects regarding governance structures and decision processes, what (supposed) impacts on livelihoods do they have, and how do the stakeholders central state, energy companies and local people behave towards each other.

My hypothesis is as follows: The pollution related to coal power (Andin) and the flooding of around 670 square kilometers (AECEN: 2015) and damming the Salween (Mongton) will have negative impacts on people's livelihoods, dramatically decreasing incomes from agriculture and fishery and thus changing the social and economic structure of the surrounding rural villages. At the same time, the benefits of producing energy for profit on a large scale, expanding the national grid and eventually exporting large parts of the energy produced will presumably not be noticeable for the people in affected areas. The central government and the operating energy companies will rake in the benefits, thus there is an unjust trade-off between benefits and costs of implementing both projects. This led to local opposition to the projects. Regarding governance and policies, I assume that, as the decisions were made during military rule, there was no participation and involvement of locals in the decision process. Decision processes affecting natural resources may now, after the transition to democracy, become more democratic and transparent, the hurdles for reevaluating projects that were already decided on still remain high though. This is due to the remaining socio-political dichotomy between center and peripheries, the conflicting goals of development and conflicting institutions regarding the use of natural resources.

To examine if my assumptions are true, I decided to use a multi-method approach, as “the best way to study most research topics is to combine methodological approaches” (SINGLETON AND STRAITS: 2010, 431). The first method used is the analysis of newspaper articles and NGO reports of the last years covering the implementation process of both energy projects. Secondly, I conducted personal expert interviews in Bangkok and Yangon. The third method used covers only the coal project in Andin as a supplement to the methods mentioned above, field research was conducted in the Mon State in April

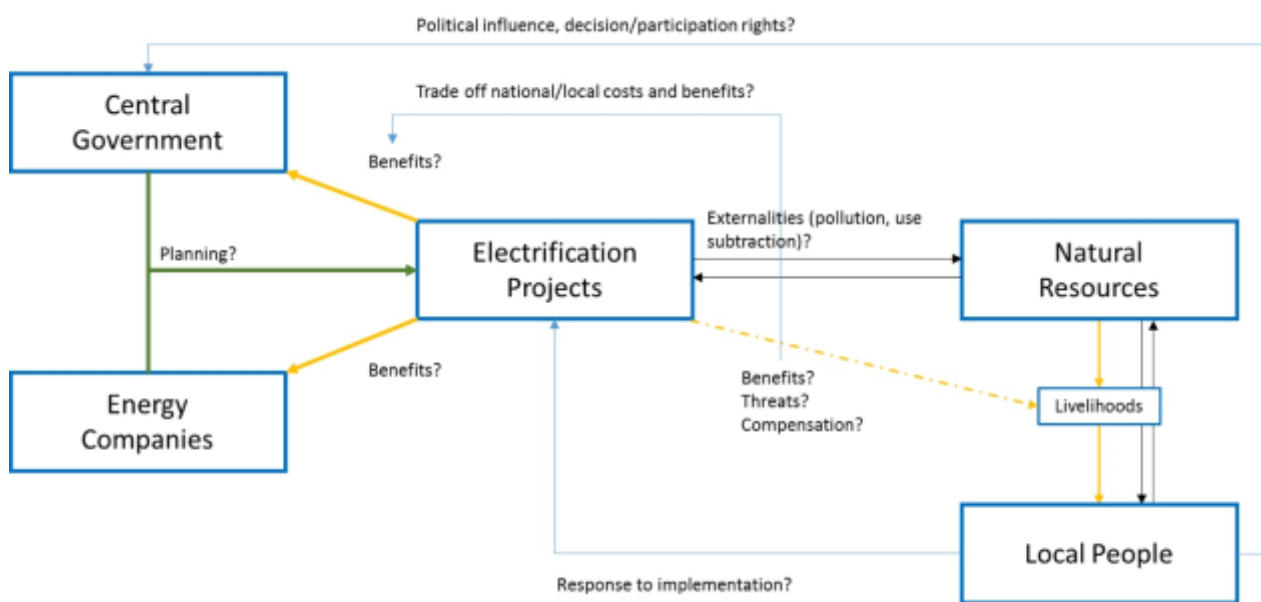
2016. The methods used stem from social scientific research and are mostly based on the theoretical framework provided by SINGLETON and STRAITS.

As a guide to the research process I have made up an ex-ante framework according to my research question, see figure below. Here, I used an approach analogous to the 'grounded theory approach' as described by BRYMAN AND BURGESS:

“After some data collection and reflection in relation to a general issue of concern, the researcher generates ‘categories’ which fit the data. Further research is undertaken until the categories are ‘saturated’, that is, the researcher feels assured about their meaning and importance” (BRYMAN AND BURGESS: 2002, 4)

Accordingly, after prior literature research I formulated some relevant categories and variables that I wanted to examine within my three different methods used and implemented them in a graph for visualization.

Figure 16 Ex ante-framework for case analysis



This graph in turn served as an approximate direction for picking up relevant information from the available data sources, expert interviews and field research later on.

4.1 Newspaper Articles and NGO Reports – Research Using Available Data

To gain an overview over the events and developments of the planning and implementation process and the backlash of the selected cases, I relied on available data for my first method of research. Such available data may have been produced by other investigators for similar or different research purposes or even for no research purpose at all (SINGLETON AND STRAITS: 2010, 393). There are five main categories of available data: (1) public documents and official records (2) private documents; (3) mass media; (4) physical, nonverbal materials; and (5) social science data archives (SINGLETON AND STRAITS: 2010, 393).

I decided to analyze NGO reports, these can be placed in the first category, as they are public documents. These reports stem from national as well as transnational NGOs working in Myanmar and Southeast Asia in the field of environmental protection and human rights, plus some reports from international Organizations. Due to the authoritarian nature of most regimes in mainland Southeast Asia, many of such NGOs started their work in Thailand, and those working in Myanmar often still operate from either Bangkok or Chiang Mai.

As a supplement to these reports I analyzed articles of newspapers available online and in English, covering a time period between 2009 and 2016, most of them were written between 2014 and 2015. These data from mass media (third category) are written in a non-scientific language but give a good historical overview regarding the progress of the selected energy projects and the public reaction to it. At the same time they provide helpful background information and sometimes contain interviews of locals as primary sources.

Selecting the appropriate sources and “finding and procuring relevant information” (SINGLETON AND STRAITS: 2010, 406) as a sample is not an easy task, Singleton and Straits give the advice to “let the research problem or hypothesis serve as a guide to appropriate sources and to search the literature for studies by previous investigators” (SINGLETON AND STRAITS: 2010, 406). Accordingly, I first searched for relevant NGO reports covering either environmental or human rights issues that were related to energy projects in Myanmar. Afterwards, I searched for recent sources of information within the literature of these reports, here I often encountered newspaper articles references. Thus I decided to use these as a second pool of data, searching for relevant articles in well-known Southeast Asian newspapers provided in English by applying search tags such as “Ye coal plant”, “Andin coal plant”, “Mongton Dam”, “Tasang Dam” or similar terms.

In order to process the sources and procure relevant information, content analysis was used: The texts were searched for information covering following content categories “analogous to deciding on a set of closed-ended questions in survey research” (SINGLETON AND STRAITS: 2010, 421): Implementation, Impact, Benefits, Costs and Reaction.

Table 2 Content categories in the analysis of available Data

Implementation	Which company was given the task of project implementation? What are the stages of implementation, e.g. was there an EIA and how was it conducted? How will implementation progress in the future or may the project even be cancelled?
Governance	Who was involved in the decision-making process? What was and is the legal framework for implementation of electrification projects, in this case dams and coal

	plants? Is there any political bottom-up influence on the central government? Is there any cooperation between state, energy companies and locals?
Impact	What are the supposed (physical) impacts of the projects in terms of e.g. pollution or flooding
Benefits	Who will benefit from the implemented projects and to what degree?
Costs	Who will bear the costs or negative externalities of energy production? Will there be any compensation for resettling or else?
Reaction	How did locals react to the planning of the projects? What are their opinions?

Finally, to present the results, information of the data used will be placed in each category and assembled in a table, enabling a comparison of the information found in different sources. In addition, information from NGO reports will be examined separately in text form, accompanied by relevant images taken from the sources mentioned above.

4.2 Expert Interviews

The second method used was qualitative expert interviews with representatives of NGOs. They were conducted in Bangkok, Thailand and in Yangon, Myanmar. In total, three interviews were conducted in the time period between March and April 2016. The experts were selected by contacting representatives of NGOs in the region covering environmental issues and human rights issues, plus companies engaged in the energy projects itself. Following organizations were contacted: Boell Foundation Myanmar, Mekong Energy and Ecology Network (Meenet), Towards Ecological Recovery and Regional Alliance (TERRA), Human Rights Foundation of Monland (HURFOM), Shan Human Rights Foundation (SHRF), Toyo-Thai Corporation Public Company Limited (TTCL) and the Snowy Mountains Engineering Corporation (SMEC). Unfortunately, both the HURFOM and SHRF did not answer my request. In addition, the energy company TTCL and the Snowy Mountains Engineering Corporation, the former involved in the coal project in Ye and the latter involved in conducting Environmental Impact Assessments in Mongton were contacted but did not respond as well.

The expert interviews were conducted as Face-to-Face interviews, being more interactive, flexible and enabling the interviewer to clarify or to restate questions (SINGLETON AND STRAITS: 2010, 282-283). The interviews lasted around one hour as proposed by Singleton and Straits (SINGLETON AND STRAITS: 2010, 283), they were as open-ended as possible, as I expected the interviewees to have great knowledge in the subject. In addition, “experts usually have a privileged access to information about groups of persons or decision processes and have a high level of aggregated and specific knowledge that is otherwise

difficult to access” (OTTO-BANASZAK et al.: 2010, 22). Content analysis was applied to procure relevant information, the results will be presented in text form. The following content categories were used, due to the expert insight the categories are more profound than those used for literature analysis (see above): Implementation; energy policies; past and future governance structures; external influences on policy and governance; property rights of natural resources; externalities (in terms of physical impacts, benefits, costs); behavior of central state, energy companies and locals/local authorities towards each other.

4.3 Field Research in Ye, Mon State

As a third method, field research was conducted in Ye, Mon State in early April 2016. The impressions from field observations and field interviews helped me to gain a deeper understanding of local people's concerns vis-a-vis the implementation of large-scale energy projects. It must be noted, that although a field trip to Mongton would have been advisable from an academic point of view. Nonetheless, due to the restrictions to enter large parts of the Shan State and the risk of armed conflicts during the trip, I was convinced not to enter the Mongton area. At least some of the conclusions drawn from the field research in Ye can also be applied to Mongton.

As Singleton and Straits mention, “a major reason for doing field research is to get an insider's view of reality” (SINGLETON AND STRAITS: 2010, 356). Indeed, especially when keeping the role of local stakeholders in mind, observations and interviews in situ can provide the researcher with helpful information and at the same time tangible impressions of the subject studied, which is referred to as methodological empathy by Meredith McGuire (SINGLETON AND STRAITS: 2010, 356).

For the minimization of costs, the fieldwork was conducted on three consecutive days between April 25th and April 28th in and around the Ye township in Mon State, in particular in Andin, the village where the coal site was planned, and in Kwan Tamort Pea (Tamort Pea Village), the fishermen's village where the jetty for coal unloading was planned.

In order to gain access to the villagers of Andin, I had to rely on my Mon teacher, Ven. Nyarneinda as a “gatekeeper” and a “key informant” (SINGLETON AND STRAITS: 2010, 274-275). Without his presence, I was forbidden to enter the proposed coal site on the first day. Given the wary and suspicious nature of the villagers and especially the Abbot of Andin, I had to undergo an interrogation by some monks and villagers on the first day of visiting, even though I was accompanied by a local motorcycle taxi driver and was able to present my student identification card. However, after a phone call, I was allowed to talk to some villagers and the head monks of the monastery, and on the next day, accompanied by my Mon teacher, I was allowed to visit the coal site at Andin and Kwan Tamort Pea, where the coal unloading jetty was supposed to be constructed.

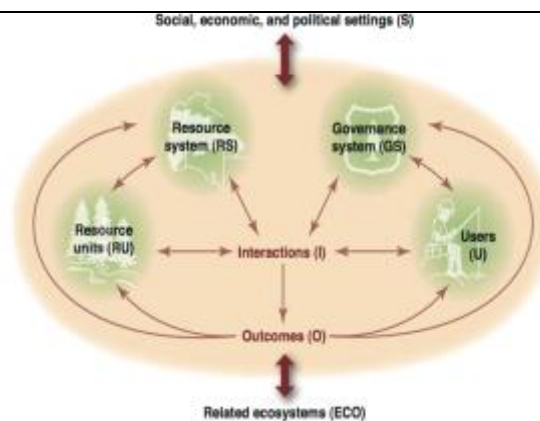
The data was collected via field observations, participant observation (SINGLETON AND STRAITS: 2010, 362-265), and field interviews (SINGLETON AND STRAITS: 2010, 362-267). A full non-participant role could

not be taken during research anyway, as I had to reveal myself as a researcher, again due to the suspiciousness of the locals. Only during my ride to the village, which is a forty-minute drive from Ye, I was able to take some photos without anyone noticing. In general, data was collected as photographic images, notes (observations and field interviews) and sound recordings and procured after the field trip. The collected data served as a supplement to the two other methods and an attempt to better understand the possible livelihood impacts and the reactions of locals, or, as Singleton and Straits state, I was able to identify “the larger meaning” of my findings and the relation of reality to theoretical frameworks (SINGLETON AND STRAITS: 2010, 388). In terms of structuring the collected data, I will use the categories infrastructure, livelihoods, project implementation and reaction and present collected data in sub-chapters according to the categories.

4.4 Interpretation of results, discussion

Before discussing the results of the research, I will present a framework for interpretation. In order to visualize the challenges of the implementation of both energy projects, a framework based on Elinor Ostrom's “General Framework for Analyzing Sustainability of Social-Ecological Systems” (OSTROM: 2009) will be applied. Resources used by humans are embedded in complex, social-ecological systems (SEs), the SES-framework helps to understand variables that influence self-organization of resource users and the overall sustainability of the SES (OSTROM: 2009, 419).

Figure 17 The core subsystems in a framework for analyzing social-ecological systems (OSTROM: 2009, 420)



Variables defining the sustainability of Social Ecological Systems can be found in Figure 18. For a detailed definition of each variable see EPSTEIN AND KREITMAIR (EPSTAIN AND KREITMEIR: 2013).

Figure 18 Variables that define the sustainability of SES (OSTROM: 2009, 421)

<i>Social, economic, and political settings (S)</i>	
S1 Economic development. S2 Demographic trends. S3 Political stability. S4 Government resource policies. S5 Market incentives. S6 Media organization.	
<i>Resource systems (RS)</i>	<i>Governance systems (GS)</i>
RS1 Sector (e.g., water, forests, pasture, fish)	GS1 Government organizations
RS2 Clarity of system boundaries	GS2 Nongovernment organizations
RS3 Size of resource system*	GS3 Network structure
RS4 Human-constructed facilities	GS4 Property-rights systems
RS5 Productivity of system*	GS5 Operational rules
RS6 Equilibrium properties	GS6 Collective-choice rules*
RS7 Predictability of system dynamics*	GS7 Constitutional rules
RS8 Storage characteristics	GS8 Monitoring and sanctioning processes
RS9 Location	
<i>Resource units (RU)</i>	<i>Users (U)</i>
RU1 Resource unit mobility*	U1 Number of users*
RU2 Growth or replacement rate	U2 Socioeconomic attributes of users
RU3 Interaction among resource units	U3 History of use
RU4 Economic value	U4 Location
RU5 Number of units	U5 Leadership/entrepreneurship*
RU6 Distinctive markings	U6 Norms/social capital*
RU7 Spatial and temporal distribution	U7 Knowledge of SES/mental models*
	U8 Importance of resource*
	U9 Technology used
<i>Interactions (I) → outcomes (O)</i>	
I1 Harvesting levels of diverse users	O1 Social performance measures (e.g., efficiency, equity, accountability, sustainability)
I2 Information sharing among users	O2 Ecological performance measures (e.g., overharvested, resilience, bio-diversity, sustainability)
I3 Deliberation processes	O3 Externalities to other SESs
I4 Conflicts among users	
I5 Investment activities	
I6 Lobbying activities	
I7 Self-organizing activities	
I8 Networking activities	
<i>Related ecosystems (ECO)</i>	
ECO1 Climate patterns. ECO2 Pollution patterns. ECO3 Flows into and out of focal SES.	

*Subset of variables found to be associated with self-organization.

In the two cases presented in this thesis, there have been established SESs – a distinct number of users, more or less common socioeconomic attributes of users, a history of use and collective-choice rules how to use resources.

The challenge for the rural systems is in the appearance of new users and new use forms, in our cases the implementation of energy projects by the central state and energy companies. As new users and use forms appear, there will be new interactions, conflicting resource governance systems and conflicting uses (local vs. national) and thus new outcomes influencing the social and ecological sustainability of the local SES.

The application of the framework, based on the findings of the research, will reveal the challenging outcomes of project implementation and hence provide a basis for discussion of the results. Note that not all of the variables defined by Ostrom will be used, instead the focus will be on variables relevant to the cases.

5 Results

In this chapter I will present the results of my research as described in the previous chapter. For a better overview this section is split into three parts according to the three methods that were used. Although both cases are different in terms of the method of energy production and the location, there is a general similarity of the core problem. Three main actors – state, energy companies, local stakeholders – are concerned, both projects will have a direct impact on the livelihoods of the local people and both projects are heavily opposed. Thus, to facilitate some comparison in the next two sections, I will indicate whether a source is referring to the Mongton case or the Andin case, although sometimes a strict separation was not possible, especially during the expert interviews.

5.1 Newspaper Articles and NGO Reports – Research Using Available Data

The following tables and texts represent the summary of the results analyzing relevant newspaper articles and content of NGO reports. For a clear separation and better comparability, I have created separate tables for newspaper articles covering either the Tasang dam or the Andin Coal Plant respectively. Please note that in order to maintain the legibility of the document, the full tables can be found in the Appendix.

5.1.1 Newspaper Analysis Results

Table 3 Summary of newspaper articles on Mongton Dam

Source	Newspaper Articles
Case	Mongton/Tasang dam
Implementation	<p>The construction and operation of the dam is a joint project between a consortium of Chinese companies (Three Gorges Corporation and Sinohydro), the Electricity Generating Authority of Thailand (EGAT), and Burma's Ministry of Electric Power. Furthermore, another local partner, the International Group of Entrepreneurs (IGE), is mentioned in some sources, this firm is controlled by the offspring of the industry minister during General Than Shwe's military regime.</p> <p>SMEC was appointed to conduct the Environmental Impact Assessment (EIA) and Social Impact Assessment (SIA) for the project.</p> <p>In 2016, Thailand signed a Memorandum of Understanding (MoU) with Myanmar for the purchase of power generated by the Mong Ton Dam. Thailand and the new government agreed on a purchase of power at the proposed ratio of 15-20%.</p>
Governance	<p>Agreements on building the dam were signed in 2007 (Than Shwe regime) and approved by Parliament in February 2013 (Thein Sein regime).</p> <p>"The Salween basin is politically and geographically marginalized. In the basin it is ethnic minority people so they have not been included in the decision-making," said Pianporn Deetes, the Thailand Campaign Coordinator for International Rivers in a statement dating 2015.</p>

	<p>Statements from the former Thein Sein government indicate the prime concern is not with the potentially disastrous impacts, but with the country's energy shortages. In February 2013 the Deputy Minister of Power Myint Zaw stated that six hydropower dams had been approved for the Salween River. Professor Maung Maung Aye, chief advisor to the MEI – Myanmar Environment Institute commented: "Today damming the rivers is the government's first principle for developing more energy, instead of being the last option for the nation." Myanmar's former government has not publicly addressed locals' concerns, but authorities in the past have praised the Salween dam projects as benefiting the local populations, securing critically-needed electricity for Myanmar and leading to peace;</p> <p>The area has been under heavy guard by thousands of Myanmar government soldiers and police. According to Shan community groups the security forces restrict access along a 32-kilometer stretch of the Salween.</p> <p>Following the elections in Myanmar, the Ministry of Energy has been restructured. The future of the project is currently uncertain. Nonetheless, the 2016 MoU with Thailand indicates the project will continue under the new democratic leadership.</p>
Impacts	<p>The dam, at a height of around 240 meters, would flood 676 square kilometers of farmland and (predominantly teak) forest, an area nearly the size of Singapore.</p>
Benefits	<p>The dam is said to have a 7,000 megawatt-capacity. Most of the electricity generated by the hydropower project is expected to be sold to Thailand and China. Most source estimate that nearly 90 percent of the energy will be exported and 10 percent will remain for domestic use.</p>
Costs	<p>Construction costs will be about \$US8 billion.</p> <p>Previously, the Mongton dam was known as the Tasang dam, which was slated for development at a site 10 km further downstream from the current project's location. The project was linked to human rights violations including forced relocation and forced labor. In total, over 300,000 people were displaced by the Tatmadaw during massive forced relocations (especially between 1996 and 1998) under the previous military government in central Shan state, 1,500 villages were abandoned.</p> <p>According to human rights activists the status and situation of people displaced from Shan state must be addressed, as construction of the dam in the area would permanently inundate the lands of this displaced population, leaving many landless and stateless.</p> <p>Significant environmental and social costs have not been taken into account and will be borne by the marginalized communities.</p> <p>Not only Mongton and Mongsat would be flooded but Mongpan, Langkhur, Kunhin, Kali, Mongpu Long, and Mongpu Awn also would be submerged in the water of the dam floodplain, about 123 villages along the Salween River would be ordered to relocate.</p> <p>If construction of the dam proceeds under the current conditions, the</p>

	government will send in even greater numbers of troops and increase military fortifications to secure the area. This will likely fuel further conflicts and lead to increased abuses against local communities.
Reaction	<p>SMEC's efforts to carry out local meetings and consultations on the project have met with significant local resistance, communities believe there has been a lack of transparency in the assessment process and accused the consultation of bribery.</p> <p>Local people and civil society organizations are demanding a halt to the building of the dam. 16 Shan organizations issued a statement in Bangkok in 2015 warning the project could revive civil war in an already unstable part of Myanmar by encouraging the government to send in more troops to secure the area. Shan community representatives revealed the signatures of 23,717 Shan State citizens who oppose the construction of the dam.</p> <p>A NGO called "The Network of People in Salween Basin" demands the suspension of any hydropower projects in the River until all affected people are provided an opportunity to meaningfully participate in decisions regarding the river's future and the management of natural resources</p>

Table 4 Summary of newspaper articles on Andin Coal Plant

Source	Newspaper Articles
Case	Coal Plant in Andin, Ye
Implementation	<p>Toyo Thai Company, based in Thailand with the most share of Japanese companies, planned to build the coal power plant which will produce around 1270 MW of electricity once in operation. Assessment began in 2015, the central government permitted the Toyo Thai (TTCL) Company to implement the project after it considered the environmental impact assessment/social impact assessment (EIA/SIA).</p> <p>In April 2015 a memorandum of agreement (MoA) was signed between Toyo-Thai, the union government and the ministry of electricity (MOEP), the company will construct and operate the plant for 30 years. The 500-acre project site is located near the beach of Andin village. Win The Yangon-based company Yaung Chi Oo had bought the 500 acres of land for the project. Construction will take between four and six years as estimated by the company.</p>
Governance	<p>The MOEP, supported by the World Bank, has set a target of 67 percent electricity generation by coal and gas-fired power plants by 2030. According to a National Electricity Master Plan drafted by the Japan International Cooperation Agency (JICA) and a Japanese consultancy, the suggested mix for the 23,594 MW of generating capacity that Burma is forecast to require in 2030-31 is 38 percent from hydropower, 33 percent from coal, 20 percent from natural gas and 9 percent from</p>

	<p>renewable energy sources.</p> <p>Union-level authorities kept quiet about coal projects before the election. The former Union Solidarity and Development Party (USDP) government ignored the objections of the local community, which had protested the power plant numerous times.</p> <p>After the election in 2016 the status of the project is unclear. The project has been suspended but not cancelled according to Aung Than Oo, Deputy Minister of Ministry of Electric Power.</p> <p>A group of villagers had been taken on a study tour in Japan to learn more about the Ultra Super Critical technology used in the coal plant. However, participants of the study tour stated that the regulatory environment in Japan, construction procedures and standards of government accountability were worlds apart in Japan and Burma.</p>
Impacts	<p>According to environmental activists, the power plant could pollute soil, air and water in the region. The NGO Mekong Watch claims that local people living near similar projects in the regions are already suffering from coughs and other illnesses.</p>
Benefits	<p>Currently, Ye township is not connected to the national grid yet. Ye township residents have long complained about the high cost of electricity locally. As private companies charge between K500 – K1000 per kilowatt hour, about 10 times the rate from the national grid. If plans proceed, Toyo-Thai will sell electricity from the coal-fired plant to the government. One unit of electricity from the plant would cost between K100 and K115. Still, the main purpose of building the power plant is to sell the majority of electricity produced to Thailand and the plant will provide only a few megawatts of power to the local people.</p> <p>In a meeting, villagers were told that Toyo-Thai would provide an additional one-time payment of US\$1.5 million as part of its corporate social responsibility (CSR) program in order to promote development in the township.</p>
Costs	<p>Construction costs will be about US\$2.8 billion.</p> <p>The project poses various potential health and environmental risks for people in the region.</p> <p>Villagers of the seven villages surrounding the proposed power plant have conducted their own economic survey of the area and claimed the area earns US\$5.8 million per year from farming and fishing, which they say renders the Toyo-Thai proposal well below the coal plant's potential impact on local agriculture. The promised payment would not sufficiently compensate losses of the local agriculture and fishery.</p>
Reaction	<p>Locals have constantly opposed the project since they were informed about the plans to build the power plant. A movie documentation about the project was made by locals and NGOs to inform others about the process and the negative impacts for the affected villages.</p> <p>After the Toyo-Thai company signed the MoU with the government on 5 May 2015 about 6,000 locals staged a protest in Andin. NGOs such as the Myanmar Alliance for Transparency and Accountability (MATA) or HURFOM call upon the Mon State government to respect and protect the economic, social and cultural rights of the community and plan for</p>

action to protect the environment in Mon State. According to them, the coal plant project should be abandoned.

5.1.2 NGO Analysis Results

In this sub-chapter, I will present a summary of ten papers or reports that cover a) energy issues and/or human rights issues in Myanmar in general, b) energy issues and/or human rights issues related to the Mongton Dam Project and c) energy issues and/or human rights issues related to the Andin Coal Plant

a) Energy issues and/or human rights issues in Myanmar in general

Poverty, Displacement and Local Governance in South East Burma/Myanmar

The first report of relevance, “Poverty, Displacement and Local Governance in South East Burma/Myanmar” (THE BORDER CONSORTIUM: 2013b) deals with social and political issues in the eastern part of Myanmar, spanning from Mon State (including Ye) to Kayah State, Kayin State and Southern Shan State (including Mongton). The report aims to document the living conditions in the rural areas and is based on surveys carried out in several communities: “The survey design complemented quantitative questionnaires [...] about basic living conditions, the impacts of ceasefire agreements, protection concerns and perceptions about the potential return of displaced persons” (THE BORDER CONSORTIUM: 2013b, 6).

Regarding fundamental governance structures, the authors conclude that in spite of reforms and reorganization of Myanmar's polity since the 2000s, the degree of centralization and top-down governance structures remain high:

“Despite the establishment of state and regional governments, Myanmar’s system of governance remains centralised because of restrictions on political autonomy at the sub-national level, confusion over administrative lines of accountability for public servants and Union oversight of revenue and expenditures. Decentralisation within the existing constitutional constraints will not provide the devolution of authority that the non-state armed groups seek. However, strengthening local governance will contribute to building confidence, accountability and transparency. Legislative reform in 2012 enabled the replacement of centrally-appointed village tract administrators with indirectly elected representatives which provide an opportunity to strengthen local governance. The dynamics between government township authorities and village leaders have generally been characterised by a top-down command structure” (THE BORDER CONSORTIUM: 2013b, 23).

Additionally, there are indications for the ongoing conflict of **legitimacy of governance**, as both the central government and ethnic militia were still issuing property rights certificates in the region: “The majority of households in 30% of villages surveyed have land demarcated and recognised by the government, while non-state armed groups have issued land use certificates for most households in 26% of villages” (THE BORDER CONSORTIUM: 2013b, 24).

The report further elaborates that due to the economic opening of the country, chances are high that rural communities will suffer from **negative externalities** of the exploitation of natural resources: “With investors flocking to Asia’s last frontier, there are significant risks that local communities will bear the burden of resource extraction, which includes environmental degradation, land confiscation and displacement” (THE BORDER CONSORTIUM: 2013b, 24). This could potentially hinder or even derail the process of reconciliation and national peace. Another point of criticism regarding foreign investment is the lack of a clear legal framework: “Given the cessation of hostilities but the absence of any political settlements, investors are expanding into contested areas by exploiting the lack of a regulatory environment” (THE BORDER CONSORTIUM: 2013b, 24).

Salween “People’s Alternative Energy Policy” Promotion: Looking for an Alternative Option for Sustainable Electricity Development for Mon and Kayin State

In this briefing paper (PERMPONGSACHAROEN: 2015), the Power Sector Development Plan and the World Bank National Energy Plan for Myanmar are being reviewed, and an alternative policy is suggested by the author. Currently, the electrification ratio is around 29%, with many villages having off-grid electricity connections, the peak demand of energy was 2,400 MW in 2014 (compared to 27,000 MW in the neighboring country Thailand) (PERMPONGSACHAROEN: 2015, 2). The long-term plan both by the government and the World Bank is to have full electrification in 2030. As for policies by the government, the 30-year Power Development Plan (PDP), has increasing targets: “2015-2016’s target is to have an installed capacity of 11,154 MW, but today only 40% of that target is met [...]. 80 % of the estimated production capacity is aimed for export [...]” (PERMPONGSACHAROEN: 2015, 4). In addition, there is the National Electricity Plan (NEP) as proposed by the World Bank. The World Bank will provide loans to the government to meet this plan (PERMPONGSACHAROEN: 2015, 4) regarding transmission and distribution, while power generation is supposed to be developed by private companies (PERMPONGSACHAROEN: 2015, 11). The plan insists on a national-grid solution, as it is „the most cost effective option for the overwhelming majority of households” (PERMPONGSACHAROEN: 2015, 5) with total estimated costs of 800 USD per connection and a total cost of 5.8 billion USD (PERMPONGSACHAROEN: 2015, 6).

However, the author criticizes that with focusing on national-grid as the solution for the electrification issue state is in total control over the power development, and there is no real possibility for communities affected by the power projects to have their voices and opinions heard (PERMPONGSACHAROEN: 2015, 8). Large-scale hydropower and coal power projects pose serious threats (PERMPONGSACHAROEN: 2015, 9-10). In addition, there is corruption and the lack of transparency in such projects (PERMPONGSACHAROEN: 2015, 5, 10).

Therefore, the briefing report encourages evaluating alternative solutions, including off-grid and mini-grid solutions in combination with renewable energy, which would be even cheaper, as 40 percent of

estimated costs are accounted for the nationwide transmission (PERMPONGSACHAROEN: 2015, 12). The dominant economic development model for the whole region should be reevaluated, sustainable solutions should respect the natural limits of the environment, decouple economic growth from the consumption of fossil fuels, create greater equity in the use of resources, phase out dirty, unsustainable energy sources and implement renewable solutions, especially through decentralized energy systems (PERMPONGSACHAROEN: 2015, 13).

Myanmar Energy Master Plan Launched

The implications of political transition are further reforms of state organizations. The short paper “Myanmar Energy Master Plan Launched” (MYANMAR ENERGY PARTNERS: 2016) aggregates some useful information on the current Myanmar Energy Master Plan that sets **policy targets** for the future energy market in the country:

“On Friday, 8 January 2016, Myanmar’s National Energy Management Committee (NEMC) launched the Myanmar Energy Master Plan in Naypyitaw. The NEMC is the Myanmar government’s minister-level energy policy coordination body, functioning under the patronage of the Vice President. The NEMC’s Energy Master Plan Formulation Processes began in 2014 through Technical Assistance provided by the Japan Fund for Poverty Reduction and administered by the Asian Development Bank” (MYANMAR ENERGY PARTNERS: 2016).

According to the authors the proposed energy mix for 2030 looks somewhat different compared to 2012, the planned mix for hydropower has been reduced while coal has been increased in the mix: “Hydropower is projected to decrease from almost 70% in 2012 to 57% in 2030 and natural gas from 28% to 8%. This projection also shows a modest increase in solar PV from 0% in 2012 to 5% in 2030, and a significant increase in coal from 2% to almost 30%” (MYANMAR ENERGY PARTNERS: 2016).

b) Energy issues and/or human rights issues related to the Mongton Dam Project

Fatally Flawed

The report “Fatally Flawed” (EARTH RIGHTS INTERNATIONAL: 2002) was already published in 2002, before the dam site was relocated, additionally the group of investors has changed in the meantime. Still, the adverse **impacts** of construction and the **negative social effects**, especially regarding military involvement and forced relocations, haven’t change since then and are described as follows:

“The Tasang Dam would lead to fragmentation of the ecosystem, decreasing biodiversity in the area. The dam would also reduce the replenishment of nutrients downstream and other benefits that come from natural flooding. Additional effects would likely include erosion of the riverbed downstream of the dam, logging in the reservoir area before it is flooded, malaria breeding in the reservoir, and the degradation of forests by people with no other resources. The weight of the dam’s reservoir would also increase the threat of major earthquakes in the region. The harmful cultural and social effects are indisputable. Even

at this early stage of the project, the army has restricted movements of river-dependent communities, hindering their livelihoods and cultural practices [...]” (EARTH RIGHTS INTERNATIONAL: 2002).

Furthermore, the report criticizes the involvement of the Thai government, as investments from the neighboring country rather serve own interests than bring any **benefits** regarding Myanmar’s development: “[...] GMS Power’s involvement in the Tasang Dam project perpetuates a pattern of Thai companies taking advantage of Burma’s political crisis for profit under the guise of “constructive engagement.” There is no evidence to support claims by companies investing in Burma that their constructive engagement benefits the country” (EARTH RIGHTS INTERNATIONAL: 2002).

Warning Signs

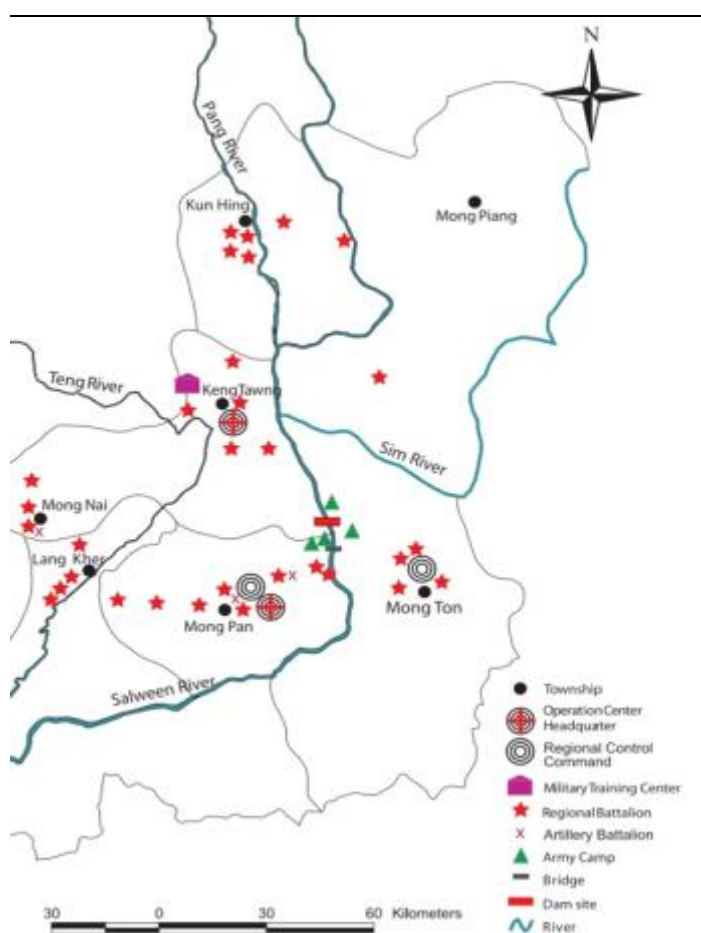
The Shan Sapawa Environmental Organization published a report called “Warning Signs” (SHAN SAPAWA ENVIRONMENTAL ORGANIZATION: 2006) that deals with the background of dam projects along the Salween, focusing on the Tasang Dam.

At that time, the consortium of investing firms was still a bit different from today. The **implementation** of the project was promised to a group of companies from Thailand in 2002 already, and a Memorandum of Agreement (MoA) was signed in April 2006 between the group, called MDX, and the Burmese Department of Hydroelectric Power of the Myanmar Electric Power Enterprise. Nonetheless, as in 2006 another project plan was signed between Sinohydro (now a partner of the Mongton consortium) and EGAT, the report concludes that “[i]t is expected that Sinohydro could provide financing for the other dams on the Salween as well (SHAN SAPAWA ENVIRONMENTAL ORGANIZATION: 2006, 8).

The organization reports massive forced relocations linked to the Tasang project:

“Prior to 1996, there were approximately 60,000 people living in 280 communities in the rural village tracts adjoining the Tasang dam site and its projected flood zone. These were traditionally prosperous agricultural areas. Most people were farmers, planting seasonal crops in fertile valleys between mountains thickly forested with teak. In two tracts of Kun Hing Township, villagers lived along the Pang River, a

Figure 19 Army Deployment in 2006 (SHAN SAPAWA ENVIRONMENTAL ORGANIZATION: 2006, 11)



tributary of the Salween, farming on the many islands in the river (Kun Hing or Kun Heng means Thousand Islands in Shan)” (SHAN SAPAWA ENVIRONMENTAL ORGANIZATION: 2006, 20).

During a military campaign in 1996, most of the villages were abandoned and villagers were forced to move to army-controlled relocation sites near accessible towns or roads (SHAN SAPAWA ENVIRONMENTAL ORGANIZATION: 2006, 20).

Another **negative effect** of dam construction not mentioned in other sources is logging done by the military and other groups around the dam site:

“As increased numbers of Burma Army troops have moved into the areas around the dam site and roads have been built, the rate of deforestation has risen accordingly. Logging is being done by ceasefire groups, companies with family connections to the regime, and individuals. All of these must apply through brokers to the SPDC regional commander for logging permits; they must also pay off SPDC local commanders, making the process extremely expensive for loggers and lucrative for the SPDC. Local people have depended on the forests for generations for their food, traditional medicine, and shelter. Cutting down the forest destroys the food chain of local people” (SHAN SAPAWA ENVIRONMENTAL ORGANIZATION: 2006, 17).

Regional conference on Value of the Thanlwin/ Salween River: Ecosystem Resources Conservation and Management

In 2013, transregional NGOs organized a conference focused on the Salween and ecosystem services affected by the various dam projects (REAM et al.: 2013). In particular a conference contribution by Prof. Dr. Maung Maung Aye summarized some **impacts** and **negative effects** on local communities of the Mongton dam project. Prof. Dr. Maung Maung Aye concludes that:

“All of the dams planned on the Thanlwin will greatly disrupt the riverine ecosystem and destroy the livelihoods of those peoples living along the river. Large areas of land used by many ethnic peoples for traditional farming and medicines will be flooded. Those living along the river will be forcibly relocated, probably without compensation. [...] Alterations in the Thanlwin River flows will disrupt downstream estuaries, which will harm the agricultural and fishing practices of villagers who depend on those estuaries. [...] The [Tasang] reservoir will flood hundreds of square kilometres. [...] Already over 300,000 people have been forcibly relocated from the area since dam studies commenced in 1996. If built, the [Tasang] dam will drive thousands of people from their homes and will involve even more forced relocations by the Myanmar government.” (REAM et al.: 2013, 29).

Potential Loss of Services Resulting from the Loss of the Free-flowing Character of the Thanlwin

Services	Potential lost services as a result of loss of free-flowing character
Provision of Food and Freshwater	<ul style="list-style-type: none"> ➤ Disruption of traditional fisheries ➤ Decreased downstream water quality
Regulation of hydrological regime, pollution control, natural hazards	<ul style="list-style-type: none"> ➤ Natural connection between the Tibetan Plateau, Southwest China and Katpali (Andaman) Sea lost ➤ Increased risk of flooding as a result of dam operations
Cultural spiritual, recreational, aesthetic, and educational aspects	<ul style="list-style-type: none"> ➤ Loss of the developing eco-tourism and white-water rafting industry ➤ Loss of cultural values for the Lisu, Nu, Shan, Kayin and other minorities
Support for biodiversity and nutrient and sediment cycles	<ul style="list-style-type: none"> ➤ Biodiversity will be affected both in and alongside the river through construction-related infrastructure ➤ Sediment retention in reservoirs will affect channel erosion and stability of riverbanks

Damming Myanmar: Australian Involvement and the Shan's resistance

In 2015, MELODY KEMP did a detailed review of the consulting company Snowy Mountains Engineering Corporation (SMEC) (KEMP: 2015). Kemp assesses the EIA/SIA process which has been done by SMEC as the “the public face of a consortium planning the dam [...] the disaster-prone Three Gorges Corporation; Sinohydro, which has been involved in several controversial dam projects in the past; the Myanmar Electricity Power Enterprise; and state energy monopsony Thai Electricity Generating Authority” (KEMP: 2015, 9).

The **reaction** of locals is a complete opposition of the dam and any assessment investigations, as the company was “handed a petition containing 23,717 signatures opposing [the] dam” (KEMP: 2015, 9). This opposition can be explained by different factors according to Kemp.

First, SMEC itself behaved inappropriate during the EIA process:

“SMEC’s habit of giving gifts of cloth bags, bottled drinks and snacks to people they interview has angered local villagers, who view these as possible bribes. They report that SMEC repeatedly pushes the ‘positive’ impacts of the dam, appearing deaf to protests, while attempting to persuade them to sign documents they don’t understand” (KEMP: 2015, 9).

Second, the role of the steady military presence during works on the project: “In May Burmese Army tanks were photographed in Kunhing [...]. The representatives fear that opposition to the dam will trigger military violence” (KEMP: 2015, 10).

A third point of criticism that made locals oppose the project is the various environmental **impacts**: The dam will flood an area nearly the size of Singapore, geographically dividing Shan state into two parts and destroying more than 100 communities (KEMP: 2015, 9). In addition, the unique landscape in

Kunhing, referred to as ‘thousand islands’ will be completely drowned by the dam’s reservoir (KEMP: 2015, 9).

Apart from that, Kemp states that the EIA process itself has not been done according to international standards:

“The internationally accepted convention is for these studies to be submitted to the government to be signed off—after final consultations with affected communities—and plans for mitigation to be put to the villagers and agreed to *before* work starts. However, [...] earthworks were already under way along the ridge of the mountain, as was confirmed by Sai Khur Hseng, a spokesperson for the Shan [...]. As for the social impacts, it should be obvious, when confronted with a room full of farmers and fishers wearing ‘No Dams’ headbands, that these people think the social and economic costs are not worth it. And why would they agree to their land being flooded, their river strangled? Despite SMEC’s claims to hold free and fair consultations, the presence of local militias and pro-government representatives in meetings inhibited villagers from asking questions” (KEMP: 2015, 10).

Kemp is also not very optimistic regarding **energy policies** of the newly elected government, especially since heavy military presence and even increasing armed conflict in the area continues:

“Western governments may be placing faith in Aung San Suu Kyi’s party’s recent election. But local observers are not so sanguine. She is known locally to be elitist and egocentric and brooks no dissent within her party. [...] Since this article was first written the areas under discussion have dissolved into open conflict, with helicopter gunships shelling villages and people fleeing for their lives. [...] The international community now seems intent on pushing ASSK [Aung San Suu Kyi] to make a deal with the military so as to maintain ‘stability’ (and protect their investments). They are turning a completely blind eye to the bloodbath now unfolding in Kachin and Shan states” (KEMP: 2015, 11).

Summary Of Upper Thanlwin (Mong Ton) Hydropower Project Environmental Impact Assessment and Social Impact Impact Assessment Public Scoping Meeting

This is a very interesting report, as it was published by the company responsible for the EIA/SIA assessment itself. Here, the company presents some questions and answers during a public meeting in 2015. I have picked up relevant parts and made up a table for better legibility. Besides the questions and answers presented, most of the meeting was focusing on the EIA/SIA process itself, not on outcomes of the EIA/SIA, as that the meeting was intended to be a pre-EIA public meeting.

Table 5 : Questions and answers taken from the EIA/SIA Public Scoping Meeting

Category	Question	Answer/ Consultant's position
Costs	How will intangible losses be calculated? The question was raised of how will intangible losses be assessed by the EIA/SIA	SMEC's understanding of 'intangible losses' are losses that cannot be easily quantified in monetary terms, such as ecosystem services or the spiritual significance of a pagoda. SMEC's team of EIA/SIA specialists has addressed the issue of intangible losses on many other hydropower projects and will implement the current international best practices methods when quantifying these losses and identifying suitable mitigation or compensation measures. (SMEC: 2015, 6)
Benefits	Distribution of generated power and asset transfer: The issue of the distribution of the power generated between the three funding countries (i.e. Myanmar, Thailand and China) and the timing of asset handover to Myanmar was raised.	During the concession period which is tentatively scheduled for 40 years, it is currently proposed that a portion of the annual generating capacity will be supplied to Myanmar for free with the remaining electricity to be sold to China and Thailand which is expected to contribute positively to Myanmar's economy. The exact proportion of the electricity distribution is yet to be finalized between the Government and the developers. After the concession period, the hydropower project will be transferred to Myanmar Government for free. (SMEC: 2015, 7)
Benefits	Benefits sharing: This is a common issue raised by people who will be impacted or displaced by hydropower developments, who are often not aware of the types and distribution of benefits that will be available to local Project Affected People.	There are a number of different types of benefit that can result from the development of hydropower projects. For example a low cost, sustainable, reliable source of electricity typically benefits a large number of end users located in high consumption areas such as major towns and cities. The people living in the reservoir and dam areas will also benefit from the Project. The Project will provide local employment opportunities and improve the

		local labor skills through skills training, which can also increase local incomes. (SMEC: 2015, 8)
Benefits/ Costs	Compensation: The question of how appropriate compensation will be calculated for the displaced and dispossessed is a common issue raised by people who will be impacted by hydropower developments. There were also questions raised relating to legacy issues with regard to compensation and the Tasang Hydropower Project.	The consultant is aware of legacy compensation issues relating to the Tasang Project. [...]. The fact that the EIA/SIA process will be conducted to international standards and the degree of public consultation that the client has committed to, are indicators that the compensation allocation relating to the Mong Ton Project will be a transparent process. (SMEC: 2015, 8)

Hydropower in Myanmar: Moving Electricity Contracts from Colonial to Commercial

The following two papers were released by the Ash Center for Democratic Governance and Innovation by DAVID DAPICE. The first one is an analysis of the **contracts** the former government concluded with foreign investors for the **implementation** of dam projects.

DAPICE notices that while these contracts meant construction of large dams at no cost for Myanmar, they did not bring any **benefit**, in particular when considering the urgent need to increase energy production for domestic use: “During the 2000 to 2010 period, contracts were signed with Chinese power companies [...], the companies would get 90% of the revenues while giving 10% of the revenues (often in the form of electricity) to Myanmar” (DAPICE: 2015, 4). At least the country would be able to buy electricity of the 90% of the power otherwise planned for export as long as it paid for it, but: “These contracts were unequal and almost colonial in nature. While Myanmar needs hydro investments, it doesn’t really benefit from these type of contracts. Going forward, its contracts should be commercial and fair, not one sided” (DAPICE: 2015, 4).

An example is made by further analysis of the Mongton dam: “It is supposed to cost \$12 billion and we will assume 4930 hours per year of operation. That means it would generate 34.5 billion kWh a year. [...] The value of annual output would be \$2.07 billion” (DAPICE: 2015, 5). While most of the energy, according to the “90/10” nature of the contract, would go to EGAT, the rest, with an estimated value of six cents per kWh, would **benefit** the central government of Myanmar, around \$207 million per annum – additional electricity could be bought from the investors, although this would be a **cost** and not income (DAPICE: 2015, 5).

Dapice concludes that these kind of contracts are a real drawback. Considering a domestic demand of 40,000 MW by 2030, the country needs to generate additional 35,000 MW in the future. This is almost

impossible with “90/10” contracts, the country will either have to buy back power generated by dams from the investors or replace it with fossil fuels (DAPICE: 2015, 7).

To Build or Not to Build? Designing Sustainable Hydro for Federalism in Myanmar

The second study by DAPICE was released this year, “To Build or Not to Build? Designing Sustainable Hydro for Federalism in Myanmar” (DAPICE: 2016) examines whether continuing with large scale dam projects is desirable at all.

First, the author gives the information that Myanmar’s new government will review past MOUs and even contracts of infrastructure projects that were signed by the outgoing government. It is still not clear if hydropower projects will be reviewed as well, “but it is likely and would be desirable and justified” (DAPICE: 2016, 4).

Regarding **impacts** of such projects and the **reaction** of local stakeholders, DAPICE sums up that “past investments in hydroelectric projects in Myanmar have often treated affected people poorly and caused environmental problems that fall on communities without much done to help those who suffer damages. As a result, many local activists and parliamentarians have argued for zero larger sized hydro [...]” (DAPICE: 2016, 4). While solar power is often pictured as a viable alternative to hydropower, nonetheless for the northern part of Myanmar, there are no economically feasible alternatives to hydropower (DAPICE: 2016, 4).

While the advantage of hydropower in Shan State is easy to explain – it means cheap and profitable energy – the argument against large dams is more complicated, according to DAPICE:

“Past dams were **imposed** by military or central government authorities [...] with little or no respect for local concerns. In many cases, hundreds of thousands of people were forcibly removed from construction/reservoir areas to inadequate sites, more like refugee villages than satisfactory alternative living areas. Furthermore, [...] the local areas get no benefit in terms of new electricity supplies. Often, these investments were part of a military effort to weaken ethnic groups trying to control areas historically under their control. [...]

In addition, there are a range of **ecological concerns** about the impact of these dams. These include possible damage from flooding of areas essential to wildlife (and people!); lack of beneficial downstream siltation; erosion and dry season flooding from dam water releases; destruction of habitat or migration routes for many species such as river fish; earthquakes in zones where large reservoirs could increase risk; and pressure on forests from the displaced populations. In addition, there may be increased risks of malaria. These potential **costs** have often not been well studied and it is difficult to evaluate their importance or magnitude relative to the well-understood benefits” (DAPICE: 2016, 6).

For the future of the Mongton dam, after the new government has been elected, Dapice comes to following conclusion:

“An agreement was signed to export all electricity to Thailand and they may not want to support a project that would reduce exports to Thailand soon after completion. [...] Environmental damages should be identified, mitigated where possible, and weighed against benefits after that. If a few thousand families are displaced, they should be consulted first through a transparent and inclusive process and be fairly compensated – and have typically not been in the past. But even if a fraction of those families have trouble in a new home, there may be millions who benefit from electricity” (DAPICE: 2016, 9-10).

Dapice is sure that the costs of many hydroelectric projects will be less than the benefits (DAPICE: 2016, 10). Nonetheless, costs have to be considered in a fair and transparent process and damages have to be minimized, in addition, alternatives should be examined where appropriate (DAPICE: 2016, 10).

Open letter from 26 Shan community groups to Daw Aung San Suu Kyi to cancel Salween dams

In August 2016, the Shan Human Rights Foundation SHRF published an open letter of Shan community groups, where they address concerns regarding the continuation of the Salween damming project even under the democratic NLD:

“We wish to remind you that the Salween river basin has been a conflict area for decades, where the Burma Army has been relentlessly expanding and committing systematic atrocities against villagers in its attempts to control ethnic lands and resources. Pushing ahead with these unpopular dams will inevitably lead to more Burma Army militarization, increased conflict, and ongoing atrocities” (SHRF: 2016).

The joint statement further condemns the new regime’s **governance structure**, especially the reluctance towards a settling of the ongoing federalism issue. With the instant resumption of dam projects, any **decision rights** of local stakeholders are being ignored. The community groups state that “the unilateral decision to go ahead with the Salween dams before political dialogue about federalism has even begun, is depriving ethnic communities of their right to decide about natural resources in their areas, and indicates a lack of sincerity towards the peace process” (SHRF: 2016).

China and Thailand are the main **beneficiaries** of the Salween projects, while the ethnic communities are the ones that have to bear the “terrible” (SHRF: 2016) **costs**.

They conclude that “we therefore strongly urge you to immediately cancel the Salween dams. Only federal policies granting equal rights to the ethnic peoples will end the civil war in Burma, a goal which our neighbouring countries will also wholeheartedly support” (SHRF: 2016).

c) Energy issues and/or human rights issues related to the Andin Coal Plant

Examining Foreign Direct Investment in Mon State, Burma

A report by the Mon human rights organization HURFOM examines the impacts of so-called foreign direct investment (FDI) in the region. HURFOM states that after release of the new Electricity Master Plan in 2016, there is an increasing interest of foreign companies to invest in coal power in Mon State (HURFOM: 2016, 10).

However, local politicians, especially the Mon National Party (MNP) have made clear that they **oppose** the use of any coal-fired power plants as they may have **negative effects** on the lives of people in Mon State, many have promised to prevent the Ye power plant (HURFOM: 2016, 16).

The report criticizes the **weak governance** of the country and HURFOM is unsure whether the new NLD regime will be able to change the interest in coal energy:

“Due to Burma’s weaknesses in governance and rule of law, many companies are able to enter the country and use coal to fire their plantations, mainly because most local people are unaware of the negative effects and will not protest against these companies. [...] As the NLD, having won the 2015 national election, takes office, it remains unclear how the National Energy Policy will be implemented and whether or not Burma’s Electricity Master Plan goal of 33% coal generated power will be moved to less destructive methods” (HURFOM: 2016, 17-18).

Another **governance** issue identified by the report is that the considerations and concerns of local politicians and even decisions by the local Parliament (Hluttaw) were overridden by the Ministry of Electric Power under the former government:

“Dr. Aung Naig Oo, from Mon State Hluttaw, also disagreed with the project due to the devastating effects that coal pollution can have on public health. He brought the concerns of the local people along with his own knowledge to Hluttaw, where they announced that a feasibility study for the project would not be allowed. Nonetheless, the federal government had signed the MOA. TTCL ignored the community’s opposition and proceeded to sign the MOA with the Ministry of Electric Power on April 9, 2015” (HURFOM: 2016, 43)

Regarding **implementation, costs and benefits** of the coal plant planned in Ye, the reports summarizes as follows:

“On April 25, 2014 TTCL, the Ministry of Electricity of Mon State and the Myanmar Parliament reported that they will start to build a 1,280MW coal-fired power plant near Andin Village, Ye Township. Toyo-Thai has previously attempted to build a coal-fired power plant near Yangon but was unable to acquire land for the project. Therefore, they have moved to Andin, Pharlain region in Mon State instead and if plans proceed, TTCL will sell electricity from the coal-fired plant to the Myanmar government. The plant will be built on 500 acres of land and will become operational in 2017.

A jetty would need to be constructed in order to receive imported coal brought by a train or large freight ships. The community has expressed their concerns about the construction of the jetty as this can alter the sea floor, changing the marine habitat and fishing ground. The coal unloading jetty will be built 3 to 5km away from the shoreline after the seafront is examined. The unloading jetty will be used to receive imported coal. [...] 60% of imported coal will come from Indonesia; 20% from Australia; and the remaining 20% from South Africa. [...] At least 4 million tons of coal would be imported from Indonesia and elsewhere to feed the power plant throughout its 30-year operating concession. The construction would take 4-6 years before it generates electricity to be used domestically in Myanmar around 2019” (HURFOM: 2016, 28, 43).

According to HURFOM, local stakeholders were concerned about following negative impacts of the coal plant once in operation: damage to traditional livelihoods, natural environment, and local economy; more pollution and waste; and coal being a leading cause of climate change (HURFOM: 2016, 44).

Most of local stakeholders are **disagreeing** with the project: On May 5, 2015, over 6,000 people protested against the proposed coal-fired power plant project. Nonetheless, according to villagers in Andin, some villagers still supported the power plant (HURFOM: 2016, 41-44).

At the moment, the project has been **officially suspended** by the former Deputy Minister of Electric Power, U Aung Than Oo at the end of 2015 (HURFOM: 2016, 44). The status remains unclear due to the election.

Pharlain Study by its community 2016 – Abundance of Pharlain Natural Resources and Communities

With the help of the NGOs TERRA and HURFOM, the community of seven affected villages in the Pharlain area published a report on the abundance of natural resources and their livelihoods, to elaborate the negative impacts of the planned coal plant and to express concerns of local people. In the foreword already, the Andin Abbot explains that “the village elders and the community leaders, have strong intention that we do not want to leave bad environment of air, water and ground because of the impacts by a coal-fired power plant to the next generations” (PHARLAIN STUDY: 2016, 3).

The seven villages of Andin Village Tract that are directly involved in the Pharlain Study are: Sanint Krate, Kwan Tamort Pea (New Andin Village), Andin, Saigram, Sanint Janu, Plaing Sam, and Kwan Kaw Kha Raw. In Andin there are 505 households, the total population in the area is estimated at 30,000 ethnic Mon (PHARLAIN STUDY: 2016, 12-14).

Regarding **livelihoods**, the report state that the three most important factors in the local economy are rice, both subsistence farming and farming for sale on local markets, betel nut cultivation, and fishery, especially in the two villages located near the coast, Kwan Tamort Pea and Sanint Krate (PHARLAIN STUDY: 2016, 27). Based on the survey and interviews between January 2015 and November 2015, the minimum total income from betel nuts, rice, and fishery the seven villages can generate in a year is 7,240,499,650 Kyat, around US \$ 5,738,000 per annum (PHARLAIN STUDY: 2016, 35).

In 2014, the villagers compiled a joint statement where they expressed concerns about possible **negative impacts** on the local environment and livelihoods, see Figure 10:

Table 6 negative impacts on the local environment and livelihoods (PHARLAIN STUDY: 2016, 50)

Local environment will be damaged by the proposed project.
Traditional livelihoods and the gardens will be affected by the proposed project.

The proposed project will destroy the soil and have huge impacts on cultivation. The proposed project will also make water resources dirty.

The proposed project will cause climate change that will affect all sectors including environment and agricultural business.

The proposed coal-fired power plant will produce chemical waste that kills all marine creatures.

The smoke emitted by the proposed coal- red power plant will cause air pollution that damages health and shorten life spans of local villagers.

The noise produced from the proposed project, the comings and goings, the use of huge vehicles and the seaport will change the life styles of the locals and damage the marine business of the villagers.

The proposed coal-fired power plant will be too noisy to hear the sound of wind and sea that warn the locals about possible natural disasters.

The chemical waste product from the proposed coal- red power plant will hugely damage the health of local people.

The proposed coal-fired power plant project would bring a huge number of migrant workers to Andin. The livelihoods, the culture, the language and the religion can be affected by the migrant workers.

The study further claims that the **implementation** process of the planned coal plant has been intransparent from the very beginning, and locals were mostly **opposing** it anyway:

“On April 25, 2014, representatives from TTCL, Ministry of Electricity of Mon State, and parliament members came to Andin. They met with local villagers and said that they would build a coal-fired power plant in Andin. Local villagers did not like the project so they did not give any agreement. [...]

On June 3, 2014, a foreign company came to the area and conducted a study by the sea for one month. They did not tell the name of the company or the reason for their arrival. Later, the villagers found out that the company came to conduct a preliminary study for the proposed coal-fired power plant project that they have been opposing” (PHARLAIN STUDY: 2016, 42).

In addition, the **political power** of the local parliament was small, at least before the election. A decision by the Mon Hluttaw to prohibit any further feasibility studies, nonetheless an MOA was signed between MOEP and TTCL (Toyo-Thai) in 2015:

“On September 5, 2014, Mon State prohibited TTCL to conduct the feasibility study. The letter was sent to Moulmein Districts General Administration Department and Ye Township Administration Department, explaining that the deadline (July 20, 2014) for the feasibility survey had already passed. [...]

On April 9, 2015, TTCL and Ministry of Electric Power signed a memorandum of agreement (MOA) for the proposed coal-fired power plant project. However, no information on the signing ceremony or the project was released to the community. Locals did not know about the signing of MOA” (PHARLAIN STUDY: 2016, 42).

As a supplement to the study, the report also contains chronology of events. I have summarized the events of most interest in the following table, focusing on the **governance/implementation** process and the formation of local protest as a **reaction**.

Table 7 Summary of events (PHARLAIN STUDY: 2016, 44.49)

Governance/ Implementation	Reaction of locals
In 2013, TTCL signed Memorandum of Understanding (MOU) with the Ministry of Electric Power to build a coal-fired power plant in Andin.	
In early 2014, a project manager of TTCL reached to Sanint Krate, met with four local monks and Andin Village Administration and requested for 200 acres of land. The company gave six books titled “Feasibility Study for Ye Coal-fired Power Plant” written in English to the village monastery.	
On April 25, 2014, TTCL entered Andin Village to explain about the proposed coal- red power plant.	Many villagers disagreed or did not grant their approval to the project. The villagers explained that the company did not inform much about the proposed project.
In early June, 2014, a small business company bought some lands near the proposed project site, saying the land would be used for prawn farming. The company later changed its name to Win Yaung Chi Oo Company and later the company mutually cooperated with TTCL.	Early June 2014, over 100 members of Ye Social Service held a “NO COAL” campaign around Ye Town and distributed brochures to inform villagers near the proposed site about the impacts of coal.
On June 3, 2014, a foreign company reached to the local beach and did a survey for nearly a month. However, TTCL never explained the local about the company and why they did the survey	

On June 8, 2014, Dr. U Aung Naing Oo, a parliamentarian from Chaung Zon Township, visited the area and held a meeting with the community, local monks, and township officials.	Of the 216 villagers who attended the meeting and voted on the proposed coal-fired power plant, 206 voted NO to the plan; 4 agreed to allow the project; 6 remained undecided.
On December 10, 2014, TTCL organized an 8-day excursion trip to Japan for 3 monks, 4 local residents, some journalists and members of parliament to study coal-fired power plants in Japan. The officials from Win Yaung Chi Oo Company also joined the trip.	
	On December 15, 2014, local monks and Pharlain residents met with the Chairman of Mon State Parliament, the Chief Minister and the members of Mon State Government and requested them to stop the proposed coal-fired power plant project.
The Chief Minister replied that the project could not go on without the consent from the local people.	
On April 8, 2015, Dr. Aung Naing Oo submitted a letter to oppose the proposed Ye Coal-fired Power Plant Project at the Mon parliamentarians meeting where the Ministry of Electric Power's Mon State representative was present. However, the chairperson, other parliamentarians, and the representative from MEP ignored and/or showed no sign of support.	
On April 9, 2015, TTCL signed Memorandum of Agreement (MOA) with Department of Hydropower Planning, Ministry of Electric Power for the proposed 1,280 MW [...] project. The project's total investment would be 2.8 billion USD and EPC contract would be 2.3 billion USD. The construction was expected to take 4-6 years.	
	On November 26, 2015, Andin villagers sent letters to Japan Bank for International Cooperation (JBIC) and

	Japan International Cooperation Agency (JICA) requesting them not to grant financial support to TTCL.
	On November 27, 2015, Andin villagers sent a letter to the Embassy of Japan in Myanmar stating their opposition to the proposed Ye coal-fired power plant. The villagers also organized a press conference with the media.
On December 30, 2015, the Ye member of parliament Mi Myint Than asked a question about the proposed Ye coal- red power plant at the Mon State Parliament and the Deputy Minister of Electric Power U Aung Than Oo replied that the project and the survey for the project were suspended as it did not get local consent.	

The report concludes with a statement on the rich natural resources and the importance of the local ecosystem for the communities living in it, not only in terms of income but also regarding cultural values:

“The rich natural resources reflect a diverse and healthy ecosystem. The abundance of tasty tropical fruits and betel nuts in the garden, the half-submerged mangrove forests in the estuary, the widespread paddy fields, and numerous wildlife and aquatic species inland and in the sea exemplify the interconnection of each unique ecosystem that nourishes Pharlain and its people.

The fertile land of Pharlain also assures the people’s basic needs – stable nutritious food, clean air and water – to survive. Their smiles and happiness reflect quality wellbeing of the people. The sense of a community cherishes and confirms local’s root with their ancestors and beliefs. These undisturbed Nature and harmony with the environment form unity and peaceful coexistence among the people, without the need to struggle for survival. Along with the presence of the monasteries as central hubs to protect local customs and beliefs that shape who they are and hold the community together.

The number 7,240,499,650 kyat shown in the income table is only a jigsaw to the bigger picture. It only partially reflects the values of Pharlain and how it feeds the lives of the people here. Nonetheless, if the number is gone, it is not only the local’s income that leaves them; it’s everything that’s associated with it.

The research team hopes that Pharlain Study is the beginning of the collection of the values of Pharlain that locals are proud of. This study also shows that there is much more to discover and learn from Pharlain and its people.

The research team also hopes that the knowledge and information gathered during this study will be able to start discussions among Pharlain communities to draw out the future they want to see and how to protect their homes from external threats that do not align with their visions” (PHARLAIN STUDY: 2016, 51).

5.2 Expert Interviews

The results of the expert interviews are presented according to the categories mentioned in chapter 3. The three interviews are treated separately, relevant statements were picked up and combined. The complete interview notes can be found in the appendix.

5.2.1 Mekong Energy and Ecology Network

Energy policies

Regarding the electrification plans, there are 3 categories of energy: national grid (25% of land area); off-grid (local electricity generators but not for everyone), and Public-private partnerships, PPP. In total the outcome will be: 46,000MW for export, 2000MW for domestic use. The real driver behind the grid expansion, is not actually the electricity demand any more, it's the interest of the big industry. Companies get concessions and loans from banks, and they draw the contract details for energy plans, which is the actual PPP model in Myanmar.

Dams are always a tradeoff, but who pays, who gains? Some people sacrificed for the goal of industrial development, but is that morally good, especially when taking energy export into account? Basically the government is telling people affected by energy projects: "You have to sacrifice because the companies, German, Thai or China companies, they have to make a profit". And the government is maybe able to do that, because the Salween area is a remote and marginalized area. Burmese policy makers are thinking, "building dams on Irrawaddy is impossible, so we just switch to the Salween".

We, the Mekong Energy and Ecology Network have proposed the off-grid solution to Myanmar. This is more realistic. To develop, to build a grid is very expensive. Actually, a lot of local people at the moment would be satisfied with having electric lights in the evening. The transmission grid is like a super highway, a centralized option, that is not for the local, the rural people, but for industry. But as for remote areas, you can install generators, solar, mini-grid solutions. It is much cheaper and you don't have to build a transmission line and not wait for 50 years to expand the grid. If you look only at the global energy sector, there are a lot of technologies, state of the art technology that Myanmar could use right now. But they will make the same mistakes other countries did.

Past and future governance structures

The NLD obviously wants to help the country, economic development and so on. They are in a difficult position now, and they probably do not have the capability to deal with it. The military is still strong for example. So, criticizing the NLD indirectly strengthens the position of the military. On the other hand, there is a lot of reform demand. But, if pushing a market economy too fast, this may have some adverse effects for the population. The many different institutions, languages, differences of the ethnic people of the country do not really fit to things like clear property right regimes, uniform standards, and so on. So in fact "reform" from a market economy perspective means a weak state, uniformity of the people to

serve the goals of the companies. If the people don't want that, the power of the military will again be strengthened.

Regarding energy projects, the NLD is in a difficult position as well. Contracts were made during the past government. Even during the transition, the Thein Sein government is still signing new contracts every week since the election. And who is responsible for these contracts? The former government is not accountable, because there is the new Parliament. So the new government will be accountable for things they did not do. And again, if the NLD is being criticized for that, it helps the military.

External influences on policy and governance

The World bank proposed the nation electricity plan or rural electrification plan to electrify all rural areas in the country. There are many organizations and countries behind it: The World Bank, Asian Development Bank, Australia, Norway, Japan. The focus is on national grid expansion. The majority of loans, more than 70 percent will be used for building the transmission line. The same money could be used to directly electrify people by off-grid/local-grid solution, that would be quicker and easier, but ATB/WB still insist on a national grid. All transmission line projects are linked to Japanese companies for example. So in fact they are financing themselves. Regarding coal, the countries who benefit from national projects are also Japan and Australia, as they provide the technology and the coal.

The pressure from outside is high to expand the infrastructure for economic development. Sustainability is being neglected.

Property rights of natural resources

In the dam project areas, there are no land titles. Those people living there, they have nothing to claim against the state. Until now the number of residents in the Mongton area is still unknown. In general, there is the issue of Myanmar having many rural systems with their own distinct political structures. This is inconvenient for investors or the market – markets need clear property ownership and the so-called rule of law.

Implementation

The implementation process of such big projects is not according to international standards, in particular the EIA. Companies are rushing through, as their interest is profit making rather than environmental protection.

Regarding coal, there are also major issues. The coal will be mostly imported from Indonesia and Australia, probably mixed with ignite. And they call that “green” coal technology.

Externalities (in terms of physical impacts, benefits, costs)

The benefit of dam projects is the electricity generated. Negative externalities is the lock up of fish migration and the destruction of ecosystems in the watersheds. In the case of the Tasang dam, the flood

reservoir will be bigger than the area of Singapore. So, the costs are externalized to locals. Compensating locals is mostly impossible. Most of the affected people even don't have identity cards, partly due to the history of Shan state, the ongoing conflict with the Tatmadaw. And even if there is compensation, that will be one time only – how can a one-time payment compensate for the loss of livelihoods?

Behavior of central state, energy companies and locals/local authorities towards each other

When implementing dam projects, the main focus is environmental impact assessment, but public cooperation is often neglected, local stakeholders are being ignored. Even worse, the area where the Salween dams are planned have been cleared by the Tatmadaw, many people were displaced or fled to Thailand. Meenet and other NGOs want to strengthen the locals to be active stakeholders, that they have the ability to influence plans or projects in their area.

5.2.2 TERRA – Foundation for Ecological Recovery

Energy policies

Most of the contracts for energy projects are signed on the national scale. There is the so-called Myanmar Investment Commission which plays a big role. The contract for the Andin coal plant for instance was signed between the (national) Ministry of Power and the companies, the local government was not involved.

Past and future governance structures

In Thailand there is centralized decision making, in Myanmar there is currently a negotiation of power balance between central government and local governments. The NLD will have a new approach compared to the past military governments and the Thein Sein government. They are very committed, opting for more cooperation and transparency. Still the military is granted 25 percent of seats, whether central, state or region government. Basically they have a veto right on every decision. So the big question is, will the NLD change the system, base their decision on the opinion of local stakeholders, has the NLD even the power to do that at all?

External influences on policy and governance

Besides internal pressure, the pressure from outside is also high. Even if the new government wants more transparency and change institutions, how are they going to do it? How are they going to negotiate with the World Bank, when there has already been a contract? The World Bank can just insist on contracts being made already.

Property rights of natural resources

Myanmar is based on ethnicities, different social groups. The ethnic minorities claim the natural resources belong to them. Thus, in the perspective of legitimacy, it is harder for the central government to get locals to sacrifice for the greater goal of the country.

Implementation

The feasibility study conducted by the Toyo-Thai company states that there is one river, and one village in the area that will be affected by the Andin coal project. But from our research there are at least seven villages. This information that is being used by the state government and by the central government is therefore inadequate.

Externalities (in terms of physical impacts, benefits, costs)

The communities claim that livelihoods are going to be destroyed at least to great parts. TERRA believes that the protection of local communities is a basic human right. This has to be taken into account. Also, when talking about compensation for losses, distinct cultural values cannot be monetarized, they cannot be compensated adequately.

Behavior of central state, energy companies and locals/local authorities towards each other

Regarding the history of the coal project, there has been a lot of opaque behavior of the company. Basically the company just arrived and claimed to build a new school, new roads, and to build a power generator. So the community at first was saying “We’ll think about it”. But they realized that it would not just be a power generator, but a power plant. So they became opposed to it.

If the local government is strong enough, they can push the central government to not sign those contracts, so there is hope.

5.2.3 Heinrich-Böll Stiftung Yangon

Energy policies

At the moment the country produces around 5 Gigawatts of energy which is not even enough to supply Yangon with electricity constantly. Around 70 percent of the country does not have safe electricity access. Therefore, a new Energy Master Plan has been made up, which in general is necessary, but the issue is how to produce and distribute energy. The Energy Master Plan proposes an increase from 4,8 Gigawatts to 24 GW. The energy mix proposes hydropower as the main source of energy, mostly due to the fact that there are already dams in operation. Coal would produce 33 percent of total energy supply, which is very doubtable from an ecological perspective.

From the perspective of Boell Yangon, the share of renewables and natural gas should be increased, as Myanmar has lots of natural gas reserves (but exports a lot of it). Renewable energy could potentially increase up to 20 percent.

Past and future governance structures

Large-scale energy projects have been pushed forward in the past. The military regime has made deals with investors. The Tatdamdaw was involved in land grabbing as well. Surprisingly, the Thein Sein government suspended the Myitsone Dam project on the Irrawaddy river in 2011, but still proceeded with dam projects along the Salween.

Hopefully a lot will change with the NLD. But Aung San Suu Kyi is in a difficult position. She has to stand up against both pressures from inside and outside the country. Foreign investors have interests and they are pushing forward even with the new democratic government. In addition, there are these many contracts that have been signed in the past, how will the NLD handle that? They could use some good legal advice.

As for the dam projects, the NLD will reevaluate each project. And hopefully conduct proper impact assessments. Still, they will implement some of the projects. Many things are uncertain yet, as the NLD has to negotiate with ethnic minorities if they want a lasting peace agreement.

External influences on policy and governance

Foreign investors and the IFI (international financing institutions) promote economic development and are focused on the national grid. Energy demand projections by the ADB are too high overall, while remote areas and off-grid solutions are neglected. The IFIs have identified 92 possible dam projects, most of them large-scale. A ranking of each of the projects is planned, to find out which projects will be supported and financed and which will not. So the international institutions will not necessarily support every project. But Chinese and Thai companies on the other hand may insist on implementing projects that have been contracted already.

Property rights of natural resources

Officially, as stated in the constitution, all natural resources belong to the central state, but keeping the decade-long conflict between state and ethnic minorities in mind, that is still unclear. Ethnic minorities claim the natural resources belong to them, in addition they still demand autonomy of the ethnic states.

Implementation

Implementation of dam projects has been done unfavorably in the past. Environmental impact assessments and social impact assessments have not been done properly, there was no participation of locals, they had no rights in the decision making process. In particular, the consulting company SMEC has made mistakes in Mongton, they were accused of bribery and faking signatures. Basic human rights were violated in the planning process of the dam.

Externalities (in terms of physical impacts, benefits, costs)

The dam at Mongton would bisect Shan State, plus have a huge floodplain.

Behavior of central state, energy companies and locals/local authorities towards each other

A lasting peace agreement is only possible after negotiations between central government and ethnic minorities.

5.3 Field Research

As already stated in the methods chapter, the decision was taken to conduct field research in Ye township in order to gain a better understanding of the actual livelihood situation and the concerns of the people directly affected by the planned coal-fired power plant. The data was collected via field observations, participant observation and field interviews, notes and photographs taken during the field trip will be included in the appendix, some pictures will be included in this chapter. Relevant findings are presented in the following sub-chapters.

5.3.1 Infrastructure

In Ye, there are maintained roads and there is electricity. However, the energy supply is not always given, electric appliances need high/low voltage protection devices. There is no internet access throughout the area, only mobile internet. Further from the town, roads become more corrupt, they mostly consist of gravel, and there is close to no electricity, except in monasteries. The transport mode of choice is either motorcycles, used by the whole family apparently, old bicycles or walking by foot. People mostly rely on charcoal or wood for cooking. In Andin, the main road is unusable for large cars let alone trucks. Hence the decision to unload the coal for the plant by sea. It is unclear how construction equipment is supposed to be brought here, most probable is also transport by sea. The planned coal site is around 500 meters away from the village center, located near the coast, literally in the middle of nowhere. Tamort Pea, where the unloading jetty is planned, is a small fishermen's village, all houses have been built directly at the beach. The road here is made of sand, houses are made of wood as in Andin and the other villages, but as they are located at the beach, they are built on stilts.

Figure 21 Planned Construction Site at Andin. The promontory in the background can also be seen in the picture below



Figure 22 Kwan Tamort Pea, where the unloading jetty would be located (behind the promontory)



5.3.2 Livelihoods

Along the way to Andin, or the Pharlain area, there are coconut and rubber plantations alongside the road, possibly also betel nut plantations, although I was not able to identify them. The plantations are small and seem to be cultivated by hand, without any equipment, in contrast to those in Ye, where the plantations are also bigger in size. There is wild fruit everywhere and some huge wild coconut trees. Some people have small “shops” where they sell stuff that has been bought in bigger cities for example snacks or soft drinks, or bottled gasoline for motorcycles. Most people are small-scale farmers. Women collect and cook food in the monastery for the monks and other villagers. The monastery is the cultural and political center of each village (every village seems to have at least one), where the villagers gather during the day. Due to the time of the visit, during hot season, there was less work to do, except for the fishermen. In Tamort Pea, there was more activity, people were drying fish on nets on the porches of their houses. Evaluating the local way of life from a Westerner's perspective is obviously difficult – the villages were backward but seemed peaceful at the same time, people I met were content with their way of living.

Overall, people's income and daily life revolves around small-scale farming and fishing. Undoubtedly construction and operation of the power plant would bring disturbance to the village life and farming/fishing. Especially for Tamort Pea, the coal-fired power plant would have severe impacts on the village, as the jetty would adjoin the houses of people, ship traffic would interfere with the fisheries near the coast. To what exact degree the livelihoods would be affected in terms of pollution, land degradation and coastline erosion is unclear yet.

5.3.3 Project implementation

The villagers could not tell me much about the implementation process and the overall progress. At the time of the field trip further project work had been suspended by Mon state authorities. In general, they were very suspicious about foreigners entering the village, as company members had pretended to visit the village for investigations and possibly building a school, but in fact they were conducting feasibility studies. In addition, the villagers had been told at first that the company wanted to build a “generator”, not a power plant.

One of the villagers told me that even now that the project had been suspended, it would continue in the future. The NLD does not have the power to stop the contract, and the generals (of the military junta) still wanted to divert money from such projects, according to him.

5.3.4 Reaction

The abbot, the monks of the monastery and the villagers I had spoken to in Andin all were fully opposed to the project. They wanted to protect their way of living and the current condition of natural resources in the Pharlain area. In all villages along the way to Andin there were signs and posters showing opposition to the power plant. Some of the villagers, even in Tamort Pea, seemed to be in favor of the project, but according to the monks the majority of locals do not want any coal power. They fear further change, as so-called “development” had always led to degradation of the environment in Asia. In Tamort Pea one of the Andin villagers explained that he would gladly welcome eco-tourism or any other less harmful economic opportunities for locals, but was not very optimistic, as another company was already investigating the potential of gem mining at the coast of Pharlain.

Figure 23 Palm tree plantation next to the planned construction site



Figure 24 Photograph taken with some villagers and two of the headmonks of the village, with anti-TTCL poster in the background



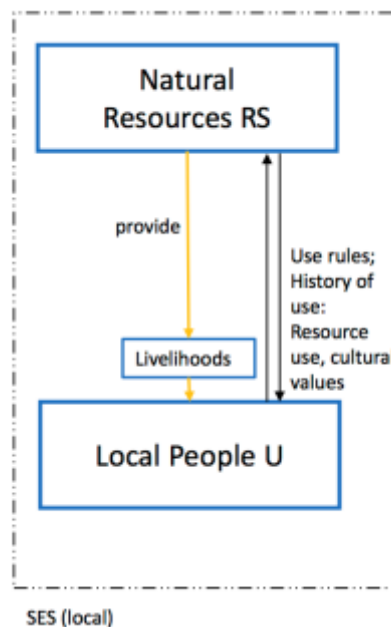
6 Findings

6.1 Interpretation of Results – visualization of results based on SES-framework

As described in the methods chapter, the results of the research will be presented using Ostrom's SES-framework.

It is assumed that, before the implementation of the projects, there was a more or less sustainable local SES in both cases. The local communities had their own distinct rules for appropriating the surrounding environment's natural resources. The natural resource systems provided communities with livelihood opportunities as well as cultural values.

Figure 25 Local SES before energy project implementation

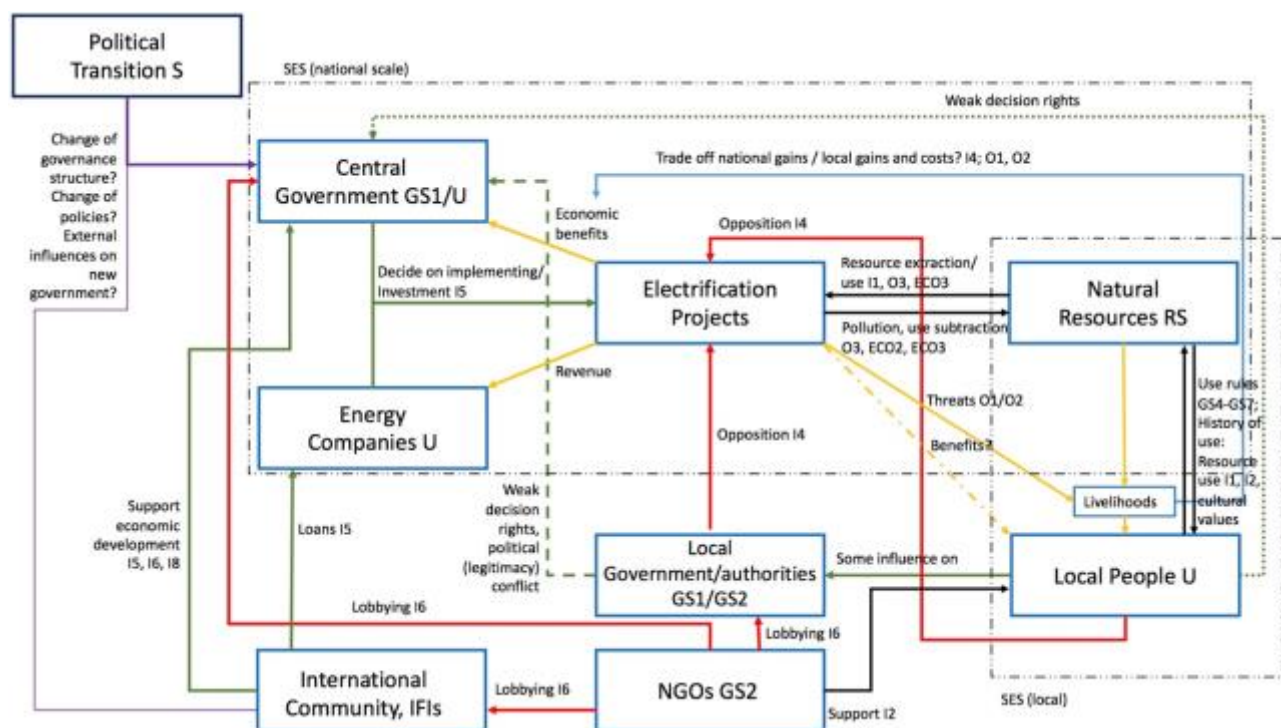


However, with the planning of energy projects, a new user group appeared: central state and energy companies. With the implementation, a new form of use would be implemented, on a national scale. This would lead to new interactions and outcomes as shown below. The graph can be explained as follows.

Central government, both government organization (GS1) and user (U) together with the energy companies as user (U) decided to invest in the electrification projects by building a dam (Mongton) or a coal-fired power plant (Andin). The benefits for them will be produced energy and/or revenue. The share of benefits between central state and companies has been agreed on before project implementation and has been identified as an export of energy to neighboring countries, where prices and thus revenue for companies are higher, while some parts of the energy remain in the country and will be used to provide energy for domestic use. With the electrification projects, a “new” SES would be established, conflicting with the previously existing local SESs in terms of impacts on related ecosystems, as new use forms put more stress on them. Resource extraction or use leads to externalities:

pollution and/or use subtraction. In the case of the Tasang dam, 'resource extraction' implies the flooding of land area and the related change of the water body and water flows. In the case of the Andin power plant, the land area used for the power plant is negligible, but once in operation it will cause pollution, in addition the construction of a jetty for coal unloading interferes with the use of the coast line as a fishing ground.

Figure 26 Framework of case analysis based on SES-framework



The result is a threat to local people's livelihoods, depleting them to a certain degree and thus negatively influencing the social and ecological sustainability of the local SES. Benefits of the electrification projects for local stakeholders remain unclear. The tradeoff between national gains and local costs leads to a conflict. Local people, formerly the only users of the natural resources, will be faced with the challenge of depleting livelihoods. Their political influence on the central government regarding decision rights in the decision-making process have been more than weak under past military regimes. Their influence on local authorities or local governments is given, but the local authorities/governments also have not been able to take part in the decision-making process due to political conflicts in the past. In addition, the underlying conflict between the central valley and the peripheries and uplands poses the question of who is the legitimate ruler over local natural resources. Finally, the planning of these projects have led to opposition both by locals and local authorities.

In addition to the internal actors and their interactions, there are external influencing factors. Environmental NGOs aid local stakeholders in their protest and lobby for a halt of the projects. The international community, in particular the IFIs World Bank and Asian Development Bank as donors support economic development and invest in activities of the central government and companies, thus facilitating the progress of such electrification projects. Nonetheless, as there is currently a political transition towards democracy, the international community could also influence future governance and energy policies positively or negatively. The overall outcome of the political transition (S) is unclear yet, there are possible institutional changes as well as governance structure and policy changes, but that is still work-in-progress and could be hampered by the political power of military elites.

If action is being taken to a) reassess the planned projects and if the decision is in favor of implementation, minimize and offset externalities to the local SESs, b) increase participation of local stakeholders and local authorities in this decision-making process, c) change governance structures and policies positively, the overall outcomes could be less threatening to the ecological and social sustainability of the local SES. How this could be facilitated shall be discussed in the following chapter, after a summary and review of the analysis of the research.

6.2 Discussion and Conclusion

Within this chapter, the results of my research shall be discussed in light of the literature reviewed in the beginning of this work. Furthermore, recommendations shall be given regarding how negative outcomes of large-scale energy projects in Myanmar could be minimized in the future, now that the transition towards democracy opens up new paths for the country.

6.2.1 Discussion of research results

Research, using a multi-method approach, has helped to identify key elements of the issues of large-scale energy projects in Myanmar. The tripartite research question can be answered as follows.

How does the state implement large-scale energy projects regarding governance structures and decision processes?

Due to its history of military autocracy that followed soon after Myanmar's independency, the country has suffered from a deep political conflict, intensifying the long existing dichotomy between the Bamar dominated central valleys and the peripheries inhabited by diverse ethnic minorities. The conflict over legitimacy of rule over the country has led to insurgencies and counter insurgencies, in other words decades of civil war.

Both the conflicts between central state government and ethnic minorities and the authoritarian governance structures play a role in the decision making processes proceeding large-scale electrification projects. The need to develop the country's economy and its infrastructure resulted in unilateral decisions by the central government to engage with foreign investors and implement energy projects, even under the elected Thein Sein regime (2011-2016). Hydropower and coal have played a

key role in such plans and resulted in the planning of the Tasang Dam in Mongton and the Andin Coal Plant in Ye. Past regimes applied a top-down decision making approach in energy policies, local stakeholders have been excluded. This exclusion of local stakeholders is similar to other cases in the region of South and Southeast Asia as shown by VILLAMAYOR-THOMAS et al. Regarding the governance of natural resources as common-pool resources, the state has used a “leviathan approach”, as it tried to fully control natural resources throughout the country, which due to the situation of civil war was bound to intensify conflicts. State institutions to govern common-pool resources have been far from successful. A comparison with Ostrom's proposed design principles for successful CPR institutions shows that there was in particular no participation of local stakeholders in modifying the operational rules of resource use, no functioning conflict-resolution mechanisms, no minimal recognition of rights to organize.

What (supposed) impacts on livelihoods do the electrification projects have?

The outcomes of the analyzed energy projects are somewhat different. In the case of the coal plant, constructing and operating the power plant will lead to local pollution as well as greenhouse gas emissions. Local pollution will potentially lead to a loss, at least partly, of local people's livelihoods, as the coastline will suffer from erosion and local agricultural areas will be damaged. The compensation payments promised by TTCL will not cover annual income losses. Especially for the case of Kwan Tamort Pea village it is likely that people will lose their main income source as they do not have the financial capacity to adapt to a depletion of local fishing grounds near the coast.

In case of the Tasang dam, the main factor is the huge floodplain that will require the resettlement of over 100 villages and bisect the Shan state. Not only will resettlement impose a restructuring of families and communities, but also uncertain outcomes for people's livelihoods. Research on dam projects in the Mekong area have shown a 23 % to 38 % loss of fish resource losses (ORR et al.: 2012, 927). In Addition, the access to substitute livelihood opportunities depends on the access to land or other income sources, as shown by SAYATHAM AND SUHARDIMAN. As in Shan state the conflict between communities and the Tatmadaw has been exceptionally high in the past, and there have been around 300,000 displaced persons due to forced relocations already, there is little hope that affected communities will be treated fairly.

Main Beneficiaries of both projects will be the investing companies and partly the central state, as the infrastructure for a national grid will be further developed and parts of the energy will remain in Myanmar. Companies will probably favor exporting most of the electricity produced, as the revenues will be higher in neighboring countries. Locals will benefit little from the projects, as it is uncertain what amount of electricity will be usable for local markets and if the prices are affordable by the farmers who may have lost income due to depletion of local natural resources.

How do the stakeholders central state, energy companies and local people behave towards each other?

Research has made it clear that local stakeholders mostly oppose the Andin coal plant and the Tasang dam, respectively. This is due to two main reasons. First, the physical impacts of the projects. People fear livelihood losses, forced resettlement, increasing military presence or health issues. Second, the opaque and top-down decision making approach of the former governments. Literature has shown that excluding local stakeholders has led to protest in other cases as well (VILLAMAYOR-THOMAS et al.: 2016, 8). Nonetheless, the military governments and even the quasi-civilian Thein Sein government ignored lessons learned from the Mekong region. The only exception is the Myitsone Dam project on the Irrawaddy that was suspended in 2011.

As people have little political influence on central government decisions they have decided to express their concerns via public protest against central government agencies and the executing firms. Here they are being supported by local authorities and NGOs. However, such protest has so far not changed the proceedings of plans in case of the dam in Mongton. Even worse, military presence has been increased in the past years. Conflicts over who owns the natural resources in areas where there are no clear property rights or land titles at all, have intensified, this may be an obstacle to the national peace process. In the case of Andin, the situation provides a more optimistic outlook, as the Mon state government has suspended the project at the moment. The political situation in Mon state, that has been more or less stable for some years now, raises hopes that local governance decisions will be accepted by the central state.

Still, investing companies are obviously not keen to lose the projects and their projected revenues. The implementation deals in the past were in their favor so chances are high that they will pressure the NLD government to pave the way for further progress of their plans. Past governments on the other hands have not been clever from an economic point of view. Deciding on implementing electrification projects where close to 90 percent of the produced energy will be exported from a country that suffers from energy poverty may have improved the financial situation of some top-class generals and their families, but did not serve the goal of infrastructure and economic development at all.

6.2.2 Conclusion, recommendations

Sustaining local people's livelihoods not only in Ye and Mongton but throughout the country, protecting the sustainability of natural resource systems and at the same time developing Myanmar's infrastructure and economy is a difficult task. The recent political transition offers a historic opportunity to accomplish this task.

This master's thesis aim was to provide an analysis of problem areas that evolved around the energy infrastructure development in Myanmar. Past decisions were made without the consent or participation of local stakeholders, contracts for implementation of energy projects have favored export of energy instead of domestic or local use, the projects themselves pose serious threats to livelihoods of rural communities, finally the plans of the Tasang dam and Andin coal plant have led to public protest that

may intensify or revive resource conflicts and other major political conflicts between central state and ethnic minorities.

At this point I want to give some recommendations as a conclusion of my work. There are three important steps that have to be taken to enable a more sustainable and socially acceptable development in Myanmar.

First, following the election of the NLD, governance structures need to be democratized, more transparency is needed as well. Authoritarian structures and institutions that evolved during the past decades should be reformed, the political power of the Tatmadaw has to be pushed back as far as possible. It is obvious that military leaders have ensured to keep their hands on political decisions as well as monetary funds during the past decade of the “roadmap to democracy”, nonetheless the NLD should recognize that the Tatmadaw has retreated peacefully overall, although that does not imply that future generals will refrain from seizing power once more, as they did in other countries in Southeast Asia. To ensure the continuation of the transition towards democracy, top-bottom approaches of governance should be abandoned and the power of the central government should be reduced in favor of local state and regional governments, a federal governance system has to be established and strengthened.

Second, the process of national reconciliation has to proceed. This process has already been initiated during the 2015 National Ceasefire Agreement and the 2016 Union Peace Panglong Conference (GLOBAL NEW LIGHT OF MYANMAR: 2016). Besides building a multi-party democracy and a federal union to provide more autonomy for the ethnic diverse population of the country, it is necessary to negotiate institutional rules on how to govern natural resources, in particular that local communities have recognized property rights and resource use rights. Conflicts between ethnic minorities at the peripheries of the country and the central valley have to be settled as soon as possible and necessarily before any large-scale energy project works continue.

Third, local stakeholders have to be encouraged to participate in decision-making processes, not only but especially regarding large-scale energy projects. All planned electrification projects have to be reevaluated, assessed, and cancelled if costs, including externalities to local resource systems and communities, are higher than benefits. Downstream effects of dams have to be considered as well. If a decision on continuation of projects with negative impacts on local communities is being made, there has to be a fair compensation that considers not only economic losses, but also the losses of cultural and other non-monetary values. Alternative livelihood opportunities have to be provided, not only one-time payments. Surely some trade-offs between the protection of Myanmar's still rich natural resources and economic development have to be done, but marginalized ethnic groups should not be the ones who sacrifice for the sake of economic development. In general, the National Electrification Plan has to be reassessed. Central government as well as international donors and investors have to focus on off-grid

solutions and development of renewable energies wherever possible, instead of relying on coal, gas and hydropower alone. Industrial nations currently undergo a challenging process of the energy system transition, Myanmar as a developing nation could benefit from new technologies and leap-frog harmful technologies for providing electricity. Especially coal is nowadays recognized as a dirty resource and its use should be minimized, not increased. But large dam projects should be considered carefully as well, as the necessity to flood land and the downstream effects of dams are undeniable.

A historic opportunity to decouple emissions from economic growth is given in the case of Myanmar, so avoiding mistakes of other countries should be given special attention, in particular from the international community.

7 Summary

Myanmar is a country that currently experiences a substantial political transition towards democracy. At the same time, there is an urgent need to develop the country's infrastructure and economy. Especially regarding electrification rate, Myanmar suffers from energy poverty, having an electrification rate of around 30 percent and much less in rural areas. In an effort to open up the country economically, the military junta in the 1990ies has engaged with foreign investors to plan several electrification projects throughout the country, mostly large dams and coal and gas power plants. However, these projects have ever since been opposed by local communities, as they are concerned about the top-down decision making processes and the potential threats to local ecosystems and livelihoods in rural areas.

This master's thesis aims to present the problem area of natural resource management regarding such large-scale energy projects by analyzing two selected cases, the Tasang dam in Mongton, Shan State, and the Andin coal power plant in Ye, Mon State.

The works of Daly and Farley and other ecological and resource economists have shown that natural resources are not infinite, and the use of natural resources to produce electricity has external effects, particular in terms of pollution and use subtraction. As in the case of Myanmar, resources including land and watersheds are often common pool resources that need successful managing institutions, as shown by the work of Elinor Ostrom. Nonetheless, literature on energy projects in South and Southeast Asia, similar to the cases of this thesis, has shown that often local stakeholders were excluded from decision making, at the same time they had to bear the costs of large dams and coal power: Health issues, forced relocations, loss of fish species and agricultural land. In Myanmar, this may be even more concerning, as the country has suffered from deep political conflicts between the central state and the peripheral areas inhabited by diverse ethnic minorities even before the colonial area, but intensified during military rule after independency.

Following research question shall be answered: How does the state implement large-scale energy projects regarding governance structures and decision processes, what (supposed) impacts on livelihoods do they have, and how do the stakeholders central state, energy companies and local people behave towards each other? In order to answer this question, a multi-method approach was used, combining content analysis of available data, expert interviews and field research in Andin, Ye. Results show that indeed the past governance in energy issues followed a unilateral, top-down decision making approach of the central government, while local stakeholders and local authorities had no political influence. At the same time, damming the Salween River near Mongton would lead to a relocation of more than 100 communities, a floodplain nearly the size of Singapore would bisect Shan state, hence destroying local fisheries and agricultural land. The coal-fired power plant in Ye would have spill-over effects to at least seven villages nearby, including local pollution and the erosion of the coast line,

threatening local agricultural production and fisheries. This has resulted in local protest against the projects and the companies implementing it in cooperation with the central government.

The task for the recently elected civilian government is thus a revaluation both projects and other similar projects in the country. Governance structures need to be democratized, decision-making has to become more transparent and include local stakeholders. Environmental spillover effects on natural resources have to be considered, and if overall costs exceed benefits, projects have to be cancelled. Renewable energies and modern technologies should be promoted. In addition, it is necessary to proceed with the process of national reconciliation and provide local governance systems more autonomy.

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