

*A study of hydroelectric  
infrastructural violence in Salween  
River basin and its impacts on  
environmental justice for ethnic  
minorities*

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## Abstract

Salween River basin in Myanmar is a biodiversity and resource rich area, which is mostly inhabited by the ethnic minorities of Myanmar; Shan, Karenni, Karen and Mon. The river is the lifeblood of these ethnic groups and is tied to their sovereignty and cultural values. However, a series of Hydropower dams are planned across Salween River basin with 7 dams proposed on the mainstream river by the country's ruling government. Myanmar was governed by the military government since independence and until the democratic transition in 2011. During this time, there were several decades-long conflicts between ethnic armed groups and Tatmadaw (Myanmar military). When Lawpita (in 1960s) and Kengtawang hydropower (in 2005) projects were developed, a series of environmental impacts and social impacts occurred. In addition, since 1996, Tatmadaw has launched anti-insurgent offensives in ethnic minorities regions, which are also the frontier regions for development projects. Most of the areas were depopulated already when the seven dam projects on mainstream Salween were contracted in early 2000s. This study explores the environmental and social impacts produced across the various stages of hydropower development using an infrastructural violence lens to consider how different forms and acts of violence compromise the environmental justice of ethnic minorities in Salween River basin. The study applied a qualitative methodology using secondary data from publicly available reports about Salween dams produced by NGOs and INGOs. A case study approach was used to analyse two operating dams and seven proposed dams. The study used Galtung's (1969) theory of violence to identify violent acts and events, and applied an infrastructural violence framework developed by Rodgers and O'Neill (2012) to analyse types of violence generated from the Salween dams. Finally, the study used environmental justice frameworks to explore the relationships between hydroelectric infrastructural violence and environmental justice in Salween River Basin. The findings show that there are various forms of direct violence, structural violence and slow violence intersecting with each other throughout hydroelectric infrastructure projects. Such violence impacts on achieving environmental justice for marginalized populations, which in turn leads to violent actions in response to these injustices.

Keywords : hydropower, dam, infrastructural justice, environmental justice, Salween, ethnic minorities

## **Dedication**

To the people of Myanmar, my ethnic brothers and sisters, those who were oppressed, those whose voices were silenced, and those who fought for justice, this thesis is for you.

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## List of Acronyms

|         |   |
|---------|---|
| BRN     | Burma River Network                                       |
| BSPP    | Burma Socialist Programme Party                           |
| CNEEC   | China National Electric Equipment Company                 |
| EAOs    | ethnic armed organisations                                |
| EGAT    | Electricity Generating Authority of Thailand              |
| EIA     | environmental impact assessment                           |
| EJAtlas | Environmental Justice Atlas                               |
| ERI     | EarthRights International                                 |
| FAO     | Food and Agriculture Organization                         |
| IDPs    | Internally displaced persons                              |
| IGE     | International Group of Entrepreneurs                      |
| ILO     | International Labour Organization                         |
| INGO    | International non-government organisation                 |
| IFC     | International Finance Corporation                         |
| IUCN    | International Union for Conservation of Nature            |
| JV/BOT  | Foreign Joint Venture/Local Build Operate and Transfer    |
| KDRG    | Karen Development Research Group                          |
| KESAN   | Karen Environmental and Social Action Network             |
| KHRG    | Karen Human Rights Group                                  |
| KNU     | Karen National Unity                                      |
| KRW     | Karen Rivers Watch  |
| MOA     | Memorandum of Agreement                                   |
| MOALI   | Ministry of Agriculture, Livestock and Irrigation Foreign |
| MOEE    | Ministry of Energy and Electricity                        |
| MOU     | Memorandum of Understanding                               |
| NGO     | Non-government organisation                               |
| PTSD    | Post-traumatic stress disorder (PTSD)                     |
| SEARIN  | South East Asia Rivers Network                            |
| SHRF    | Shan Human Rights Foundation                              |
| SLORC   | State Law and Order Restoration Council                   |
| UWSA    | United Wa State Army                                      |

# Chapter 1 Introduction

## 1.1 Context of the study

A growing number of hydropower projects have taken place over numerous rivers around the world. Hydropower development and dam construction, and the advantages and disadvantages of these forms of infrastructure, have been a controversial topic for decades. Dam infrastructure is primarily used to store and manage water diversion, and dams have become one of the prominent infrastructures involved in producing electricity. By 2007, there were more than 800,000 dams around the world, of which 40,000 were large dams. Recent statistics on the development of dams by the International Commission on Large Dams (ICOLD) show that the number of large dams has risen to 60,000 (Adamo et al., 2020). International Commission on Large Dams (ICOLD, 2011) defines a *large dam* as “a dam with a height of 15 metres or greater from lowest foundation to crest or a dam between 5 metres and 15 metres impounding more than 3 million cubic metres”. With the growing global population, which is expected to reach 9 billion by 2040, demand for electricity is also increasing and hydroelectricity is considered a renewable energy source that can sustain this demand. However, hydropower dams also create adverse impacts on the environment and communities living in project-affected areas. Destruction of ecosystems, downstream impacts and relocation are common impacts of dam construction and operation. These kinds of impacts have been reported worldwide. The assessment of social and environmental impacts was not considered in hydropower development projects until the United Nation’s call for “Integrated Water Resource Management” in 1977 (Hjorth, 2012). Until now, many of these social impacts and the destruction of people’s lives are still considered an inevitable part of the development process.

The development of hydropower projects on rivers leads to the loss of homes, loss of livelihoods, and the loss of natural resources and culture, which are essential for the lives of Indigenous and ethnic groups, who are recognised as among the most vulnerable groups of project-affected people (Urban et al., 2013). In addition, loss of lives has also become a widely acknowledged risk associated with dam construction (Adamo et al., 2020). Several studies have shown different forms of violent acts that have occurred throughout the various stages of hydropower development. For example, Matiza (2021) discusses the occurrence of violence as part of relocation for dam projects, Delina (2020) talks about violent oppression

related to opposition to dam construction, and Blake and Barney (2018) report that many environmental defenders have been arrested, and at worst murdered. for their anti-dam activism.

The term violence is a “confounding concept” (Springer & Le Billon, 2016, p. 1), which is applied and described to numerous incidents, experiences, behaviours, and events, from crime and harassment to murder (Wieviorka, 2009). This thesis will focus on the different phenomena of violence that are produced throughout the hydropower development process, with a particular focus on the Salween River basin in Myanmar. The research draws on Galtung’s (1969) study of violence and peace to obtain an understanding of the conditions and factors that promote violence. It then considers these in the context of the framework of infrastructural violence proposed by Rodgers and O’Neill (2012) to identify the phenomena of violence that are built in or produced by the network, services and connectivity of infrastructures, and which are regulated by actors of different power dimensions.

Healthy rivers are essential in sustaining communities and ecosystems (Jensen-Cormier , 2019). Rivers regulate extreme climate events, enhance the fertility of land with sediment and minerals for agriculture, and provide nutrients to support biodiversity and abundant fisheries for 550 million people world-wide (Opperman et al., 2015). Rivers provide an essential source of living for ethnic minorities and indigenous people who live closer to nature, practise agriculture and are fishers. As McCully (1996, p. 10) says, “The essence of a river is that it flows.” The growth of dam projects on rivers not only alters the flow and nature of rivers but also generates inequality in terms of natural resource exploitation and violation of social and environmental justice (Kattelus et al., 2015). Several studies have shown how stakeholders living in hydropower project areas with less power often face involuntary resettlement, are excluded from decision-making processes and experience unequal distributions of benefits and harms (Blake & Barney, 2018; Jaichand & Sampaio, 2013; Zerrouk, 2013). Environmental justice is not only about equal distribution of resources but also about recognising the cultural identity and rights of full participation in resource management (Schlosberg, 2004; 2007) as well as the “basic functioning of nature, culture and communities” (Schlosberg & Carruthers, 2010, p. 12). Failure to create inclusive decision-making processes, to redress power imbalances, and to protect indigenous ways of living and traditional knowledge are all concerns for environmental justice scholars and activists, and trigger protests and unrest towards hydropower projects around the world (Del Bene et al., 2018; Siciliano et al., 2019). In addition

to identifying the potential infrastructural violence of dams, this thesis will explore the relationship between violence produced from dams and environmental justice for the communities affected by such projects.

Applying the fundamental distinctions of violence (Galtung, 1969) and notion of infrastructural violence (Rodgers & O'Neill, 2012), I will argue in this thesis that hydroelectric infrastructure development in the Salween River basin produces infrastructural violence which can compromise environmental justice for the ethnic minorities living in the river basin (Schlosberg, 2004; 2007).

## 1.2 Focus area and scope of study

The study area of this thesis is the Salween River basin of Myanmar, one of the country's lifeblood rivers and where a series of large dams are planned by the Myanmar government and foreign investors, especially China and Thailand. Myanmar is a resource-rich country with abundant forests, biodiversity, and aquatic resources, as well as minerals, gems, and natural gas. It is also one of the least developed countries in Asia. After political reform towards democracy in 2011 the country has attracted interest from foreign investors. Many development projects such as economic zones and factories have been established in Myanmar to help to grow the economy. However, one of the key challenges for the long-term development of foreign investment is the lack of feasible energy supply for operation of the industries. Therefore, the country's requirement for energy production is crucial for the economic development of the country (Saw & Ji-Qing, 2019). The country's abundant water resources are the potential supply for the country's growing energy demand. There are plans for several hydropower development projects along Myanmar's waterways. The development of hydropower plants provides opportunities to secure the country's energy requirement, support economic growth in the region, and make the country more attractive to foreign investors.

Alongside the development potential, however, infrastructure development also promotes inequality, poverty, and trade-offs for the environment and social well-being (Rigg, 2016). The proposed hydropower projects in Myanmar have attracted criticism due to their severe socio-environmental impacts and the unequal distribution of electrical power produced from the dams, especially since most of the electricity produced is to be sold to Thailand and China (Middleton et al., 2019).

Any infrastructure development in Myanmar cannot be discussed and understood without also considering the country's complex political situation. As of 2014, there are 17 non-state ethnic armed organisations active in Myanmar, including in Salween River basin (Sharma, 2014). The ongoing 70-year armed conflict in Myanmar has created – and still creates – much unrest and causes unstable living conditions for the local people (Middleton et al., 2019). Because of these conflicts, the local people do not want large dam projects on their land – not only because the projects will threaten the environment but also because such projects could fuel more conflict.

Numerous studies have been done to understand the environmental and social impacts of economic development projects in the Salween River basin in Myanmar (Aung, 2020; 2021; Lamb, 2018). However, very few studies have focused on the deeper relationships between humans, history, and the environment, especially those parts of the Salween River basin located in Myanmar and China (Vaddhanaphuti et al., 2019). Thus, my research is significant because I will be examining how violence is produced by the dam infrastructures within these three dimensions: human, political history, and the environment.

### 1.3 Research aim and objectives

The overarching aim of the research is:

To explore the effects of infrastructural violence from the hydropower dam projects in the Salween River basin on the environmental justice of ethnic minorities who live in the basin.

Three research objectives have been designed to support this aim:

1. to explore the concept of violence and the notion of infrastructural violence of dams.
2. to examine the current and historical environmental, social and political contexts of the hydropower projects in the Salween River basin.
3. to analyse the relationship of the impacts of the dams through the lens of violence and its influence on environmental justice for the ethnic minorities who live in the basin.

The study will be conducted through a qualitative approach, using secondary data to examine a number of cases. Although there are many dams built and planned along the Salween River, I will focus mainly on the seven mega dams planned along the mainstream Salween and two completed dams on tributaries to the Salween. I will compare and analyse the patterns and relationships that happened in the past with those occurring in the present and discuss possible

future impacts. I sourced secondary data from different local and international non-government organisations (NGOs and INGOs, respectively) that advocate for environmental protection and human rights, especially in the Salween River basin regions. The documents from these NGOs and INGOs highlight the human and environmental impacts of the Salween dams as well as conflicts fuelled by the dam projects. Analysis of these documents will, therefore, allow me to explore the violence that has occurred throughout the hydropower development in the Salween River basin and its influence on environmental justice for the ethnic minorities who live in the basin.

#### 1.4 Structure of the thesis

The thesis consists of seven chapters, including this chapter. Chapter 1 has introduced the context of the study and the research aim with its supporting objectives. Chapter 2 describes the political history of Myanmar and highlights how the conflict between the Myanmar military and ethnic minorities arose. It also provides background about the people who live in the Salween River basin, the area's geography, and how the hydropower plans along the main Salween River were developed. Chapter 3 is a literature review and includes an outline of the analytical framework used in the thesis. The chapter explores the concept of violence and the notion of infrastructural violence and environmental justice. Chapter 4 presents the methodology used in the research and explains the use of case study research methods and how thematic analysis was used to analyse the secondary data. Chapter 5 presents the findings of the data analysed from the different cases, which is presented as an overall narrative. The chapter describes the types of violence identified from the data and the different stakeholders affected by violence associated with dams. In Chapter 6, the findings from Chapter 5 are discussed in light of the analytical framework constructed in Chapter 3. Chapter 6 considers infrastructural violence associated with dam development in the Salween River basin. It identifies patterns of violence, explores the relationships between each kind of violence, and discusses the influence of violence on achieving environmental justice for the ethnic minorities who live in the Salween River basin. Chapter 7 is the final chapter of the thesis, which draws together the key conclusions from the research and identifying areas for further research.

The next chapter explores the broader background and context of Myanmar's political history and outlines the development of hydropower projects in the Salween River basin.

## Chapter 2 Background

This research examines the infrastructural violence of the hydropower projects in the Salween River basin and the impacts of this violence on environmental justice for the ethnic communities who live in the basin. To accomplish this, it is crucial to understand the ecology, demography, and politics of the region, as well as the trends in hydropower development in the project areas. Chapter 2 presents the background to this study and draws attention to the interrelationships between the different dimensions within these complex contexts.

### 2.1 The Salween River basin in Myanmar

The Salween River is one of the Asia's last wild and free-flowing rivers. The headwater of the river originates from the Tibetan Plateau and its waters flow through China, Thailand and Myanmar before entering the Andaman Sea. After emerging from the Plateau, the river passes through Yunnan province, running through the UNESCO World Heritage Site known as Three Parallel Rivers (the Salween, Mekong and Yangtze rivers) (CGIAR, 2021). The river then runs into Myanmar through Shan state, passes through Karenni (Kayah) and Karen states, sharing a border between Karenni state and the Mae Hong Son district of Thailand, before flowing into the sea through Mon state (Salween Watch, 2016). The river flows from the headwater to the mouth on the Gulf of Martaban for about 2,400 km. The whole river basin covers 283,500 km<sup>2</sup>, distributed between China (48%), Myanmar (44%), and Thailand (7%) (Johnston et al., 2017).

Although commonly referred to as the Salween River in international communities and literature, the river is known by different names in each region. The upper part of the river, which is located in China, is called Nu-Jiang River (or “angry river”) by the locals. The lower part of the river, located in Myanmar, is known as Thanlwin in general and also Nam Khone in Shan state. Meanwhile, the part of the river that flows along the Thailand and Myanmar border is known as Salawin in Mae Hong Son district (Lamb, 2019). The name Salween is a butchered version of the Burmese name *Thanlwin* and was given to the river during British colonisation of the region. During the 1800s, the name Salween spread through Europe and around the world through mentions in colonial documents and maps. In 1938, a British geographer, Kaulback, explored the upper part of the river (located in China) and mapped this stretch of the river as Salween in his documentation. Since then, the name Salween has expanded to cover the whole river system, even though it is still called different names by the local people in each region (Lamb, 2019). Even though the research area of this study mainly

focuses on the Thanlwin River basin of Myanmar, the international name “Salween River” will be used in this thesis.

The Salween River has rich biodiversity, and many parts of the basin are yet to be studied. The upper stretch of Salween is a UNESCO World Heritage Site, and hosts 25% of the world’s and 50% of China’s animal species, respectively. The lower stretch of the Salween River, which flows through Myanmar and Thailand, is surrounded by subtropical forests, montane and coastal rainforest. According to the Karen Environmental and Social Action Network (KESAN), the basin is home to 43 of the International Union for Conservation of Nature’s (IUCN) red-listed species (KESAN, 2008). Further explorations are required to study the flora and fauna of the river ecosystem in Myanmar (Johnston et al., 2017). The rich river ecosystem and its resources provide diverse livelihoods for the people who live in the basin, including fishing, shifting cultivation, paddy rice farming and raising livestock (Lamb et al., 2019). Fishing is a vital livelihood for these communities, both as a source of income and for food. Fifty-four different species of fish have been identified in the river ecosystem (Lunn & Shein, 2013).

The Salween River basin is a large transboundary basin. Various ethnic communities live in the basin and the region is governed by different government administrations from the three countries through which the river flows. The Salween River is rich in natural resources and nutrients. It is home to more than 10 million people, predominantly diverse ethnic minorities, comprising 3.8 million in China, 6.1 million in Myanmar and 0.6 million in Thailand (Johnston et al., 2017). This thesis focuses on the lower stretch of the Salween River, located in Myanmar. Here the river flows through Shan, Karen, Karenni and Mon states in Myanmar, which are predominantly inhabited by people from the Shan, Hmong, Yao, Lahu, Lisu, Kachin, Kokang, Akha, Pa-O, Karenni (Kayah), and Karen (Kayin) ethnic groups. Due to this diversity of ethnic minorities, the basin area is a cultural hub, but it is also the area where most of the conflicts and civil wars occur throughout the basin (Salween Watch, 2016). The next section explains the roots of these ethnic conflicts and ongoing civil wars, which will become important for analysis later in the thesis.

## 2.2 The political history of Myanmar

The social study of hydroelectric development projects constantly intertwines with the political governance of Myanmar (Michel, 2020). The rich and complex ethnicities and political history

of Myanmar have created various authoritarian and state governments across the country for at least 50 years (Simpson, 2014). The resource-rich areas are in the contested ethnic borderlands where resource extraction and development project implementation are carried out by the national government. The grievances and human rights abuses from resource extraction suffered by the ethnic minorities are among the causes of ongoing civil conflicts in Myanmar (Gleitsmann, 2012; Simpson, 2014).

As the resources related to violence and injustice are tied to conflicts between the Myanmar military (also known as Tatmadaw) and ethnic authoritarians, it is vital for my study to understand the relationship between the Myanmar government and the ethnic minorities and why these armed conflicts exist.

### *2.2.1 The pre-colonial period and colonial rule*

Based on the study of Smith (2002), tension between the dominant Burmese ethnic group (Burman) and the ethnic minorities in Myanmar was ignited through three distinct times in the nation's history. During the king dynasties, before colonial rule, there were two distinct groups of people in the regions of Myanmar: those who lived in the valleys and those who lived in the hills. The valley kingdoms comprised four ethnic groups: Burman, Mon, Arakanese, and Shan; these people were Theravada Buddhist, literate and cultivated wet rice for agriculture. There were also four diverse ethnic groups living in the hills: Chin, Kachin, Karen and Wa; these groups believed in spiritualism, non-literate but rich in oral tradition, and practised dry-rice cultivation. The valley kingdom was governed through a city-state structure, ruled by royal, mostly Buddhist, rulers, whereas in the hilly regions, authority was invested in the village chiefs. During the Kongbaung Dynasty in the eighteenth century, the kingdoms' rulers, who were mostly Burmans, expanded their authority into the regions of other peoples. This power shift shaped the regions of modern Myanmar. The rise in authority and culture of the Burman people continued in the nineteenth century was the first reason for ethnic tension in Myanmar.

The second catalyst for tension came with British colonisation. It is true there were diverse ethnic groups before the arrival of British; however, it has been argued that colonial rule played a critical role in escalating the tension between the different ethnic groups in Myanmar (Charney, 2009; Smith, 2002). After the full annexation of Myanmar by the British in the nineteenth century, the colonists governed Myanmar through two administrative systems. The country was divided into "Ministerial Burma" and "Frontier" areas. Ministerial Burma was the

area largely populated by Burmans and the administration was run in the form of parliamentary home rule. In contrast, the Frontier areas were where most of the country's ethnic minorities resided and the authority to govern these areas remained with traditional village heads and chiefs. Throughout the colonial period, the British prioritised security and profit. Hence, they focused more on Ministerial Burma, developing the area for the global export of rice, while little investment was made in the Frontier areas apart from enabling the extraction of natural resources such as timber. This economic neglect started the pattern of underdevelopment in ethnic minority areas (Smith, 2002). The arrival of missionaries in the Frontier areas helped the hill people to elevate their education and solidify their languages into writing; however, in the eyes of Burmans, this influence was a part of a divisive British system that introduced a different religion: Christianity.

After the annexation of Myanmar, the British favoured enlisting minority ethnicities such as Karen, Kachin, and Mon into the military. To the Burman, this policy sought to use ethnic minorities to maintain British oppression; they also perceived ethnic minorities as being inclined towards colonial rule. That perception was later strengthened when Karen soldiers were deployed to fight rebel groups and sided with the British during the oppression of the Burman resistance in the 1930s (Walton, 2008). Consequently, in World War II, the Burman national liberal movement, led by Aung San, collaborated with the Japanese and fought against the British, whereas the minority ethnic people such as Kachin and Karen fought alongside the British. Despite Burman attempts to collaborate with the Japanese to fight the British as a form of resistance to colonial rule, the ethnic minorities saw this nationalist movement as an attempt to collaborate with bigger power holders (Walton, 2008). Later, between 1942 and 1945, the British and ethnic minorities collaborated with the Burman forces and together they fought against the Japanese to remove them from the land. However, the goals of these groups were different: the British goal was to gain back control of the country whereas the Burman leaders urged for true independence of the country. Thus, the different political standpoints of the Burmans and the ethnic minority groups emerged during British colonisation, and after World War II, the agony of the battles meant the ethnic minorities were prepared to choose arms if their political demands were not addressed after independence (Smith, 1994).

### *2.2.2 The Panglong Agreement and independence*

In the process of becoming independent, the British attempted to federate the Frontier areas and Ministerial Burma and ensure equal rights and power sharing between the different ethnic groups.

The Pang Long Agreement was made between Ministerial Burmans and ethnic minorities as a pathway to independence in February 1947. Aung San, the Burman leader, promised unity and equality in the country during the Pang Long conference but, unfortunately, was assassinated in August 1947 (Smith, 2002). However, not all the ethnic minorities were represented at the Pang Long conference and signing of the agreement. Furthermore, the hastily made constitution did not address the expectations of the different ethnic groups. The distrust that had already been built up from war massacres, the unequal autonomy and rights of ethnic minorities, and the predominant position of Burmans in the House of Parliament increasingly fuelled conflicts between the Burmans and the ethnic minorities. Boycotting the political process, an independent political organisation, the Karen National Unity (KNU), was founded by the end of 1947 and between the late 1940s and early 1950s, many other ethnic groups such as Karenni, Mon, Pao, Rakhine chose arms to fight for their rights (O'Hara et al., 2012; Smith 1994; 2002).

In 1962, in light of ethnic insurgencies and political instability, the military seized control of the country from the civilian government and military rule continued for nearly 50 years, until the democratic transition in 2011.

### *2.2.3 Post-independence and the military regime*

Following the military coup d'état in 1962, the country was dominated by the Burma Socialist Programme Party (BSPP), which introduced the Burma Road to Socialism policy, thereby demolishing Aung San's Unity in Diversity agreement. The previously proposed governance approach that acknowledged diversity and different ethnicities and cultures was nullified, and the country was governed as a homogenised one-party-rule nation. Burmese became the official language of Myanmar. Ethnic armed groups were labelled insurgent groups and destroyed, and human rights violations such as forced relocation and conscripted labour were imposed upon civilians. Myanmar's door to the world was closed and the country was "Burmanised" in the name of socialism (Smith 1994; Gravers, 2007).

After the pro-democracy uprising in 1988, which was brutally crushed by the Tatmadaw, the BSPP was replaced by the new State Law and Order Restoration Council (SLORC), and the party system was removed, and the country was under the complete governance of the Tatmadaw. As a counter-insurgent strategy, the “four cuts” campaign was implemented by Tatmadaw throughout Myanmar, which aimed to cut off four essential forms of support for insurgent groups: food, funds, intelligence, and human resources. Ethnic minorities suffered deeply from this campaign as they were forced out of their homes, their farmlands were destroyed to enable land clearance and they were forced into labour, meaning they constantly lived in fear in conflict zones or took refuge in the border areas as internally displaced people (Smith, 1994). Political oppression and human rights violations of ethnic minorities and the civil wars by the Tatmadaw continue. Even though the country transitioned to the democratic government in 2011, the winning party was military affiliated party, that still keeps Tatmadaw in high power.

### *2.2.3 Economic development during the military regime*

The Burmese Road to Socialism caused the downfall of the Myanmar economy. In addition, in 1988 foreign aid was withdrawn after the regime’s brutal crackdown of nationwide protests. To attract foreign investments, the military launched the Myanmar Foreign Investment Law to welcome joint ventures with foreign investors and to offer incentives primarily in the form of enabling the exploitation of natural resources (Simpson, 2013).

In 1989, the military offered a cease-fire agreement with insurgent groups along with the promise of development. The cease-fire agreement was more of a military strategy to sway insurgent groups from engaging in political movements by giving them autonomy to manage resources for their profit (Karen Rivers Watch [KRW], 2004). The agreement did not, however, bring significant development to the ethnic civilians themselves. The regime also implemented the Border Area Development programme in frontier areas to construct large projects such as bridges and roads. Rapid natural exploitation such as logging and mining, along with big development projects, were carried out primarily in regions inhabited by ethnic minorities. In many cases, ethnic minorities suffered from the consequences of the exploitation but did not benefit from the projects because the sales of these resources went to foreign regions as well as to fund the military to build a better-equipped and stronger military force – which was then used to eliminate remaining insurgents (Global Witness, 2003).

The military continued to apply conservation policies that had been set up during the colonial period; however, under the military regime, conservation and management were operated solely by the military government, with little transparency and few opportunities provided for the ethnic minorities, who lived in the area where resource extraction occurred, to participate in the decision-making process relating to the extractions (Kyi et al., 2000; Smith, 2002). In addition, the lands were cleared, and the people were forcefully relocated from their homelands. Abduction for forced labour occurred for the construction of infrastructure projects such as railways, hydropower dams and pipeline projects (Apple & Martin, 2003). The revenues of these development projects flowed back to the military while the project-affected areas were destroyed, and regions remained underdeveloped.

### 2.3 Hydropower development in Myanmar

Myanmar has a total area of 676,600km<sup>2</sup> and a population of 51.4 million. Only 30% of the population lives in urban areas, whereas more than two-thirds of the country's population live in rural areas and are dependent on the rivers and other natural resources for their livelihoods (The Republic of the Union of Myanmar, 2015). Although Myanmar possesses a geographic location that provides vast potential for electricity production in the country, the country's grid-connected electrification rate is ranked as the lowest in Southeast Asia, with only 40% of the population supplied. The government of Myanmar aims to fully electrify the whole country by 2030, which will account for at least 500 MW of additional energy capacity (International Finance Corporation [IFC], 2020). Myanmar's energy mix mainly consists of gas, coal and hydropower. IFC (2020) states that, according to the Ministry of Energy and Electricity's (MOEE) presentation at the Third Meeting of the Energy and Electric Power Sector Coordination Group, the total installed capacity of electricity in Myanmar in August 2018 was 5,642 MW, with hydropower accounting for 57.7% of this capacity, gas 38.6%, coal 2.1% and diesel 1.6%. In the past, especially during the military regime, hydropower projects in Myanmar were primarily executed by the government, whether through the Ministry of Energy and Electricity or Ministry of Agriculture, Livestock and Irrigation (MOALI). Later, in 2009, after the Foreign Joint Venture/Local Build Operate and Transfer (JV/BOT) agreement was enforced, the country's private sector developers became involved in hydropower projects in Myanmar (IFC, 2020). Since then, dam constructions in Myanmar have been operated under central government control, and in joint ventures with private sector and foreign investors.

Myanmar has a rich history of hydropower development. In the 1950s, after World War II, a Japanese company, Nippon Koei, conducted a feasibility study of hydropower projects in Myanmar and they projected approximately 1,000,000 MW production in Myanmar (Akimoto, 2004; IFC, 2020). Myanmar's first large-scale hydropower project, the 84-MW Lawpita dam, was constructed on the Baluchaung River, a tributary river in the Salween River basin, in Karenni state. The first phase of the project was completed in 1960. The second phase, which added a further 84 MW of capacity production, was completed in 1974, and the third phase, adding another 25 MW, was completed in the 1980s (IFC, 2020). According to the IFC's strategic environmental assessment (SEA) of the hydropower sector in Myanmar report published in 2020, there are currently 29 hydropower plants operating in Myanmar, a further six are under construction, and 69 projects are proposed or have been identified, with an overall projected capacity of 43,848 MW of electricity. Eight projects have been proposed on mainstream rivers in Myanmar, with five of these projects planned on the mainstream Salween River. The hydropower plants planned for the mainstream Salween would cover more than 60% of the total projected capacity. The remaining three projects, which the government of Myanmar has suspended, were on the Ayeyawaddy, Chindwin and Thaninthayi rivers.

Hydropower development projects usually consist of three main stages: planning, construction, and operation. Planning stage includes from preliminary study, impact assessments to public consultation, and getting agreement. Construction stages including from building access road, offices, power station and grids to reservoirs. And operation stage includes not only the electricity production, but also about regulating water flow for the dams. The study investigates all these stages of hydropower development.

### *2.3.1 Hydropower projects in the Salween River basin in Myanmar*

The Salween River basin has been targeted for hydropower projects since the 1970s, with a series of studies conducted by Japanese, Australian and Thai consultancy companies working with the Myanmar Government (Food and Agriculture Organization [FAO], 2011; KRW, 2004). Engagement with companies from Thailand and China has escalated since 1988 along with the growth of trade and investment with these countries, and they have become the potential main power markets and investors (Middleton et al., 2019). In the late 1980s, feasibility studies for hydropower development were carried out along the Salween River by the Thai Government and Myanmar military government. In 2001, Thailand developed the policy of conciliation, cooperation and public support and encouraged Thai investors to invest

in development projects in Myanmar (FAO, 2011). During the governance of Thai Prime Minister Thaksin Shinawatra (2001–2006), the Thai Government and the Electricity Generating Authority of Thailand (EGAT) worked closely with Myanmar's military government to accelerate Thai's investment in electricity production in Myanmar. Four mainstream dams on the Salween River were incorporated into EGAT's Power Development Plan of 2004-2016 and 2007-2021. The hydropower project plans on the mainstream Salween River accelerated between 1988 and 2010 under Myanmar's military regime (Middleton et al., 2019).

According to the Myanmar Electricity Law – Law No. 14/2014, large dams in Myanmar are defined as dams with installed capacity above 30 MW. Currently, there are a number of hydropower projects already operating in the tributaries of the Salween River basin. Two of those operating ones will be studying in this study. The first one is the Lawpita hydropower project which comprises the Moebye Dam, located on the Baluchaung tributary, and three hydropower plants: Lawpita Hydropower Plant 2 (168 MW), Lawpita Hydropower Plant 1 (28 MW), and Lawpita Hydropower Plant 3 (52 MW), completed in 1974, 1992 and 2015, respectively. The second is Kengtawng Station on the Nam Teng tributary, which has an installed capacity of 54 MW and was completed in 2009 (Shan Human Rights Foundation [SHRF], 2018). Conflicts and a series of human rights abuses occurred during the construction of these two dams. Initially, seven mega dams were planned on the mainstream Salween River, with investments mainly by Thailand and China, but only five of them will proceed: Hatgyi, Ywathit, Mong Tong (Tasang), Naung Pha and Kunlong (Upper Thanlwin) dams. A feasibility study was undertaken for the other two dams, but communication between IFC and MOEE indicates that the Weigyi and Dagwin dams have been cancelled (IFC, 2020). Despite the fact the remaining five dams are not yet completed, a series of field investigations, environmental impact assessment (EIA) studies, public consultations and preliminary construction at the dam sites have been carried out over the decades. Throughout these processes, forced relocation, violence toward communities, and exploitation of natural resources in the project areas have also occurred (Middleton et al., 2019). In addition, a further 12 large dams are reported to be in different stages of planning and construction on the tributaries of the Salween River (Johnston et al., 2017). Figure 1 illustrates the seven planned dams on the mainstream Salween River and their status (Fitzpatrick & Harris, 2020). Hatgyi, Weigyi and Dagwin dams are in Karen state (Kayah in the figure); Ywathit Dam is located in Karenni state (Kayah in the figure); and Mong Tong, Kun Long and Naung Pha dams are located in Shan state.

**Figure 1: Map of seven dams and their status on the mainstream Thanlwin (Salween) River**



Source: Fitzpatrick & Harris (2020)

In the following sections, the histories, project details and status of the two existing hydropower projects on tributaries of the Salween and the seven planned hydropower projects on mainstream Salween River will be discussed, as reported by several local NGOs and international activists' organisations.

#### [2.3.1.1 Lawpitha Hydropower Project \(Moebye Dam\)](#)

Lawpitha Hydropower Project was the first large-scale hydropower project constructed in the 1960s. The project was supported by Japan as a part of a bilateral war reparation (Middleton et al., 2019). Moebye Dam for Lawpitha Hydropower Project is 11 metres in height, and its reservoir stretches to 207 km<sup>2</sup>. The dam is located on the border between two states – Karenni and Shan – on the Baluchaung River, a tributary of the Salween River (Burma Rivers Network [BRN], 2008a). Construction of the dam began in 1962 and was completed in 1970. Complete construction of the first power station was finished in 1974, with a total installed capacity of 168 MW, and two more power stations were completed in 1992 and 2015, generating an additional 80 MW in total installed capacity. The local Karenni ethnic groups suffered mainly from the dam construction; however, most of the electricity is supplied to the cities of Yangon and Mandalay (BRN, 2008a; Middleton et al., 2019).

Between 1960 and 1974, Tatmadaw caused several human rights abuses in the project area. The military deployed 24 permanent battalions to Karenni state and terrorised the lives of the ethnic communities (Karen Development Research Group [KDRG], 2006). Following militarisation and construction of the dam, forced relocations, forced labour, sexual violence, and arbitrary killing by the Tatmadaw occurred. The reservoir created by the Moebye Dam flooded the homes and farmlands of the villagers in the area. Lawpitha Hydropower Project caused more than 12,000 people to be forcefully displaced from their homeland without compensation. In addition, land mines were placed in the project areas for security reasons, which meant the villagers will never be able to return home (KDRG, 2006).

#### [2.3.1.2 Kengtawng Dam](#)

The Kengtawng Dam was the first large hydropower dam to be built in central Shan state. Located on the Nam Teng River, a tributary of the Salween River, the dam has a total installed capacity of 54 MW. The overseas developers involved in this project; Zhejiang Orient Holding Group and China National Electric Equipment Company (CNEEC), are both from China (EarthRights International [ERI], 2008). The dam was built between 2005 and 2009. The power

produced from this plant is transmitted to cities in Shan state and factories affiliated mainly with the military government. The dam is located in an area where a scorched-earth operation by the Tatmadaw occurred between 1996 and 1998. More than 300,000 people were forcibly driven out of their homes to relocation centres during the operation. After the Tatmadaw had terrorised the local people, the military government planned two dam projects in the area. The first one was the Kengtawng Dam, which has been completed, and the second one was the Upper Kengtawng Dam, which is currently under construction. The construction of the Kengtawng Dam also coincided with a scheme that gave permits to cronies of the ruling military for large-scale logging in the area. Violence, such as sexual harassment, was also perpetuated against the remaining villagers living in the area during the construction period (Shan Human Rights Foundation [SHRF] & Shan Sapawa Environmental Organization [Sapawa], 2018).

The Kengtawng Dam has had an impact on the Zong Arng waterfalls of the Nam Teng River, which are downstream from the dam, reducing the water flow to and hence the size of the waterfalls. The Nam Teng River and its waterfalls are culturally significant to the Shan people as it is believed to be the birthplace of the much-loved Shan folklore “Khun Sarm Law and Nang Oo Pim”. Various big fish species once inhabited the river, but only small fishes were found after the dam was built (SHRF & Sapawa, 2018).

#### 2.3.1.3 Hatgyi Dam

Located in Karen state and 47 km downstream of the Thai–Myanmar Border, the Hatgyi Hydropower Project was one of the projects invested in by EGAT and China's Sinohydro Corporation under a joint venture agreement with Myanmar's military government signed in 2010 (Salween Watch, 2016). In the initial feasibility study in 1999, the project was projected to have a production capacity of 300 MW capacity, but a later study published by EGAT in 2005 projected the installed capacity to be 1360 MW, with a dam height of 33 metres (BRN, 2008b; EJAtlas, 2018a). According to ERI (2018), even though the Myanmar Government claimed the project would benefit the local communities, 90% of the electricity will be exported to Thailand.

The Hatgyi Dam is the first of the seven proposed dams on the mainstream Salween River scheduled to be completed, but the construction is currently stalled until the conflicts end (Pollard, 2018). The Hatgyi Dam is located in an area traditionally controlled by a Karen ethnic

armed group; Karen National Union (KNU), where conflicts between the KNU and Tatmadaw have been occurring for decades.

In January 2006, EGAT began to survey in the dam area; however, tragedy soon struck when one EGAT staff member killed by a land mine in 2006 and another was killed by grenade amidst conflict in 2007 (Hengsuwan, 2013). Following the death of the EGAT personnel, the Tatmadaw deployed more troops to the area, claiming it needed to provide security for those building the dam. In September 2006, EGAT commissioned a research team at Chulalongkorn University to conduct an environmental impact assessment (EIA) of the Hatgyi Dam project. However, the project was reported to be incomplete as the research team did not have access to the half-stretch of the river in the KNU-controlled area, which is a part of the flood area of the dam (Hengsuwan, 2013). In 2010, EGAT carried out an additional EIA, and the findings were presented in the Mae Sariang district in Thailand in 2015. However, the full version of the report was never shared with the public (Salween Watch, 2016). Findings by EJAtlas (2018a) stated that it was agreed in a Memorandum of Agreement (MOA) to keep the project information confidential and not disclose it without the consent of all groups involved.

Undoubtedly, the construction of the dam has caused significant environmental destruction and had serious social impact on the local Karen people in Myanmar. However, the project has not been studied for its impacts across the Thailand/ Myanmar border. In addition to flooding two official wildlife sanctuaries in Myanmar, concerns about border impacts on fishery and agriculture have as been raised by Thai communities (ERI, 2018). Moreover, the dam site is located on a major fault zone, making it vulnerable to earthquake disaster (EJAtlas, 2018a).

#### 2.3.1.4 Weigyi Dam and Dagwin Dam

Despite these two dams being cancelled, I include them in the research because the preparation stage of these dam projects caused severe impacts on local communities. In the downstream area of the Salween River basin, the river forms the border between Myanmar and Thailand, flowing between the Karen state in Myanmar and the Mae Hong Son district in Thailand. The location for Weigyi and Dagwin dams both lie in the Papun district in Karen state, near Mae Hong Son province (Simpson, 2012). The Weigyi Dam was planned to have a height of 168 metres and an estimated installed capacity of 4540–5600 MW, while the Dagwin Dam, which was proposed to be 56 metres in height with an installed capacity of 728MW, was to be built as a pumped storage facility for the Weigyi Dam (BRN, 2008c, 2008d). The dams were a part of Thailand's cheap electricity scheme and a cooperation between the Thailand and Myanmar

governments (Salween Watch, 2016). The plan was initiated in the 1980s, and in 1996, the two governments signed an agreement that Thailand would purchase electricity from Myanmar. In 2008, the Myanmar Government also signed the "strategic cooperation agreement for electricity production" with Chinese companies (BRN, 2008d).

The ethnic Karen communities once inhabited the areas where these two dams were to be located, under the authority of KNU. However, in 1992 the Tatmadaw launched an offensive and anti-insurgency campaign in the area to secure the territory for the dam projects. Between 1992 and 2004, 210 villages in the Pupun district were attacked and destroyed, forcing people to flee to Thailand as refugees. Only a quarter of the villages now remain, and the remaining villagers in the region have become internally displaced persons (IDPs), who live in hiding in the jungle and struggle to maintain a livelihood (ERI, 2005).

If built, the reservoir would flood 640 km<sup>2</sup> of forest areas, including the Dagwin Forest reservation and wildlife sanctuary (ERI, 2005). The reservoir would stretch 380 km upstream, flooding ancient towns in Karenni and forcing villagers to relocate (EJAtlas, 2018b). KDRG (2008) estimated that about 30,000 people would be displaced, including the Indigenous Yin Ta Lai ethnic minority. According to Salween Watch (2016), these two projects were only suspended because of the potentially severe impacts they would have on Thai communities living in the border district.

#### 2.3.1.5 Ywathit Dam

In 2011, a MOA was signed between the China Datang Corporation and the Government of Myanmar to invest in three hydropower projects in Karenni state. One of these is the Ywathit Dam; it would be located in Karenni state, 45 km from Thailand/Myanmar border, on the mainstream Salween River. The other two dams would be smaller and located on tributaries to the Salween River, on the Pawn and Thabet rivers, and their purpose would be to power the Ywathit Dam. The MOA states that the Ywathit Dam would have an installed capacity of 300 MW, but on the Datang website, it is stated to be 4500 MW (KDRG, 2011; Salween Watch, 2013)

Even though the MOA was signed and site surveys were carried out, the villagers were not aware of the dam project (KDRG, 2011). Roads were constructed for the access to the dam site and excessive logging were reported in the area (Salween Watch, 2016). The preparation for the dam's construction had clearly begun. However, in December 2010, a Chinese-Burmese

survey team in the area was attacked by the local insurgence group, resulting in the deaths of three Chinese engineers. Following that attack, in 2011, more troops from the Tatmadaw were sent to the area for the security of the Chinese who were building the dam (Salween Watch, 2016). The villagers in the Ywathit Dam area have been the victims of civil wars for more than 20 years. Karenni state also has a tragic past in relation to the Lawpita Hydropower Project, where severe environmental and human rights violation was perpetrated against the villagers by the Tatmadaw. Since the extensive military operation on ethnic organisations began in 1996, 212 villages in the Ywathit Dam area have been relocated, and approximately 37,000 people displaced from their homes. Most fled to refugee shelters on the Thai border, afraid to go home, and the remaining villagers in the area are now counted as IDPs (Salween Watch, 2013).

One of the Karenni's indigenous people – the Yin Ta Lai ethnic group – inhabit areas along the Pawn River. The dam on the Pawn River, which is planned to power the construction of the Ywathit Dam, also threatens the existence and livelihood of the Yin Ta Lai people. It is estimated that only about 1000 Yin Ta Lai are left in Karenni state (KDRG, 2011). In addition to fuelling conflict, the dam will flood the Kayah-Karen montane rainforests, destroying biodiversity and fisheries (BRN, 2011a).

#### 2.3.1.6 Naung Pha Dam

The Naung Pha Dam will be located in the northern Shan state, between Lashio and Ho Pong Township. The proposed dam will be 90 metres in height with an installed capacity of 1200 MW. A MOU was signed between the Chinese and Myanmar governments during then-Vice President Xi Jin Ping's Myanmar trip in 2010. An MOA for the project was signed in 2014. The dam project is jointly developed by HydroChina, MOEE and the International Group of Entrepreneurs (IGE). MOEE holds 15% of the shares, and the others hold 85% collectively. Ninety per cent of the power is to be exported to China (Salween Watch, 2016).

The dam will affect 55.41 km<sup>2</sup> of area, flooding farmlands, garden lands and forests that the local people depend on for their livelihoods. Four hundred and thirty people from two villages will be directly impacted by the dam (BRN, 2014). In addition, concerns about the dam project are compounded as the dam site is located close to the Nampawng fault line, and the reservoir stretches to the Nam Ting fault line. Downstream communities are at risk due to potential dam breakage and subsequent flooding (SHRF, 2016). Furthermore, the project is sited in an area where there is already active conflict between local armed groups and the Tatmadaw, and now the project has created a reason for the Tatmadaw to reinforce their presence in the area. Indeed,

in 2015, 1000 Tatmadaw troops were deployed to protect the territory for dam construction, increasing locals' fears of new large-scale Tatmadaw offensives (EJAtlas, 2018c).

#### 2.3.1.7 Kunlong Dam (Upper Thanlwin Dam)

The Kunlong Dam (also known as the Upper Thanlwin Dam) is located about 7 kilometres upstream from Kunlong Township in northern Shan state and 25 kilometres from the Chinese border (BRN, 2014). An MOU was signed between Chinese companies and the Myanmar Government for the development of the project in 2010, and a joint venture agreement was signed in 2014. The dam will have a total installed capacity of 1400 MW, of which 1200 MW will be sold to China through the Southern China Power Gridline company (Salween Watch, 2013). An EIA study was conducted. The results were not published. Construction of the dam has already begun.

The Kunlong Dam is located in an area contested by Kokang resistance forces. In 2009, a lethal battle broke out between Tatmadaw troops and Kokang forces in the area, forcing 30,000 people to seek refuge at the Chinese border. Another large battle between these two forces took place in 2015, forcing 100,000 villagers to be displaced to China (Salween Watch, 2016). The dam site is a strategic location for the Tatmadaw to confront several ethnic forces. As a result, there is a heavy military presence at the Kunlong Dam site (SHRF, 2014). The dam project was suspended in 2015 over security concerns due to the conflicts (Shin, 2015).

The military began to take land in 1992 in the region, and so the Kunlong area is inhabited by the villagers who were already relocated by the Tatmadaw (SHRF, 2014). The dam project in the area will further fuel the conflict and disturb the peace process.

#### 2.3.1.8 Mong Tong Dam (Tasang Dam)

The Mong Tong Dam, previously known as the Tasang Dam, is located in Shan state. The project is a joint investment by EGAT, Shinohydro, Southern Power Grid Co., and China Three Gorge Corporation. The plan for the Mong Tong Dam has been on the Myanmar Government's agenda since a 1981 study by Japanese company Nippon Koei. In 2002, Myanmar Government signed an MOU with the Thai MDX group to develop the dam project (Akimoto, 2004; EJAtlas, 2018d). A ceremony for the dam construction took place in 2007, and nearby villagers were forced to attend (BRN, 2008e). In 2009, the contract with MDX was cancelled as the project was delayed. Later, the project was contracted to EGAT.

Originally, the plan was to locate the dam in Tasang, but because of construction challenges at the site, its location was moved 10 km closer to Mong Tong township and 40 km from Chiang Mai province, Thailand (Salween Watch, 2016). When completed, the Mong Tong Dam will become the largest hydropower dam in Myanmar and Southeast Asia (BRN, 2008e), with a dam height of 241 metres and a total installed capacity of 7110 MW. Thailand is reported to be planning to buy most of the power produced (BRN 2008e). The EIA study was conducted by SMEC an Australian consulting company that received a great deal of backlash because of the poor quality and inauthenticity of the study. For example, the study did not cover a stretch of the river that was under the control of the United Wa State Army (UWSA), an ethnic minority militia group (Salween Watch, 2016), and the villagers in the area were not aware of the planned dam construction.

The dam and its reservoir will extend 870 kilometres along the Salween and Pang rivers. The latter is the main tributary of the Salween River in Shan state. The town along the Pang River is Kunhing, which means "One Thousand Islands" in the Shan language. It is called this because the Pang River is an ecologically unique place that features many small and large islets and cascades of waterfalls in the sub-basin (Salween Watch, 2013). The area will be flooded once the dam is built, which will alter the local ecosystem and fishery. In addition, the dam site is an area that was once inhabited by a large population of people from minority ethnic groups; however, an anti-insurgency campaign carried out by the Tatmadaw in the 1990s caused more than 300,000 people to be displaced. The majority sought refuge along the Thai border. If the dam was built, their dream of going back home will never happen (Salween Watch, 2016)

## 2.4 Conclusion

This chapter has provided background information on the complex history of and events that have occurred within the Salween River basin. The chapter has explained the growing conflict between the Tatmadaw and minority ethnic groups, the development trends of hydropower projects in Myanmar, the roles played by various actors in the hydropower development process, and how the electricity will be distributed. The chapter has outlined the spatial and temporal dimensions that have given rise to complex events and engagements that have occurred in the river basin by providing details about the two existing dams and seven (proposed) dams on the mainstream Salween River.

The next chapter outlines the theoretical framework for this thesis, drawing on literature on the discourse of violence, infrastructural violence, and environmental justice.

## Chapter 3 Literature Review

### 3.1 Introduction

This research identifies the hydroelectric infrastructural violence in the Salween River basin, the violence that has occurred, and still is occurring, as a result of hydropower infrastructure development in the Salween River basin. This violence occurs not only during the planning, construction, and operation process but also on a broader temporal scale. In this chapter, I review definitions and theories of violence and link this body of scholarship to research focused on environmental justice to gain deeper insights into the multiple impacts and effects of hydropower development. I begin by reviewing violence with a particular focus on Galtung's definition of violence and its distinctions, along with theories of direct violence, structural violence, and slow violence. I explain infrastructural violence and consider hydropower development projects as an example of infrastructure that leads to different forms and intensities of violence. In the final section, I review environmental justice scholarship and consider, in particular, distributive justice, procedural justice and recognition justice. These two bodies of scholarship provide the analytical framework for understanding how Indigenous and ethnic communities in the Salween River basin of Myanmar continue to be affected by past, present and proposed dam projects in the basin.

Violence is a universal issue and one of the most pressing concerns today. In talking about violence, the initial response is to visualise an act to harm, hurt or torture another being in a physical way. This can include acts ranging from hitting someone to killing. However, violence is not limited only to conventional understandings of physical harm – violence can occur in every part of daily life in different forms from direct physical violence to harm towards a person's psychological thinking to harm causing catastrophic events. With a growing understanding of the many forms that violence can take, it is essential to be aware of the existence of violence in a situation. Lacking awareness about violence can become the primary cause that allows violence to take place later (Lee, 2019).

Studying violence can enhance understanding about the nature, sources and causes of violence which, in turn, can help to mitigate and or prevent violence from happening. Therefore, in the first section of this chapter, I explore the meaning of violence as well as basic distinctions about the nature of infrastructure in general, and the reasons why and how violence can occur during infrastructure development. Secondly, based on the distinctions of violence and an

understanding of violence that can occur during infrastructure development, I explore the existing and potential hydroelectric infrastructural violence of hydropower project. The third section covers the concept of environmental justice and how environmental injustice occurs in the presence of dam projects. The chapter ends with a conclusion, which summarises how the study is framed based on the literature of violence, violence around hydropower infrastructure, and environmental justice.

### 3.2 Defining violence

Galtung (1969, p. 168) defined violence as “that which increases the distance between the potential and the actual, and that which impedes the decrease of the distance”. Based on his definition, violence exists in a situation when the gap between the potential realisation of a person and the actual realisation of a person grows bigger. In short, violence exists when there is a difference between a person’s ability to perform their upmost at the given level of insight and resources, and what they can actually do in reality. The nature of violence is broad and varied. Violence refers to human-made acts that are cruel and destructive. Lee (2019) studied violence within a bio-socio-environmental framework and argued that violence was not solely biological even though biological conditions such as brain damage, use of medication and hormonal changes can cause aggression, disorders, and mental illness. However, the interaction of biological conditions with social connection and environmental structure can trigger the act of violence (Lee, 2019). When an individual or a group commits violence towards an object (a person or a group) directly in a form that affects the somatic and mental realisation of the object below their potential realisation, then direct violence (also known as personal violence) occurs (Galtung, 1969).

Violence can occur in different forms and in different situations. Galtung (1969) argues that while it may not be necessary to construct a definite typology or definition of violence, there should be grounding dimensions of violence that can support more research, and actions to address the matters of violence. To understand the nature of violence, Galtung (1969) presents a framework to explain violence according to six key distinctions: impacts, influences, absence of objects, absence of subjects, intended and unintended outcomes, and manifest and latent violence. The first distinction is that violence can have a physical and/or psychological impact. *Violence on the body* refers to actions that decrease a person’s somatic capability, such as hurting a person physically or placing limitations on human movement. The latter ranges from acts of imprisonment to blocking access to such as transportation. *Violence on psychology* is

an action that decreases a person's mental capability; for example, by lying, brainwashing, blackmailing, and threatening. The second distinction is that using *positive and negative approach* to a person and obstruct them from realising their potential capabilities can be achieved. A negative approach, for example, would be to give punishment or threats to receive desired outcomes whereas a positive approach may be to give a reward to manipulate.

The third distinction – *absence of an object* – relates to the relationship between subject, action, and object. Violence usually happens in a “subject + action + object” format, according to Galtung. However, Galtung (1969) also asserts violence can happen whether or not there is an object to receive the action. In addition to the direct physical violence towards an object, if there is an action taken by a subject that imposes a threat to an object's physical and mental potentialities, then a violence has occurred. Galtung's fourth distinction states violence can also occur in the *absence of an actor (subject)*. This is where violence is formed in the system and structure. While there may not be a specific physical actor who causes the violence, violence is built into the structure through unequal power dynamics.

The fifth distinction differentiates between *intended violence* and *unintended violence*. However, although a sense of guilt may be factored into identifying whether violence is intended or not, the importance of violence should be considered based on the consequence of the action, not guilt. If the level of violence is decided based on guilt, this brings the potential of risk of unrecognising *structural violence*.

Finally, the sixth distinction, relates to differences between manifest and latent violence. As the term implies, regardless of whether it is in direct or indirect form, *manifest violence* is obvious and identifiable, whereas *latent violence* is something that is not necessarily evident immediately but emerges slowly over time. Latent violence exists when a situation is at an unstable equilibrium and thus an object's ability to realise to its potentialities reduces over time.

In 2002, the World Health Organization (WHO) defined violence as:

“[Violence is the] intentional use of physical force or power, threatened or actual, against oneself, another person, or against a group or community, that either results in or has a high likelihood of resulting in injury, death, psychological harm, maldevelopment or deprivation.” (WHO, 2002)

This definition implies that violence refers not only to direct harmful lethal acts towards a subject, but also when the power dimension of a situation prevents a society from obtaining the nourishment it deserves. This, in turn, means that an individual or a group with power in the social order can exert violence systematically and indirectly to produce social oppression (Farmer, 2004). This is a form of structural violence.

*Structural violence* occurs when harm is built into a structure. It is subtle, hidden and, at a certain point, the act has been accepted as a regular norm in society (Lee, 2019). Structural violence is the product of institutions and systems that hinder people or a community from meeting their basic needs and achieving full quality of life (Gilligan, 1999; Gupta, 2012; Lee; 2019; Winter & Leighton 2001). Structural violence is an indirect form of violence because it is based on unequal power within a structure, and the result of the violence cannot be directly tracked to specific actors. Structural violence occurs, for example, when decision-making power is unequally distributed, which leads to the unequal distribution of resources, education, healthcare, and so forth (Galtung, 1969). Merry (2008) defines structural violence as “violence that impacts the everyday lives of people yet remains invisible and normalised. It includes poverty, racism, pollution, displacement, and hunger”.

Structural forms of violence can occur because of politically, economically, and culturally driven structures and can result in different impacts on different groups within a society. The most vulnerable groups to structural violence are those in the bottom socio-economic class; that is, the people, social groups and minorities that suffer from the underprivilege, discrimination and hold the least power in society (Gilligan, 1999).

The Organization for Economic Cooperation and Development (OECD)) distinguishes between political and social violence:

[*Political violence* is] the use of force towards a political end that is perpetrated to advance the position of a person or group defined by their political position in society. Governments, state militaries, rebels, terrorist organisations and militias engage in political violence, as well as actors who may adopt both political and criminal motives. [*Social violence is*] a broader manifestation of grievances, criminal behaviours and interpersonal violence in society. These include multiple types of crime, homicides, and interpersonal and self-directed violence. (OECD, 2016, p. 20)

Understanding the definitions of and distinctions between different types of violence is important when exploring the process of infrastructure development and how this can impose threats or acts of violence.

### 3.3 Infrastructural violence

#### 3.3.1 Defining infrastructure

Before moving to consider infrastructural violence, it is crucial to first explore the nature of infrastructure. The global importance of economic growth and development processes has grown continuously since the beginning of Industrial Revolution in the eighteenth century. From the invention of steam-powered engines to mass production and advancement, to science and technology, there has been enormous growth in infrastructure development. The expansion of roads and rail, the growth of cities including factories and high-rise buildings, and the construction of bridges across the rivers and dams and reservoirs are the most common and easily observable types of infrastructure. According to Petroski (2009), the word infrastructure, as used in common English, originated from military usage where the British and France forces interacted during World War II and used the term “infrastructure” as a reference to their bases and camps. The word was then introduced into American English following the development of the North Atlantic Treaty Organization. Over time, the word came to be used by urban planners in a civilian context. Beyond the construction of physical buildings, the word *infrastructure* nowadays refers to the public works that are systems or functions that bring improvement to civilisation through, for example, improving accessibility and communication. Examples of infrastructure include rail networks, bridges, airports, water supply, waste management systems, and information and communication networks. Star (1999) identified two types of infrastructure: (1) visible engineering-built structures and networks, and (2) the systems and method of construction and operation embedded in these tangible bodies. People usually see and appreciate the end result of the production and coordination work of infrastructure, but the articulation of work to operate that infrastructure is often overlooked; the latter usually only becomes more apparent upon closer examination. Wakefield (2020) described infrastructure as a built system that secures bodies, processes, and provides logistics for the capitalist order. Lack of proper infrastructure or a failure in existing infrastructure, such as a weak transport system or an inadequate sewage system, can impose risks to human health or halt day-to-day operations, which could lead to the decline in a country’s progress (Choate & Walter, 1983).

### 3.3.2 Defining infrastructural violence

Rodgers and O’Neill (2012) explain that infrastructure is, firstly, a tangible structure that is observable, with variable purposes, equipped with different kinds of functions, and which has identifiable stakeholders. It is also a system that distributes social benefits to society, enabling society to progress. However, Rodgers and O’Neill (2012) further explain that infrastructure is not only a tangible-built system; infrastructure is also entangled with society, culture, the economy, and politics. Based on this definition, infrastructure can be considered an abstract system where social order, power, control, and oppression can be seen and translated. Depending on how the infrastructure is constructed – not only in engineering and scientific ways but also within the context of a social system – the social orders and power dynamics within a society can create the notion of infrastructural violence. Rodgers and O’Neil (2012) describe *infrastructural violence* as the violent outcomes of infrastructure designs and services that are (re)produced by the structural politics of a country or institution. Although infrastructure development aims to bring progress, social improvements, and benefits to be distributed throughout society, Enns and Sneyd (2020) claim that infrastructure does not always benefit and serve societies and economies equally. Because of its complex nature and because the articulation of infrastructure is beyond the engineering and planning process, Mcfarlane and Rutherford (2008) argue that infrastructure is shaped by and can result in consequences for the economic, political, and social life of a nation.

Rodgers and O’Neil (2012) break the concept of infrastructure violence down into two further classes: active and passive. *Active infrastructure violence* occurs when the operation or function of infrastructure is designed by a group in society that holds power to oppress another group of people and manage desired social and territorial outcomes. *Passive infrastructure violence* refers to harmful social suffering resulting from the infrastructure’s exclusion of particular groups from, for example, its services. These groups are usually the poor and vulnerable groups within the society. Thus, structural violence can exist within as well as flow through infrastructure (Rodgers & O’Neil, 2012).

In addition to the structural violence, direct violence can occur during the process of implementation or as a result of infrastructure development (Enns & Sneyd, 2020). An example of direct violence caused by infrastructure development is the displacement of people and dispossession of their homes and land through forced eviction by a government for dam construction (Isaacman & Isaacman, 2013). Failure in infrastructure design can also ignite

violent clashes between the users of infrastructure (Danielak, 2019). Infrastructural violence also comes in the form of disconnecting people from resources due to social status (Anand, 2012), and can also occur when actors (the developers of an infrastructure project) disentangle their responsibilities for the compensation of the people affected by the process of the infrastructure development (Appel, 2012).

Violence does not always come in an immediate explosive visible form. Consequences of certain actions can build up over time and surface only in a temporal scale as slow violence (Nixon, 2011). Nixon (2011) discusses how it is important to understand past occurrences to understand what may lie ahead. Slow violence has the potential to create multiplier threats, which imposes the risk of negative impacts on cultures, nature, and lives. Displacement of a community caused by the construction of infrastructure leads to the loss of the community's sense of place and exposes people to the risk of new diseases due to a change to an unfavourable landscape (Isaacman & Isaacman, 2013).

Like violence in general, infrastructural violence can be physical or psychological, manifest, or latent. Furthermore, all these types of violence can be found interconnected within an infrastructure (Doherty, 2019; Sims, 2021). As infrastructure developments are usually large-scale projects implemented by the state, violence induced by infrastructure developments are usually related to state regulation and the articulation of power within states. Large-scale infrastructure development can create not only direct violence but also structural violence, which can have a gradual and long-term effect on society and the groups within it.

In the next section, I will focus on infrastructural violence induced by the development of hydropower infrastructure.

### *3.3.2 Infrastructural violence and hydropower development*

Since the operation of the world's first hydroelectric power plant began in Appleton (USA) in 1882 (Allerhand, 2020), the large-scale production of electricity from water has become a worldwide infrastructure phenomenon. Electricity production brings economic and social benefits and generation of electricity through hydropower is one of the most convenient renewable energy technologies. However, it is also a widely accepted fact that hydropower projects have severe environmental and social impacts. Large hydropower development projects are among the most controversial development projects in the world, generating discussion and debate around inclusive participation, resource sharing, environmental

management and planning, socio-environmental damages and even their impact on climate change (Goulet, 2005; Midgley, 2007). Many case studies on large dams have revealed the intense social and environmental challenges for project-affected communities. Forced relocation, loss of livelihood, impact on communities' agriculture and fishing, loss of access to resources, conflicts with plant employees, and loss of life's richness are frequently cited impacts caused by hydropower development around the world (Blake & Barney, 2018, Campbell & Barlow, 2020). Because of growing protests and criticism over hydroelectricity production, international organisations such as the World Bank and International Hydropower Association have introduced many safeguards, sustainable guidelines, and standards relating to compliance. However, despite these safety nets, there are few comprehensive remedies for project-affected people following construction, with governments and developers still assuming that both environmental and social risks can be mitigated at the same time (Cooke et al., 2017). In addition to this, the international investors and the constructors of dam projects follow the host country's rules and regulations regarding the required compliance (Hensengerth, 2013). Many Global South countries, where many of the hydropower projects are undertaken, have weak environmental protection laws. Exclusion from dam projects, inadequate relocation plans, and unequal distribution of benefits are common consequences of the weak regulations and policies regarding natural resource management. Hydropower dams directly affect people in a project area in terms of habitat loss, including loss of flora and fauna for living and livelihoods as well as for settlement. In the case of the Xe Pian Xe Namnoy Dam in Lao, the local community – the Indigenous Jrou Dak (Sou) and Oi people – were not even aware of the dam being built when construction began, and they lost their fish resources and livelihoods when the dam diverted the waterway and reduced downstream water (Baird, 2020). While the development of dams has a direct impact on the flora, fauna and livelihoods of local communities, the communities that live in project-impacted areas often have little say in the design and articulation of the whole hydropower infrastructure development. Furthermore, eviction and ecological destruction are not the only forms of direct violence produced by the dams: there are cases where anti-dam activists have been arrested, detained, and even murdered during dam projects (Blake & Barney, 2018).

In addition to the direct impacts of mega dams, the allocation of the energy produced from these dams is also inequitable. In most Global South countries, most of the electricity produced by the dams is distributed to cities or exported to other countries rather than supplying those in the rural areas in the vicinity of the dam (Intralawan et al., 2018; Tang & Shen, 2020). While

electricity distribution is mostly related to the individual country's policy, such as Lao's policy to become the battery of Asia (Punya, 2014), other political factors are also highly influential. Resource sharing between countries is influenced by the power relations between different countries, as well as the power relations between different states within a country (Suhardiman et al., 2017). For example, the controversial proposed Myit Sone Dam in Myanmar is contracted to transmit 90% of the generated electricity to China, while only 10% is to be consumed by the host country (Linn, 2013). Likewise, the energy production from Lao's hydropower dams supply electricity to Bangkok shopping malls while the Lao people are the ones adversely affected by the construction and operation of the dams (Marks & Zhang, 2019). In most of these cases, project-affected people do not have the shared benefit of this water resource management. Indigenous people and local residents in remote and rural areas where the dams are constructed are marginalised groups of people, and they are often excluded from the environmental benefits of hydropower development projects while suffering the most from the risk of the exploitation of the resources (Freudenburg, 1992).

### 3.4 Environmental justice and dam development

In section 3.3, I outlined the different kinds of infrastructural violence that dam projects can create. In the following section, I apply the concept of environmental justice to better understand how infrastructural violence violates environmental justice for people living in the project-affected areas. I also explore extant research on environmental injustice and Indigenous communities because the study area of this research is occupied by many ethnic communities and Indigenous people who are marginalised by the ruling government's policy.

The concept of environmental justice (EJ) originated when the unfair distribution of solid waste sites among the communities of colour in Houston, Texas (Bullard, 1983) and the hazardous waste dump in Warren County, North Carolina (United State General Accounting Office, 1983) was highlighted. The unequal and unfair distribution of the environmental burden towards lower-income communities and communities of colour highlighted by these cases led to studies focused on environmental injustice and environmental racism. The practice of unequal distribution of environmental goods and bads in society sparked an early interest among environmental scholars and activists on "distributive justice". Justice as distribution centred on exploring "how and what gets distributed in the construction of a just society". (Schlosberg, 2007, p. 12). The discourse expanded to assessing unequal patterns of experiencing environmental risks or accessing environmental goods and services based on race or class

(Vanderheiden, 2015). The beginning of EJ research focused primarily on racialized minority groups and low-income populations (Holifield et al., 2017). Later studies expanded to consider other marginalised communities including ethnic minorities, indigenous people, lower caste peoples, and unregistered migrated people, who were also more likely to be found residing in proximity to areas prone to environmental risks than privileged groups (Parsons et al., 2019).

Research focused on distributive environmental justice has been criticised not least because it is based on the assumption that equal access to every group in the society can remove the unequal exposure to harm and injustice (Schlosberg, 2004). This critique shifted the dimension of environmental justice beyond distribution to a focus on “procedural justice.” Procedural justice draws attention to processes to utilise environmental services and resources and emphasises inclusion of different stakeholders and their meaningful participation in decision-making processes for environmental management (Schlosberg, 2007). To achieve this, there is a need for procedures to ensure fairness in decision-making processes. Walker (2012) outlines a set of conditions for achieving procedural justice as follows: 1) access to environmental information, conditions for effective participation and obtaining informed consent; 2) meaningful participation in decision-making process where resources are available, respect is given and power is shared; 3) access to legal process and legal redress; and, 4) knowledge co-production and research with community and scientists. In reality, existing unequal power relationships, domination by some groups over others, and the exercise of authority can make it difficult to enable the meaningful inclusion of marginalised peoples (Bickerstaff & Walker, 2005). Thus, to achieve procedural justice, it is important to both recognise and include diverse voices and to consider context – especially socio-economic and political factors – in the politics of the environmental management (Schlosberg, 2007; Schlosberg & Carruthers, 2010).

The next theoretical development within environmental justice scholarship is recognition justice. *Recognition justice* refers to the right of individuals, societal and cultural norms, identities, ways of life, and values in relation to their environment to be recognised (Barnhill-Dilling et al., 2020; Bryant, 1995). In addition to exploring the “how” of equal distribution and equal participation, it is also crucial to ask “why” of the inequity (Schlosberg, 2007, p. 15). The underlying marginalization, discrimination, and exclusion of cultural differences pose barriers that recognition justice seeks to overcome, and which are also the heart of the concerns for marginalised groups (Zanotti, 2015). Understanding these underlying issues is important

for addressing misrecognition and for achieving meaningful participation. Recognition is the foundation of participation in decision-making; in the absence of recognition, it is difficult to achieve procedural justice and distributive injustices may persist (Branhill-Dilling et al., 2020; Zanotti, 2015). The interrelatedness of these different forms of environmental justice is acknowledged by researchers, with Schlosberg (2007) arguing that environmental justice is “trivalent” and Walker (2012) describing environmental justice as a pluralistic discourse. Schlosberg (2007), further discusses the “capability” approach as the core of the environmental justice. Capabilities are the ability to function and to flourish, based on an individual’s opportunity to do and to be, in a given society (Schlosberg, 2007). The notion of capability also encompasses the functions of community as well as the nonhuman realm (Scholsberg, 2007; Walker, 2009). Edwards et al., (2016) discusses capabilities as the ability to enable well-being and argues it as the core of achieving environmental justices.

The right to an equitable distribution of environmental services, resources and risk, the right to participate in the decision-making process of resources management, and rights of cultural and value recognition are, in most cases, related to place attachment. Since hydropower development has significant social and environmental impacts, there is a risk that development could lead to distributive, procedural and recognition injustices, particularly as the right to sustain environmental services can be affected. From an environmental justice perspective, such risks require mitigation or actions taken to avoid negative social impacts. However, many examples show that dam proponents and impact assessments often ignore these environmental justice considerations in hydropower development schemes. One example is the San Roque project along the Agno River in Philippines, home of the Ibaloi Indigenous community. The dam development forced the displacement of people from their land, who had to find a new way of living because the dam caused the soil to be unavailable for their traditional farming (Hughes, 2000). A local community in Karenni state also protested a proposed dam project on the Pawn River as it had a high risk of destroying the cultural and historical heritage of the Karenni capital (Kramer et al., 2018).

Parsons et al. (2021) refer to procedural justice and recognition justice associated with distributive justice when discussing the exclusion of Indigenous and the minority communities from participating in decision-making processes and the management of resources and environments. In a similar way, Indigenous culture and identities are also neglected in development projects. Like many countries, local resources that are the target of development

projects carry meanings that are deeper than economic values. In particular, local resources are often tied to the culture and identity of the people living in the area (Kramer et al., 2018). However, the role of Indigenous residents and their deeper relation to the land can be overlooked when considering and planning development projects. Indigenous people's lives are highly connected to their place – it shapes the way they live, the things that hold value, and the way they survive (Artelle et al., 2018). This aspect of Indigenous communities has been often neglected in the assessment and planning of hydropower development projects, resulting in inadequate resettlement planning, loss of livelihood and long-term impact on loss of the culture and tradition of local Indigenous communities.

### 3.5 Conclusion

This chapter has provided a theoretical framework based on constructions and discussions of violence. It has presented a number of definitions of specific types of violence and described how the construct of violence in general fits into the specific construct of infrastructural violence. It has explained how hydroelectric power plants, as large-scale infrastructure projects, are usually implemented by national governments in partnership with the private sector and other countries, and how large-scale hydropower dams can produce violence. The chapter then discussed the three major categories of environmental justice, and how dam development can have negative impacts on local Indigenous communities in terms of distributive justice, procedural justice, and recognition justice.

The next chapter explains the research methodology and design used in this study to achieve the research aim, and specifically, to answer the three research questions.

## Chapter 4 Research Methodology

### 4.1 Overview

In this chapter, I explain the research methodology and design used in this study to achieve the research aim, and specifically, to address the three research objectives. The next two sections of this chapter discuss the qualitative approach used in and the case study research method chosen for the research, respectively. Section 4.4 focuses on data collection and sampling and provides justifications for the methods used and approaches taken. Section 4.5 briefly explains the approach taken to analyse the data. Section 4.6 is a discussion of the potential risks of qualitative research and the steps taken to mitigate these. Sections 4.7 and 4.8 highlight the ethical considerations of the research and discuss the limitations of the research, respectively. Section 4.9 concludes the chapter with a summary of the research methodology.

### 4.2 Research approach

The very first and critical stage of designing a research project is to define a precise aim and develop a theoretical framework for the research. A theoretical framework is produced based on a literature review, and needs to be undertaken before applying the research method. To frame the direction of the research more precisely, I focused on understanding the context of the study area in parallel with the literature review to ensure my research was well scoped and the research objectives could be addressed adequately (Gillham, 2000).

To achieve the research's aim and answer the three research objectives mentioned in Chapter 1, I employed a *qualitative research methodology*, using both deductive and inductive approaches to analyse the data.

According to Morgan and Smircich (1980):

... [the] social world constitutes some form of open-ended process, any method that closes the subject of study within the confines of a laboratory ... does not do complete justice to the nature of the subject. (p. 498)

A qualitative approach helps the researcher to gain in-depth knowledge about the social worlds within which the study population operates and to learn about their social and physical events, experiences, perspectives, and histories (Ritchie et al., 2013). A qualitative approach enables

the researcher to understand the human environment and human experiences in various conceptual frameworks (Winchester & Rofe, 2010). Winchester and Rofe (2010) explain how qualitative research usually answers questions concerned with objects and practices of social structure relating to social, cultural, economic, political, or environmental and individual experiences.

There are various qualitative methods used by researchers to explore and understand in greater depth the phenomenon under investigation. According to Gillham (2000), qualitative methods are often descriptive and inferential, which is important in describing and interpreting “facts” and translating them into “meaning”. Gillham (2000) states that, in addition to enabling the researcher to understand the meaning of events, process and so forth, qualitative research can enable the discovery or modification of existing theories. Qualitative research also allows the researcher to expose underlying assumptions, beliefs and values (Yauch & Steudel, 2003). Braun and Clarke (2013) claim that a qualitative approach helps the researcher to make sense of the patterns of meaning and evidence in the data collected and allows for interpretation of the research in the context of broader academic debates and theories.

#### 4.3 Research design: Case study research

I used a *case study method* to address the three research objectives. A case can be either a single instance, such as an individual, group, institution or a community, or multiple instances comprising several single cases (Gillham, 2000). Case studies are used to develop an in-depth understanding of phenomena, whether a single or multiple instances, set in a real-world context (Bromley, 1986). Robson defined a case study as:

A strategy for doing research which involves an empirical investigation of a particular contemporary phenomenon within its real-life context using multiple sources of evidence. (Robson, 1993, p. 148)

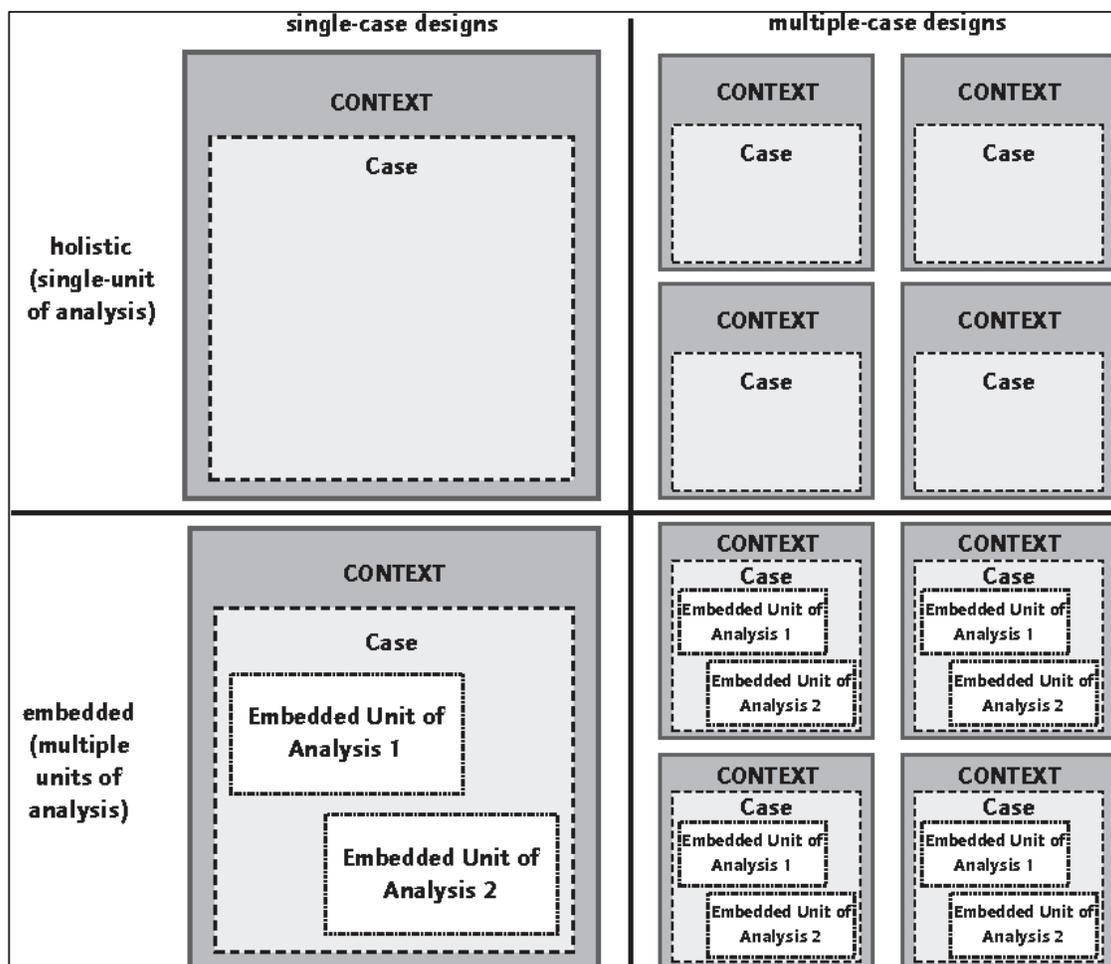
More recently, Yin defined a case study as:

An empirical inquiry about a contemporary phenomenon (e.g., a “case”), set within its real-world context, especially when the boundaries between phenomena and context are not clearly evident. (Yin, 2009, p. 18)

A case study seeks to explore in-depth meaning and contextual influences and provide an explanation of a phenomenon, which is something happening or someone doing something

(Yin, 2014). A phenomenon can be an event, a process, or a particular place. (Baxter, 2010). A researcher can design their research as either a single case study or a study involving multiples cases. The researcher can also design their research using either a holistic or embedded case study approach. A *holistic case study approach* is usually used when the researcher wants to explore every aspect of the case or cases, whereas the *embedded case study approach* is used to explore certain specific aspects in a case or cases (Yin, 2012). Figure 2 illustrates the basic types of designs for case studies. See Yin (2102) for detail explanations of these designs.

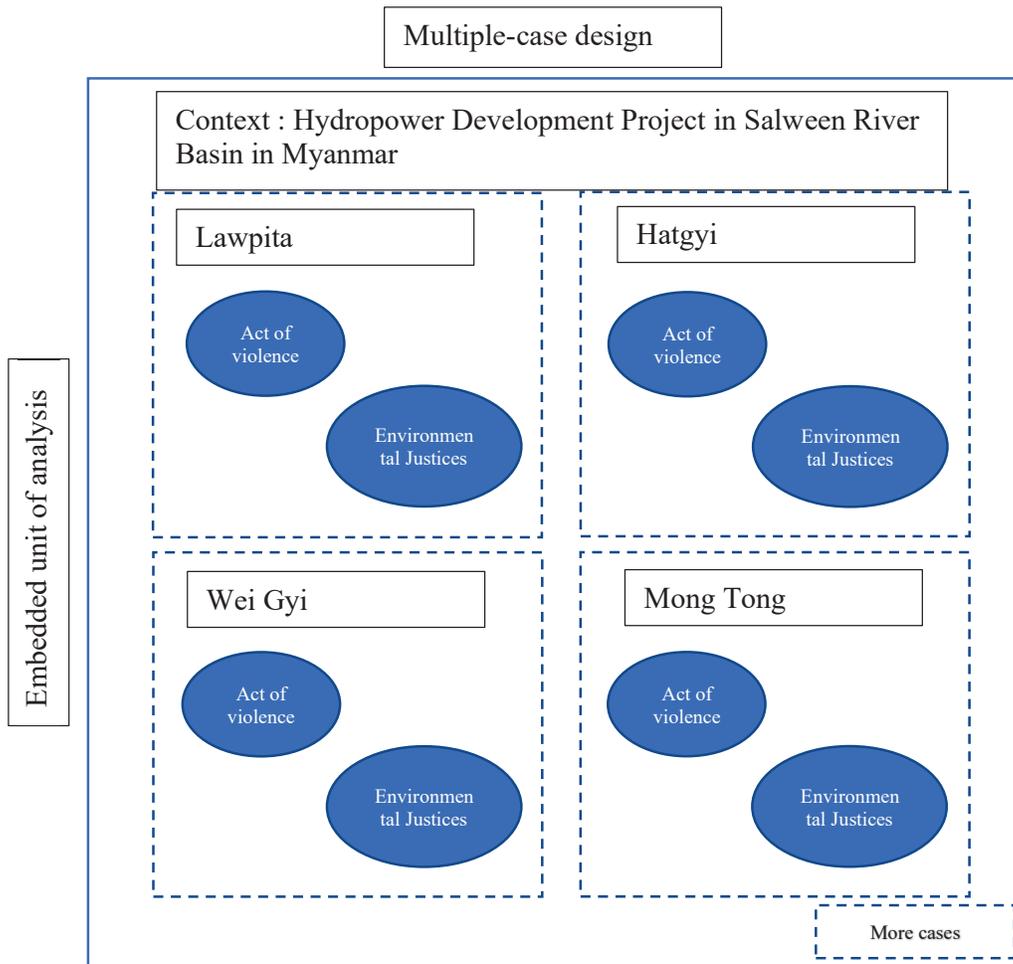
**Figure 2: Basic types of case study designs**



Source: COSMOS Corporation (in Yin, 2012, p. 8).

Derived from the COSMOS Corporation case study design theory, I built my case study design as shown in Figure 3.

**Figure 3: Application of the embedded multiple-case study design in this study**



In my research, I examined different cases of hydropower development in the Salween River basin in Myanmar, looking particularly into the notion of dam-induced violence and environmental injustice.

Based on my research aim, my research sought to explain how infrastructural violence impacts on environmental justice for ethnic groups. For this reason, my research was conducted as an *explanatory case study*. Explanatory case studies usually seek to answer “why or how” some social phenomenon works or happens (Yin, 2014). In addition, my study required looking into historical instances as well as current instances of the same context to understand the temporal dimensions of the phenomena and, to address the limitations of not being able to have physical access to my research area. Explanatory case studies are usually used to answer research

questions that explore “a contemporary set of events” and/or “over which a researcher has little or no control” (Yin, 2014, p. 14).

## 4.4 Data collection

### 4.4.1 Qualitative secondary data

The next step in my research design was to decide how to collect the data. *Qualitative research*, to put it simply, is making sense of words. In qualitative research, “words are data” and “the possibilities for data are seemingly endless” (Braun & Clark, 2013, pp. 3, 33). Braun and Clark (2013) explain how good data are rich data that provide “thorough, thoughtful and unexpected” information, rather than common insights, and that assist the researcher to explore and gain an in-depth understanding of their research topic. There are six common types of *qualitative data*: documents, archival records, interviews, direct observation, participant observation and physical artefacts (Gillham, 2000; Yin 2012, 2014). These types of data are also referred to as *evidence* in case study research. In addition to these, qualitative databases can expand to visual and audio data from video tapes, recordings or documentaries, movies and songs – as appropriate for one’s research (Hox & Boeijie, 2005). Typically, there are two types of data: primary and secondary. *Primary data* are generated by the researcher through engaging with research participants or within study environments and *secondary data* are existing material that are primarily produced for a different purpose of study and which researchers analyse, filter and reuse to explore their research question(s) (Braun & Clark 2013; Gibson & Brown 2009; Hox & Boeijie 2005). A secondary analysis of pre-existing statistical data is a well-known methodology in quantitative research practices and has been increasingly recognised as a valid data source in qualitative research. In a qualitative research study, there are five types of secondary analysis of qualitative data (Heaton, 2004), as summarised in Table 1.

**Table 1: Types of secondary analysis in qualitative data**

| Type of secondary analysis | Definition   |
|----------------------------|--|
| Supra analysis             | Transcends the focus of the primary study from which the data were derived, examining new empirical, theoretical, or methodological questions. |

|                        |  |
|------------------------|--|
| Supplementary analysis | A more in-depth investigation of an emergent issue or aspect of the data which was not considered or fully addressed in the primary study. |
| Re-analysis            | Data are re-analysed to verify and corroborate primary analyses of qualitative data sets.  |
| Amplified analysis     | Combines data from two or more primary studies for purposes of comparison or in order to enlarge a sample.                                 |
| Assorted analysis      | Combines secondary analysis of research data with primary research and/or analysis of naturalistic qualitative data.                       |

*Source:* Heaton (2004, p. 38).

My research design is solely focused on secondary data analysis. Among these five types of secondary data analysis, my research method aligns with supra secondary analysis because my purpose for using secondary qualitative data was to derive and analyse primary studies conducted by other researchers and organisations of the same case to explore and address my research objectives using a new theoretical framework.

There are both advantages and disadvantages of using secondary resources for analysis. The following table summarises the advantages and disadvantages of secondary sources based on an evaluation by Greenstein (2006).

**Table 2: Advantages and disadvantages of using secondary data**

| <b>Advantages</b>           | <b>Disadvantages</b>  |
|-----------------------------|---|
| 1) Cost and time-efficient  | 1) Required to exist  |
| 2) Reliability data-quality | 2) Availability of data on appropriate population of your study       |
| 3) Large quantity of data   | 3) Availability of data from the appropriate questions for your study |

*Source: based on* Greenstein (2006).

Using secondary data has the advantage of likely being low-cost and not time consuming as the researcher does not need to build the data collection procedure from scratch. If the data received are from an entity or firm that can invest money and capacity into quality control, the chances are the data produced will be highly supervised, regardless of the capacity of the researchers or the research process. If the data are also produced by large institutions or firms for reasons such as national surveys, they can cover populations that are difficult for a single researcher to access. One disadvantage of relying on secondary data is that the data for the context you want to study needs to exist – clearly, if there are no secondary sources, then the researcher will need to reconsider their research method. Similarly, even when data are obtained from the same context, if the data do not relate to the same population that the secondary data researcher is exploring or if the data were gathered based on very different research questions or problems from those the secondary researcher is investigating, then the researcher may not be able to use the secondary data sources to address their research aims (Greenstein, 2006).

Table 3 provides a justification of the secondary data sources used for my research, using Greenstein’s framework of the advantages and disadvantages of using secondary data sources (Table 2). Based on this review, the advantages of using the secondary data available for my research outweigh the disadvantages, with the review showing that it is justified to use secondary data for the analysis in my study.

**Table 3: Justification for applying secondary data analysis**

| <b>Advantages</b>   | <b>Justification</b>   |
|---|--|
| 1) Cost-efficient   | My study area is in various regions in Myanmar, and I am currently living in Auckland, New Zealand. Using secondary data helped me to access data without logistical costs associated with collecting primary data. Furthermore, collecting primary data was not possible because of border closures due to COVID-19 and military unrest in Myanmar. |
| 2) Reliability, data-quality  | I mainly obtained data from two different types of sources: (1) international organisations such as ERI, and (2) local NGOs that have access and resources in the local areas. The data from these sources are usually coproduced by different organisations in an established network.  |
| 3) Large quantity of data   | In terms of the quantity of data, even though there is no nationwide or state-level data, many studies have been conducted in the context of my research by various INGOs, NGOs and news agencies. The data from these studies are publicly available.   |
| <b>Disadvantages</b>  |  |
| 1) Required to exist  | Data within the context of my study can be found in documents, literature, and visual and audio sources such as documentaries, sound recordings, and photos  |
| 2) Availability of data on appropriate population of your study       | My study populations are the ethnic minority groups that have been impacted by the dam projects in the Salween River basin. The impact of dam development in the Salween River basin has been well documented. There are several secondary data sources relevant to my study population and that are similar to my research context.                 |
| 3) Availability of data from the appropriate questions for your study | The main limitation for me in using secondary data was that I did not have access to the survey questionnaires used by the extant studies. Nevertheless, their findings are relevant to use for analysis and discussions.  |

#### *4.4.1 Secondary data sources*

Pre-existing secondary data comprise of written or audio-visual data that are already available to the public and which are sourced from printed copy, electronic and broadcast media formats (Braun & Clarke, 2013). Of these abundant sources of data, I employed documents as the main data source and literature as a supplementary source to generate evidence to address my research objectives. Documents used for secondary data analysis can be broad and can include news articles, academic works, reports, letters, regulations, policies and so on. My sources of data were primarily drawn from: (1) existing reports from international organisations and local NGOs in the Salween River basin (such as the ERI, Karen Rivers Network, Salween Watch, KESAN); (2) news articles and briefers that covered the dam developments and their impacts on social, environmental and cultural conditions in the basin; (3) global and regional data bases such as the Environmental Justice Atlas (EJAtlas) and Burma Rivers Network; and (4) transcripts of documentaries regarding the lives of those in Salween River basin. I also read reports and academic literature about the political situation and history of ethnic groups of Myanmar to develop a contextual and chronological framework to assist me in the data analysis. These data sources were identified by using both brainstorming and exploring documentary sources approaches (Gibson & Brown 2009). Prior to coming to New Zealand, I worked as a project assistant and associate sustainability consultant, and my knowledge from these roles helped me to identify existing data sources available in my topic of interest. I then listed potential international organisations and local NGOs that work within my study context. I also looked for organisations with strong records in terms of published reports. I made a list of these organisations and analysed the data available based on their relevancy to my research objectives. Afterwards, I filtered out the reports that were the most relevant to my study. I also explored documentary sources for relevancy, especially academic reports, and literature. I used University of Auckland Libraries and Learning Services and Google Scholar to explore extant literatures, using keywords and citation references. Following that, I scanned the documents and filtered them based on information relevant to my study.

#### *4.4.2 Data sampling*

The next part of my data collection was sampling. In general, there are two types of sampling: probability and non-probability sampling. My research employed a non-probability sampling technique called purposive sampling (also known as judgemental sampling). *Purposive*

*sampling* is a sampling method that selects a particular individual, group(s), event(s) or scenario to gather information to address the research question, when any other mean of choice is impossible (Maxwell, 1996). According to Malhotra and Birks (2006), purposive sampling is “cost and time efficient, convenient, and ideal for exploratory design”. The case study setting for my research is located in a particular area, the Salween River basin in Myanmar, and of the many dams constructed or planned in the basin, I chose to focus on the large dams to produce critical information that would meet my research aim. I chose this area because I have worked in similar landscapes while I was in Myanmar. This means that I am familiar with the sources of data, which helped given that I had to analyse the secondary data remotely. Saturation which is commonly applied in purposive samples, is also used in my data collection to determine the adequate data required for analysis (Hennink & Kaiser, 2019).

#### 4.5 Data analysis

The next stage of the research was analysing the collected data. There are three basic foundations in the qualitative data analysis process: looking for patterns, interactions, or stories (Braun & Clark, 2013). There are many ways to analyse qualitative data, and while a researcher is not bound to stick with only one method, they must make sure to always find a means to interpret data for analysis (Coffey & Atkinson, 1996). Of the many qualitative analysis methods available, I chose thematic analysis, using both inductive and deductive approaches. *Thematic analysis* is the method that helps the researcher to make sense of the data sets and identify themes and patterns relevant to the research questions (Braun & Clark, 2013). Thematic analysis is used in research across a wide range of disciplines, including health (Tobler-Ammann et al., 2020), psychology (Frith & Gleeson, 2008), business (Jones et al., 2011), supply chains (Sodhi & Tang, 2018) and education (Burns, 2018). There are three basic concepts to applying thematic analysis: “examining commonality, examining differences and examining relationships” (Gibson & Brown, 2009, p. 128). I use thematic analysis to understand the patterns that have happened across decades of hydropower developments in Myanmar, whether different scenarios occurred within the same context, and the relationship between violence resulting from the dam projects and environmental injustice.

Thematic analysis is a flexible analytical approach that can be used in various research methodologies, and there is no linear framework for conducting the analysis. However, having a structure for the analysis results in a more organised and transparent process, making it easier

for both the researcher to implement and the reader of the research paper to understand (Lester et al., 2020). In this section, I discuss each stage involved in the overall analytical process, applying frameworks from structuring thematic analysis (Lester et al., 2020) and the step-by-step process of thematic analysis (Braun & Clark, 2013). I also explain the use of deductive and inductive approaches in thematic analysis (Azungah, 2018).

Before beginning the analysis, the data must be organised and prepared. Part of this preparation included transcribing the data from the video documentary sources included in the data set. I then read over the data sets, again and again, to familiarise myself with the data before I started coding. Coding is a critical part of qualitative thematic analysis as this enables the researcher to search for commonalities, to categorise specific features in the topics, and to identify and organise themes from the data (Cope, 2010; Gibson & Brown, 2009). Gibson and Brown (2009) discuss five approaches to coding, whereby the researcher looks into: (1) “something that occurs more than once”, (2) “a strong emphasis on something”; (3) “something that is commonly agreed or taken for granted”; (4) “something commonly disagreed”; and (5) for “mistakes [that might] exist”. Keeping those five approaches in mind, I coded the data according to my theoretical framework and research objectives. I then merged the codes into categories, and the categories into themes to finalise the analysis. Table 4 presents the stages of the thematic analysis process.

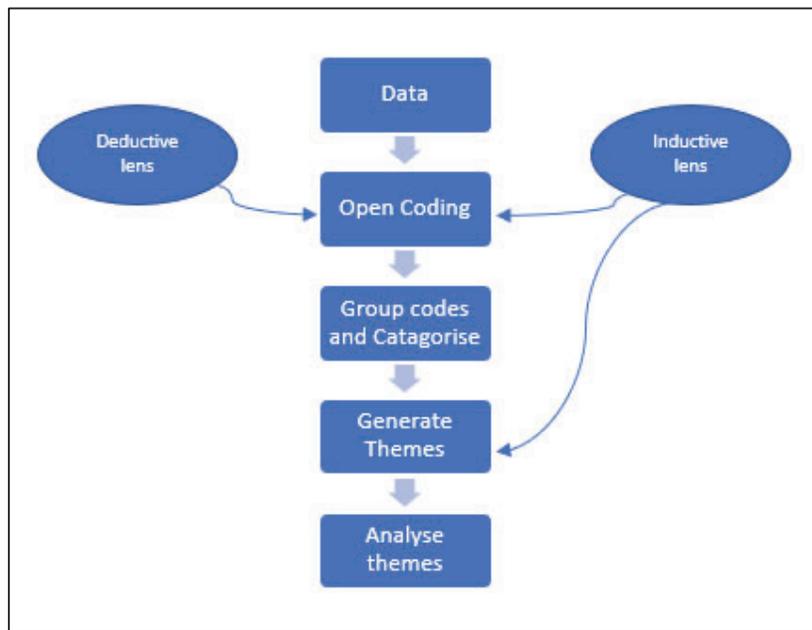
My thematic analysis was guided by both deductive and inductive approaches. When I reviewed my data with a deductive lens, I used the existing conceptual framework as a starting point from which to explore core concepts in the data. Conversely, when I reviewed my data with an inductive lens, I started afresh with an open mind, working with the data to derive any new emerging concepts that were relevant to my research objectives. I used a deductive lens in the beginning of the analysis process, and an inductive lens to develop themes to analyse to address my research objectives (Azungah, 2018; Fugard & Potts, 2019). Figure 4 describes how I employed both deductive and inductive approaches in my analysis.

**Table 4: The stages of thematic analysis process applied in the research**

| Stages                                      | Applications   |
|---|--|
| Stage 1 : Data preparation and organisation | After the data were collected, I built a database, created folders for the respective data sources, and named the data by “title and date produced/collected”. The data sources are also listed in Appendix 1,2 &3.  |
| Stage 2 : Data transcription                | Even though my methodology didn’t involve interviews, I transcribed documentaries for textual secondary data. And I gathered interview quotes from each report.  |
| Stage 3 : Data familiarisation              | I familiarised myself with the data by reading through the data and exploring ideas, experiences, potential gaps, and limitations. I noted down my initial thoughts, reflections, and interpretations as I went.   |
| Stage 4 : Open coding                       | I coded any words or phrases or sentences that aligned with my theoretical framework and those that might possibly be relevant to my research objectives. I applied manual coding by using printed papers, highlights, and memos. These codes were then saved in Microsoft Word. |
| Stage 5 : Grouping codes and categorising   | I checked the relevancy of the codes again and narrowed them down by grouping the codes with common characteristics. The grouped codes were then categorised based on their generic features.  |

|   |   |
|---|---|
| Stage 6 : Categorising codes and identifying themes | I developed themes from the categories. Some themes were merged from different categories and some themes were stand-alone themes.              |
| Stage 7 : Finalising the analysis                   | For finalising the analysis, I studied the commonalities and differences, and the relationships between them, to answer my research objectives. |

**Figure 4: Application of deductive and inductive approaches in the data analysis process.**



#### 4.6 Positionality and reflexivity

As a qualitative researcher myself, my research is influenced by my positionality and reflexivity: from how and why I chose the specific research context to how I see the data is influenced by my social status, history, socio-cultural values, perceptions and political influences developed throughout my life. The subjective approach intertwines these personal values and perceptions into my research process (Dowling, 2005). Positionality is important as

it describes an individual's world view and how they adopt on the research objective and its social and political context (Holmes, 2020). However, we must also be mindful that different people will engage with, shape and perceive the world in different ways. Acknowledging my positionality in the research process requires reflexivity in conducting research and being aware of how this can shape the knowledge produced and relationships with research participants (Braun & Clark, 2013; Dowling, 2005). In my case of secondary research analysis, most of the existing data were generated by the organisations that represent ethnic minorities and the organisations acquired data through interviews and surveys with the ethnic minorities. As described in earlier chapters, there has been conflict - historical and still ongoing - between the dominant Burman ethnic group and the minority ethnic groups in Myanmar. As a Burmese (Burman) myself, there was always the risk that my presence could influence any data collected directly from ethnic minority groups. I overcame this potential problem by employing a research methodology that involved collecting and analysing only secondary data. On the other hand, despite being Burmese, I am well-informed about the political and historical tension between the Burmese and ethnic minorities, not only from my extensive reading of the literature but also through life experiences as non-elite Burmese living in Myanmar and my engagement with ethnic minorities in similar contexts during my previous careers. I factored in these aspects to guide me in this research process.

#### 4.7 Limitations of the research

Yin (2014) encourages the use of multiple sources of evidence in case study research to provide a broader understanding of historical and behavioural issues. Initially, the intention for this research was to employ a primary research design using in-person interviews and observations. However, due to restrictions imposed by the COVID-19 pandemic, I could not travel back to my country to conduct in-person research. Then, in February 2021, the Tatmadaw (Myanmar military) launched a coup and conflicts have been occurring in Myanmar ever since. The escalating political situation in Myanmar at the time of research, as well as the limited access to internet in the country, have both hindered my ability to collect primary data; that is, to conduct in-person or virtual interviews with the stakeholders of the hydropower development projects in the Salween River basin in Myanmar. Therefore, the data for the research have been derived from available secondary sources.

Furthermore, most of the local NGOs that work in the Salween River basin are located in the conflict zones where battles between the military and people's defence forces occur, which

poses limitations in terms of accessing to up-to-date documented data from such organisations. Despite being remotely located from Myanmar at the moment, writing a research paper in the midst of coup was quite challenging. In addition to the difficulties accessing data just described, I also lost opportunities for peer-consultation with colleagues with whom I have worked in some of these same contexts.

#### 4.8 Ethics

The research used secondary data and did not involve interactive engagement with the target population. Therefore, I did not have to request human ethics approval from the University of Auckland Human Participants Ethic Committee (UAHPEC).

However, in recent times, there has been a growing argument about the ethical value of secondary data analysis. There are four areas in secondary data analysis that should be considered to promote ethical standards in secondary research: confidentiality, informed consent, non-maleficence, and fidelity (Goodwin, 2012). In terms of confidentiality and informed consent, my research mainly focused on publicly available data. My experience and engagement with ethnic minorities during my previous career helped me to keep an open mind when accessing the data – I was mindful about not putting my prejudices in the study. When a researcher uses primary data, there is the opportunity for the research participants to correct the researcher if their understandings are wrong - but this option is not available if the researcher is using secondary data. Therefore, when I was unsure about an interpretation during the data analysis phase of the research, I made a judgement call based on my experiences and understandings from my prior engagements with similar communities.

#### 4.9 Conclusion

My research methodology is qualitative and used deductive and inductive analytical approaches. In terms of research design, I used an explanatory case study, applying an embedded multiple-case study approach. I collected my data mainly from documents such as reports, news articles, archival websites, and transcripts of documentaries as well as from songs as textual documents. I also conducted an academic literature review to collect further data and to help in theory development. I used purposive sampling for my research as my study area lies in a specific location with unique cases.

In terms of data analysis, I employed thematic analysis, using both deductive and inductive approaches to code and analyse the data. A deductive approach was used to generate primary theory to help me guide what to “code” from my data based on the research objectives. At the same time, I used an inductive approach to read through the data again to look for the anything that could be relevant to my research objectives. I used the following steps when analysing the data: open coding, grouping codes, categorising codes, and identifying themes. The aim of the data analysis was to understand the patterns, differences, and relationships in the data so that I could address my research objectives.

Table 5 summarises the components of my research methodology.

**Table 5: Summary of research methodology**

| <b>Methodology</b>   | <b>Method</b>                                   | <b>Sampling</b>  | <b>Data Collection</b>   | <b>Analysis</b>   |
|----------------------|---|--|--|---|
| Qualitative research | Explanatory embedded multiple-case study method | Applies purposive sampling.<br>Sample cases are<br>- Lawpita Hydropower project<br>- Kengtawng Dam<br>- Hatgyi Dam<br>- Weigyi Dam<br>- Dagwin Dam<br>- Ywathit Dam<br>- KunLong Dam<br>- Naung Pha Dam<br>- Mong Tong Dam | Secondary data<br>- documents such as reports, archival websites, news articles, textual documents from audio/visual data<br>-literature | Thematic Analysis with deductive and inductive approaches |

## Chapter 5 Findings

In this chapter, I present the findings from the analysis of the eight reports (Appendix 1), seven briefs/newsletters (Appendix 2) and five video documentary transcripts (Appendix 3) about the two operational dams, the Lawpita Hydropower and Kengtawng Hydropower projects, and the seven planned dams on the mainstream Salween River (as discussed in section 2.3 of Chapter 2). Table 6 summarises the status of these dams. Data have been collected from reports and findings of local NGOs and INGOs, which are comprised of organisations working in the fields of research and development, environmental conservation, and human rights.

Using a thematic analysis approach (as explained in section 4.5 of Chapter 4), I explored the different stages of the hydropower development process – from planning to operation – and identified the actions, impacts, and associated harms, losses, mistreatment, destruction, suffering, inequities, concerns and violations that occurred throughout the projects' time lines. From this analysis, I identified four main types of violence: violence on physical realisation, violence on psychological realisation, structural violence, and slow violence. In the following sections, I outline the findings of the cases that support each of these themes in a narrative style. Many of these cases were found to be interrelated with different types of violence.

**Table 6: Operating dams on tributaries and planned dams on the mainstream Salween River in Myanmar**

| <b>Project</b>                          | <b>Location in Myanmar</b> | <b>Power Capacity (MW)</b> | <b>Dam Height (m)</b> | <b>Reservoir Area (km<sup>2</sup>)</b> | <b>Developers</b>   | <b>Power Market</b>                       | <b>Status</b>  |
|---|----------------------------|----------------------------|-----------------------|--|---|---|--|
| Moebye Dam (Lawpita Hydropower Project) | Karenni state              | 248 MW in total            | 11 m                  | 270 km <sup>2</sup>                    | <ul style="list-style-type: none"> <li>Nippon Koei and Kajima Corporation, Government of Myanmar</li> </ul>   | Yangon and Mandalay                       | Operating since 1970s  |
| Kengtawng Dam                           | Shan state                 | 54 MW                      | n/a                   | n/a                                    | <ul style="list-style-type: none"> <li>Zhejiang Orient Holding Group and China National Electric Equipment Co. (CNEEC) and Government of Myanmar</li> </ul>                         | Shan state cities and Pinpet Iron Factory | Operating since 2009   |
| Hatgyi Dam                              | Karen state                | 1360 MW                    | 33 m                  | unknown                                | <ul style="list-style-type: none"> <li>Sinohydro (PowerChina)</li> <li>EGAT (Thai)</li> <li>MOEE (Myanmar)</li> <li>International Group of Entrepreneurs (IGE) (Myanmar)</li> </ul> | Thailand                                  | Joint Venture Agreement and MOA signed in 2010<br>EIA undertaken, preparing construction |

| Project     | Location in Myanmar                | Power Capacity (MW) | Dam Height (m) | Reservoir Area (km <sup>2</sup> ) | Developers  | Power Market | Status  |
|-------------|------------------------------------|---------------------|----------------|-----------------------------------|---|--------------|---|
| Weigyi Dam  | Karen state/ Mae Hong Son district | 4540–5600 MW        | 168 m          | 640 km <sup>2</sup>               | • EGAT  | Thailand     | Feasibility study undertaken, preparing construction, and now cancelled |
| Dagwin Dam  | Karen state/ Mae Hong Son district | 728 MW              | 56 m           | unknown                           | • EGATi   | Thailand     | Feasibility study undertaken, preparing construction and now cancelled  |
| Ywathit Dam | Karenni state                      | 4500 MW             | unknown        | unknown                           | • China Datang Overseas Investment Co. Ltd.<br>• PowerChina<br>• MOEE<br>• Shwe Taung Group | China        | MOA signed in 2011  |

*(Table continued on the next page)*

|             |            |         |         |         |  |       |                    |
|-------------|------------|---------|---------|---------|--|-------|--------------------|
| Kunlong Dam | Shan state | 1400 MW | unknown | unknown | • Hanergy Holding Group<br>• PowerChina<br>• MOEE<br>• Gold Water Resources (Asia World) | China | MOA signed in 2014 |
|-------------|------------|---------|---------|---------|--|-------|--------------------|

| Project  | Location in Myanmar | Power Capacity (MW) | Dam Height (m) | Reservoir Area (km <sup>2</sup> ) | Developers  | Power Market | Status                                   |
|--|---------------------|---------------------|----------------|-----------------------------------|---|--------------|--|
| Naungpha Dam                                   | Shan state          | 1200 MW             | 90 m           | 31.28 km <sup>2</sup>             | <ul style="list-style-type: none"> <li>• HydroChina (PowerChina)</li> <li>• MOEE</li> <li>• IGE</li> </ul>  | China        | MOA signed in 2014                       |
| Mong Tong Dam (previously known as Tasang Dam) | Shan state          | 7110 MW             | 241 m          | 870 km <sup>2</sup>               | <ul style="list-style-type: none"> <li>• CTGC, Sinohydro</li> <li>• China Southern Power Grid</li> <li>• EGAT</li> <li>• MOEE</li> <li>• IGE</li> </ul> | Thailand     | MOU signed in 2010<br>Under construction |

Sources: IFC (2020); Middleton et al., (2019); Salween Watch (2016); SHRF (2018).

## 5.1 Violence on physical realisation

In this section, I outline the incidents that led to violent acts that have had an impact on people's bodies, restricted their movements, and destroyed their land, homes and personal belongings. First, I discuss the relocation of ethnic minorities who were living in the areas around the dam projects, then restriction of locals' movement, and finally the abuse by the Tatmadaw as the military increased its deployment of troops in the area.

### *5.1.1 Forced relocation and displacement*

Given the land required to build a dam, hydropower projects always involve the relocation of people living in the project area. Large infrastructure projects such as dams, airports and roads play a significant role in uprooting and relocating large population groups globally for the sake of land requirement. When dam projects are implemented, the first – and major – direct impact communities in a project area face is relocation and displacement. In Myanmar, forced relocation for dam projects is intertwined with the Tatmadaw's anti-insurgencies campaigns. In the case of Myanmar's first mega dam, studies to determine hydropower potential from the Salween River were done by a Japanese company, Nippon Koei, in the 1950s (Akimoto, 2004). Since the 1960s, the Tatmadaw has undertaken offensives in Karenni state as anti-insurgency campaigns, targeting civilians to block support to ethnic armed resistance groups, including villages along the Prawn River and Salween River areas (KDRG, 2006). Myanmar's first mega dam, the Moebye Dam, was built in 1960 on a tributary of the Salween River as part of the Lawpita Hydropower Project. The scorched-earth campaign associated with this dam carried on until 1975, forcing thousands of people to become homeless. In 1972, about 8000 more families were displaced when the reservoir for the Moebye Dam was filled. Relocation continued until 1996, with many other people being forced from their homes by the Lawpita Hydropower Project expansion. Some of the villagers experienced forced relocation twice (KDRG, 2006).

Even though forced relocation as part of anti-insurgency campaigns by the Tatmadaw may not appear directly relevant to my research topic, I argue it is important to include these campaigns since infrastructure projects such as mining and dams were among the key reasons behind the Tatmadaw expanding their territorial control over the resource-rich ethnic regions (Smith, 1994). In 1996, a scorched-earth campaign by the Tatmadaw occurred in all the states along the Salween River, including Shan, Karenni, Karen and Mon. Studies on hydropower potential

in these areas have been conducted by Thai developers since the 1970s (Karen Rivers Watch [KRW], 2004). Planning and preparation for hydropower development had been on the agenda of the military government even before official agreements for hydropower projects were made in 2000s (Akimoto, 2004; Sapawa, 2006). The offensives in 1996 by the Tatmadaw in Shan state displaced 300,000 people, including 60,000 ethnic Shan who were living around the Kunlong, Naung Pha and Mong Tong dam sites (Sapawa, 2006, 2009). In Karenni state, a large-scale relocation in 1996 caused 37,000 people to be evicted from their homes, the majority of whom were living in the flood zones of dam projects in Karenni (KDRG, 2011). In Karen state, the Tatmadaw increased their troop numbers in order to seize the area and relocate about 24 villages in the Papun district, where the Weigyi and Dagwin dams were proposed (KRW, 2004).

Villages were relocated when the Tatmadaw launched offensives and terrorised areas to fight armed ethnic groups. In many instances, dams were planned in areas on the mainstream Salween River that had been depopulated by earlier Tatmadaw's relocations, meaning there were fewer people remaining in the area who could be reported being affected by the projects (KDRG, 2006). The villagers were moved to relocation sites controlled by the Tatmadaw, with little or no notice and without any compensation. In most cases, the Tatmadaw relocated people to other existing villages without providing any facilities for the increasing populations. The villagers were not always happy in the relocation sites because these were under the control of the Tatmadaw, and violence by troops often followed. Some people who did not want to live in the relocation sites chose to wander in the forest and became internally displaced persons (IDPs), hiding from the Tatmadaw and surviving on their own. Others fled to Thailand as refugees (KRW, 2004). After relocating the villagers, the Tatmadaw burned down their villages or declared them restricted areas, making it difficult for the villagers to return. People who chose to live as IDPs hid near their old villages and were forced to cultivate in secret and to avoid the patrolling Tatmadaw because of the risk of being killed. Various reports provide evidence of villages being burned down, houses and belongings being destroyed and looted, and families being separated and abused because of forced relocation (Action for Shan State Rivers, 2016a; KDRG, 2006; Karen Human Rights Group [KHRG] & KRW, 2018; KRW, 2004; Sapawa, 2006; SHRF & Sapawa, 2018,).

The displacement did not stop even after the country transitioned from a military regime to democratic governance. In 2014, a lethal fight broke out between the Tatmadaw and a Karen

resistance group near the Hatgyi Dam site (KRW, 2016). Taking this opportunity, the Tatmadaw launched offensives to take control of the area. More fighting broke out in 2016 after the government announced their Energy Master Plan at which time the Hatgyi Dam was planned to be finished in 2021–2022. Between 2014 and 2016, more than 5000 people were reportedly displaced to relocation camps due to conflict (KESAN, 2018). The conflicts fueled by the dam project caused people to lose their homes, farmlands and livelihoods, as well as their chances of returning home (KHRG & KRW, 2018). Land confiscation for infrastructures associated with dam development projects, such as office space and roads, also occurred (KDRG, 2006; SHRF, 2014). For example, SHRF (2014) reported that construction for road access to the Kunlong dam site caused 60 villagers to lose their lands and homes in 2012. There was no compensation for this loss.

Forced relocation is the very first step of the physical abuse by the military associated with the dam projects. In the case of the dams on the Salween River, relocation never occurred in a peaceful manner. Relocation forced villagers to leave their lives and livelihoods behind. The cases outlined above highlight the experience of forced relocation and displacement that project-affected communities suffered when hydropower projects were planned and implemented along the Salween River. Even though some villagers remained in the proposed project areas, a large population had already been forcibly removed from the area by the Tatmadaw since the 1960s (Sapawa, 2006). The Lawipita Hydropower Project and Kengtawng dams are past examples of this case (KDRG, 2006; SHRF & Sapawa 2018). Current residents in the reservoir areas of the planned dams along the mainstream Salween River are now under threat of floods. Residents living in the flood areas of the Mong Tong, Kung Long and Nong Pha dams are the same villagers who suffered from the relocation scheme during the 1960 anti-insurgency campaigns (Action for Shan State Rivers, 2016a; Sapawa, 2006, 2009; SHRF 2014). Residents living in the Hatgyi Dam area were temporarily moved to a relocation centre due to the conflict fueled by the dam in 2016, and some of these villagers were also already-relocated villagers from past incidents (KESAN, 2018; KHRG & KRW, 2018; KRW, 2016). The development of the Ywathit Dam is predicted to flood the land of the minority indigenous group Yin Ta Lai, which has a population of just 1000 people (KDRG, 2011). Forced relocation and displacement is the first visible major impact affecting local communities because of dam development along the Salween River.

### *5.1.2 Restriction on movement and resource uses*

In addition to forced relocation, there have been several reports on the struggles encountered by relocated and displaced villagers (Action for Shan State Rivers, 2016a; Akimoto, 2004; KDRG, 2006; KRW, 2004; SHRF & Sapawa, 2018; Sapawa 2006, 2009). To summaries the findings of these reports, the villagers who were moved to the relocation sites were under the strict control of the military and their movements around the village were limited. Restrictions were imposed in village areas, and, in some cases, permits were required to leave the village. Villagers who broke the restriction orders were fined and punished (KDRG, 2006). And the displaced people living in the jungle were no freer; IDPs lived and farmed in secret, to hide from the Tatmadaw (Action for Shan State Rivers, 2016a). IDPs were often killed when they are sighted by Tatmadaw troops as the latter considered them working for the ethnic armed groups (KRW, 2004). Lethal violence on a person's physical wellness was compounded by restrictions on movement.

Restrictions were not only caused by Tatmadaw troops but also by landmines placed in dam areas as security measures for dam sites. In the case of the Lawpita Hydropower Project, approximately 18,000 landmines had been placed around the power stations by 1990, and the area was declared a restricted area (KDRG, 2006). By 2001, it was estimated that 30 local people had died and a further 50 been injured by the landmines, along with the deaths and injuries of 200 livestock (KDRG, 2006). There were cases of people forced to venture into the forest for food who were injured or killed by landmines installed to protect the power plants (KRW, 2004). These kinds of incidents also caused villagers to hesitate about going into the forests to find food or to farm.

People living in the Salween River basin use the river as a mode of transport. Once the dams became part of the government's agenda, militarisation in the area increased and several military checkpoints were established along the Salween River; some parts of the river were even being closed for travel. Due to the increased number of military camps along the river, the villagers simply stopped going to certain areas along the river (Akimoto, 2004; Sapawa 2006). Water resources were also controlled by the dam operators once the Lawpita hydropower plants were built. According to KDRG (2006) before the hydropower plants were built, the local villagers used the water from the river for irrigation. The river water was abundant for the farmers, even in the hot season; however, the utilisation of water became limited once the Moe Bye dam was built. The project operator controlled the reservoir and

waterflow of the Baluchaung River; a tributary of the Salween River, on which the Moebye Dam is located and restricted the use of its water by the villagers. Traditional irrigation methods were also banned by the military to save water for the power plants. Similar controls over water sources occurred when the Kengtawng Dam was built (SHRF & Sapawa, 2018). Based on the experiences of the villagers living near the existing power plants, the local villagers living in the project areas of the new proposed dams were fearful of losing their resourceful lands and forests as well as the threat posed by landmines. Villagers displaced during the conflict around the proposed Hatgyi Dam also feared returning home due to the landmines installed in the area (KHRG & KRW, 2018). And villagers who lived in the Mong Tong Dam area were unable to travel freely on their boats as they were frightened of the military seizing their boats if they were seen. Therefore, taking advantage of the unique geography of the tributaries in the Mong Tong area (see Chapter 2, Session 2.3.1.8), villagers often hid their boats in islets when they used the river for travel (Sapawa, 2009).

As is the nature of farmers and forest dwellers, local communities depend on farming and collecting forest products for their livelihood. People living along the Salween River also depend on the river for transportation and fishing. After seeing the increase in military troops and conflicts generated by the Lawpita Hydropower Project, local communities who are living near proposed dam sites are still concerned about landmines and restrictions placed around the dam sites. Ethnic people's movement in their local area and their use of natural resources have been restricted by the dam projects, which has increased concerns over the development of new dams along the mainstream Salween River (Action for Shan State Rivers, 2016a; KESAN, 2017, 2018).

### *5.1.3 Abuses by the Tatmadaw and their expansion for dam security*

Dam projects not only led to relocations and restrictions, but also to the expansion of the military in the area. The Tatmadaw first launched offensives in ethnic regions as part of anti-insurgency campaigns and took control of areas and land for potential development projects. Once they conquered an area, the number of troops deployed in the area was increased for safety. Military expansion into areas around the dams brought nothing but abuse of the local people. According to several reports (Action for Shan State Rivers, 2016; Akimoto, 2004; KDRG, 2006; KRW, 2004; SHRF & Sapawa, 2018; Sapawa 2006, 2009), villagers have been used as forced labor in the construction of dams and roads, as porters and jungle guides, and in gardens to supply food for the military. Villagers' possessions, such as their houses, livestock,

and personal belongings, were looted by the military. The local people were even forced to serve as mine sweepers. Villagers who did not want to work or act as a porter for the military were fined, and, at times they were even beaten or shot by the soldiers (KDRG, 2006). The Tatmadaw also confiscated villagers' land, with no compensation, to use for their battalions and often extorted the villagers for fees such as porter fees, gate fees, military funding fees, road fees and permit fees to travel (KDRG, 2006; KRW, 2004). Forced labour continued even after the transition to democratic governance in 2011. In 2020, SHRF reported that hundreds of villagers were forced to help build a Tatmadaw tactical command base in the Salween River basin, in an area between the Kun Long and Naung Pha dams (SHRF, 2020).

Physical violence such as sexual harassment and arbitrary killing have also been carried out by military forces with impunity. Twenty-nine cases of rape were reported between 1996 and 2003 in Karenni state and some of the rape victims were murdered after being assaulted (KDRG, 2006). Three rape cases were reported during the construction period of the Kengtawng Dam between 2005 and 2009 (SHRF & Sapawa, 2018). In a separate report, "Licence to Rape", it was claimed that there were at least 625 rape cases between 1996 and 2001 in Shan state by the Tatmadaw (SHRF, 2002) of which about 300 women raped were in the radius of the Tasang (now Mong Tong) Dam (Sapawa, 2006). Most of the sexual harassment cases committed by military troops were left unaddressed or the soldiers were not charged (Akimoto, 2004; Sapawa, 2009). Killing by Tatmadaw soldiers occurred on several different occasions; for example, people were killed while hiding in the jungle (Action for Shan State Rivers, 2016a; KRW, 2004), and villagers forcibly recruited as guides were later killed in the jungle near the Tasang (Mong Tong) Dam site (Sapawa, 2006). Recently, in 2018, civilians who were travelling by boat on the Salween River were fatally shot by Tatmadaw soldiers guarding the survey office of the Mong Tong Dam (SHRF, 2018).

Due to these past incidents, ethnic communities are fearful that new hydropower projects will lead to military expansion and an increased risk of abuses because of the increased troop numbers. There are ongoing conflicts in all the regions along the Salween River and the increasing presence of the Tatmadaw threatens the lives of local villagers. The military presence has already been growing in dam project areas and as the companies came into the regions to conduct surveys and to construct roads and camps (Sapawa, 2006). Even though planned dams have not yet been constructed, the military has already expanded into prospective areas. For example, a military operations command was established in the town near the Mong

Tong Dam project area in 2000 (Sapawa, 2006), military troops took over many areas near the Hatgyi Dam site in Karenni after the 2014–2016 conflicts with ethnic armed groups in the area (KESAN, 2018), and more battalions were deployed for the security of dam project staff in the Ywathit Dam area in 2011 (BRN, 2011b). Meanwhile, the Naung Pha Dam is located in an active conflict area and it is expected that the dam project will ignite more conflicts and bring more Tatmadaw troops into the area (Action for Shan State Rivers, 2016b). Several abuses towards the local communities have already occurred as troop numbers have expanded.

Local communities are not the only stakeholders affected by the violence produced by the hydropower development process. Engineers and surveyors involved in the projects have also been victims of violence, with many reports of abduction and even killing of project staff caught up in the conflict between the Myanmar government and ethnic armed groups. For example, in 2006 and 2007, in two separate incidents, two engineers from EGAT were killed (one by a landmine and the other by a grenade attack at the hands of an armed ethnic group) at the site of the Hatgyi Dam (BRN, 2011b); in December 2020, at least three people, including foreign technicians, were killed when the Karenni National Progressive Party (KNPP) attacked military trucks near the Ywathit Dam site (BRN, 2011b); and in 2011, four Chinese engineers went missing while surveying the area around the Tasang (now Mong Tong) Dam (BRN, 2011b).

If the proposed dams were to move forward, the projects will fuel more conflicts and result in more military troops being employed in the Salween River basin. This will likely lead to further abuse and violence, as already seen in the region. The local villagers are worried that the dams planned for the area will bring nothing but intensification of the military's oppression towards the villagers in the river basin.

## 5.2 Violence on psychological realisation

Hydropower development projects not only bring violence on the physical body of project-affected people but also on the psychological realisation of these people through assaults and threats or manipulation with inadequate information and false incentives.

When the Lawpita Hydropower Project was constructed, the military government used the threat of violence and violent force to urge residents to abandon their homes and relocate to the resettlement sites. The villagers affected by the Lawpita Hydropower Project were not given prior notice nor compensation (KDRG, 2006). Although they did not want to move, they

had to obey as they feared the intimidating presence of Tatmadaw (KDRG, 2006). Even after relocation, the violence continued in the resettlement sites and the villagers there lived in fear of abuse by the Tatmadaw. The IDPs also lived in constant fear, hiding from the Tatmadaw. Furthermore, the Tatmadaw used their power and guns to force people living in the resettlement sites to work for them (KDRG, 2006). People who lived in the area around the Lawpita Hydropower Project were used as forced labour for so long that many ended up thinking of it as their way of life (KDRG, 2006). People lived in a state of fear throughout their lives (KDRG, 2006; KRW, 2004). Women also lived in constant fear of sexual assault by Tatmadaw soldiers (Sapawa, 2006, 2009).

Conversely, the Tatmadaw and project developers also used words, the false promise of facilities and the provision of services to manipulate people into supporting the dam projects (KDRG, 2006; KRW, 2004; Sapawa, 2006). When Lawpita was planned, the military government conducted a campaign telling local people in the project area that the Lawpita hydropower plants were an “advancement of your lowly living standard” (KDRG, 2006). However, what the villagers received was the destruction of their lives. When the seven dams were planned on the Salween River, the military government used “infrastructural development” as a mean to boost national patriotism and as a carrot to induce a ceasefire between the Tatmadaw and local ethnic groups (KRW, 2004). People were also recruited under the banners of “volunteer” and “patriotism” as free labour to help in construction of the Lawpita Project and were punished if they refused (KDRG, 2006). The project developers also tried to cultivate the villagers’ approval for the planned dam projects by providing healthcare and education services in the affected villages – without mentioning the negative impacts of the dams (Sapawa, 2006).

When the Weigyi and Dagwin dam projects, were still in process, the planning of the dams caused concerns and worries among the villagers in the flood area (KRW, 2004). However, the villagers felt helpless about the situation as they did not feel they were powerful enough to talk to the military to stop the projects (KRW, 2004). The villagers living around the Hatgyi Dam site also expressed feelings of being powerless against the military government and being unable to prevent the dam projects (KHRG & KRW, 2018). The planned dam projects along the Salween River have brought fear and insecurity into the day-to-day lives of the local communities: firstly, by bringing the perpetrators of violence to their lands; and secondly, by

causing anxiety among the local ethnic people about their future if their homelands are flooded (Action for Shan State Rivers, 2016b; KESAN, 2017, 2018; Sapawa, 2009).

### 5.3 Violence in participation, decision making and benefit sharing

Hydropower development in the Salween River basin has not only caused violence towards the physical and mental well-being of local people, but also violated the rights of local communities in many other ways. From the post-independence period until the transition to a democratic government in 2011, the country was under a military regime. Many hydropower projects were implemented and planned by the military government, who did not follow required compliance requirements and procedures in planning mega infrastructure. While analysing the data from the several reports, I discovered that the rights of local communities were violated in many ways. In this section, I outline the violence in terms of communities' rights to participate in the planning, implementation and operation of hydropower projects and the overall oppression of ethnic minorities in government structures such as the systematic use of forced labour.

Even though the hydropower projects are located in regions that are highly populated by ethnic minorities, the ethnic minorities never had a say in the projects. As mentioned in Chapter 2, section 2.3, studies for dams on the Salween River were conducted between the 1950s and 1970s by various companies and the military government, but none involved the participation of local ethnic communities. When the Kengtawng Dam was built between 2005 and 2009, the construction site was inaccessible to the public due to heavy military security (SHRF & Sapawa, 2018). Neither of the two dams that are currently operating involved the local communities in the planning stages. A similar situation occurred when the seven new dams were planned on the mainstream Salween River. There are examples of secret surveys being done for new dams under military guards (KDRG, 2011; SHRF & Sapawa, 2018).

Locals were not consulted about the changes that would happen to their regions when the dams in the basin were planned. In the case of the Lawpita Hydropower Project, the villagers were not informed about the impacts of the project, not even for the relocation. They were given only short notice about relocation and their grievances were ignored when they complained about the relocation process (KDRG, 2006). Even though the seven dams on the mainstream Salween River are not completed yet – and some of them are suspended (see section 2.3.1) – various stages, such as feasibility studies, EIAs and construction of roads and offices have been

completed at different dam sites. The local communities were excluded from receiving information about the dam projects. Under the authoritarian military regime, the military government made decisions under a dictatorship and anyone who opposed their decision was ill-fated (Akimoto, 2004). The military government did not conduct public consultation. The villagers living along the Salween River were not given information about the proposed dams. When the locals learned about the dam plans from third parties, they expressed their fears and concerns. Villagers living around the Weigyi and Dagwin dam sites were worried about flooding over their lands (KRW, 2004). People living downstream were worried about the unpredictable water flow and risk of dam breakage because of earthquakes (SHRF, 2014). Most importantly, there were concerns about the increased deployment of military troops in the dam sites, which could lead to more human rights violations and conflicts with ethnic armed groups (KHRG & KRW, 2018; SHRF, 2014).

When the country transitioned to a democratic government in 2011, the companies started initiating public consultation for the EIA studies. However, the local people reported their unwelcoming setting and the inadequacy of these public consultation process (Action for Shan State Rivers, 2016b). For example, public consultation for the EIA study of the Naung Pha dam by the Australian consulting company SMEC was reportedly criticised by the local communities as the study was conducted in secret without informing the locals. In addition, when the company called for public consultation, they invited the villagers only a few hours before the meetings. Even though the participants voiced concerns and opposition towards the dam plan, the process was announced as “successful” on the project website (SHRF, 2014). Another example is when a public forum with villagers was held in 2015 where representatives from EGAT presented information about the Hatgyi Dam; the attendees claimed EGAT’s information was inconsistent and there was a lack of transparency in relation to the villagers’ questions (KESAN, 2015).

In addition to a lack of transparency and exclusion from participation in the hydropower development projects, another form of oppression under military rule was the use of systematic forced labour. Despite the International Labour Organization’s (ILO) warning in 1998 about the use of forced labour in large infrastructure projects, including hydropower projects, the Tatmadaw continued using local communities as a workforce to construct the dams and related infrastructure against their will (KDRG, 2006). Even though the Tatmadaw released orders in 1999 to punish anyone who was found to be using forced labour, including forcing villagers to

act as porters, and they officially announced an end to forced labour in 2000, Tatmadaw battalions continued to use villagers as the labour for their troops and for construction of dam and associated infrastructures (KDRG, 2006; KRW, 2004). The use of forced labour was widespread and accepted in the military, whereby even soldiers who witnessed the violence could not speak out as it could lead to trouble for them in the military (KDRG, 2006). Arbitrary killings and sexual abuses have followed wherever the military troops have been stationed, and these crimes have been barely addressed, let alone the perpetrators punished. Forced labour, killing and sexual abuses towards local communities are normalised within the military institution.

When hydropower projects in the Salween River basin are implemented, it is the local communities who suffer the severe negative impacts of these projects and who also benefit the least. For example, the electricity generated from the Lawpita hydropower plants is sent to the urban cities in Myanmar while most of the villages in Karenni still do not get access to the power. And even those who have received electricity got only a nominal amount as the voltage was too low to light up a bulb (KDRG, 2006). Likewise, the electricity from the Kengtawng project is mainly sent to the military government-affiliated factories in Shan state (SHRF & Sapawa, 2018). Similarly, the electricity produced from the new dams on the mainstream Salween will not be distributed to the local villagers – the purpose of these dams is to generate revenue by selling the electricity to China and Thailand (see section 2.3). The ethnic minorities did not have a say in the decision-making processes relating to the resources in their homeland and the centralised government system of Myanmar prevents the ethnic minorities from taking part in resource management.

Lack of information, lack of participation, lack of transparency, systemic abuses built into institutions and inequitable resource sharing from past and current hydropower projects in the Salween River basin affirm that there is a violence built into the structure of the Myanmar government, who are the main proponent of the hydropower projects.

#### 5.4 Destruction of ecological, socio-economic and cultural values

Hydropower projects along the Salween River not only destroy the lives of the people who live (or used to live) there, they also destroy the ecological, cultural, and socio-economic conditions in the region. In this section, I highlight the findings about the impact of these hydropower

projects on local forests and fisheries, cultural practices and social networks, and the health and education systems of the local communities.

When the Lawpita Hydropower Project was implemented, the water level of the Lawpita waterfall was drastically reduced (KDRG, 2006). In addition to this, the evergreen and monsoon forests that grew over 260 square kilometres in the Baluchaung basin were heavily extracted when the Lawpita Project began. After the dam was built, the floodplain of the Baluchaung river was filled with sediment, making the land unsuitable for farming. Fish population decreased within the 5 years of dam construction. Species such as Hamilton carp and loach became extinct in the area (KDRG, 2006). Similarly, after the Kengtawng Dam had been built upstream of Kengtawng's famous Zong Arn waterfall, the reduced water flow turned the seven-cascade waterfall to only a two-cascade waterfall in the dry season (SHRF & Sapawa, 2018). The teak forest in the basin was cleared for the damming of the rivers and fisheries declined to the point that large fish species disappeared and only six species of small fishes were left in the Nam Teng River; another main tributary to the Salween River where Kengtawng was built (SHRF & Sapawa, 2018). The local communities and many environmental conservation groups worried about similar ecological impacts associated with the new dams on mainstream Salween River (Action for Shan State Rivers, 2016b; Akimoto, 2004; ERI, 2002; KDRG, 2011; KESAN, 2017; KRW, 2004; Sapawa 2009). Forests have been cleared around most of the new dam sites. For example, excessive logging has occurred in the Mong Tong Dam area, carried out not only by the military and their affiliated companies, but also by the ethnic armed organisations (EAOs) that had signed cease-fire agreements with the ruling military regime (Sapawa, 2006, 2009).

There is a huge concern about flooding expressed in various reports. Flooding concerns are related to destruction of livelihood and cultural heritage. In Karenni state, only a few areas are available in the basin for the low-land wet-rice farming that locals depend on for their main source of income (KRW, 2004). Low-land farming on the fertile soil of the river basin is a primary livelihood in Shan state as well (Sapawa, 2009). These precious lands will be flooded when the new dams are built. Another concern is that the proposed dams risk destroying the unique landscapes in the basin. For example, in Shan state, the proposed dams impose threaten the destruction of the unique ecological landmark referred to as "One Thousand Islands" on the Pawn River (Sapawa, 2006). When the Mong Tong Dam is built, the flood will destroy not only this landscape, but also the tradition of exchanging food between the different villages

located in those different islets (thousand islands) of the Pawn River (Akimoto, 2004). Local livelihoods and social networks will be destroyed by the flood when the dam is built (Sapawa 2009). The temples and forests with spiritual values in the flood areas will be destroyed. The relocation will not only alter the locals' livelihood, but it will also prevent the locals from being able to celebrate traditional festivals that require visiting from village to village and using forest products for festival meals (Action for Shan State Rivers, 2016b; Sapawa, 2009). Likewise, the flood from the Ywathit Dam will destroy the land of the Indigenous Yin Ta Lai people (KDRG, 2011), and the flood from dams in Shan State will destroy the temples in the area (Action for Shan State Rivers, 2016b; Sapawa, 2006, 2009). Most importantly, the floods from the proposed dams will destroy the home lands of the relocated people, including IDPs and refugees, making them unable to return home forever, along with submerging their history and culture (Action for Shan State Rivers, 2016b; Akimoto, 2004; KDRG, 2006; KRW, 2004; Sapawa, 2006, 2009).

Changes in water flow of a river due to dam construction can create more favourable breeding grounds for mosquitoes. This leads to the spread of diseases such as malaria and elephantiasis (Huanok, 2006). The villagers who were forced to stay in the jungle were vulnerable to these kinds of diseases (KRW, 2004). The IDPs also faced harsh weather and malnutrition. The difficult lives of IDPs caused insufficient rest and nutrition for pregnant moms, which led to death of newborn babies (KRW, 2004). The restrictions imposed by dam security also prevented villagers to access necessary healthcare. Likewise, IDPs did not have access to education as they lived the lives in secrecy. The schools were frequently relocated due to conflict or lack of teachers and teaching resources. This led to lower education rates in the conflict prone regions (KRW, 2004, Smith, 1994).

Dam construction not only destroys the ecology and culture of local communities in project areas, but it also creates prolonged impacts on the livelihood, social welfare, and health and education of the people who live – or used to live – in the areas around the dams. These are impacts that can last for generations. Most importantly, when the new dams submerge lands, the IDPs and refugees will lose their homes forever.

## 5.5 Conclusion

Even though the mainstream dams are not yet completed, many human rights violations have already been observed as the preparation of the dam projects have stretched over a long period.

In addition, studies of the completed dams highlight past experiences of hydropower development in the Salween River basin. A review of different projects reveals different types of violence on the physical and psychological well-being of humans, violence built into government structures, and violence on abstract values of the communities. Each and every one of these types of violence has long-term impacts on the minority ethnic communities in the dam-affected areas. In the next chapter, I discuss these types of violence and their influence on environmental justice for these ethnic communities.

## Chapter 6 Discussion

### 6.1 Violence from the Salween dams

The development and operation of hydropower dam infrastructure in the Salween River basin has produced – and continues to produce – infrastructural violence in the forms of direct, structural, and slow violence. The findings of the data analysis confirm this statement by showing that different forms of violence have occurred throughout the various stages of the development of the Salween dams infrastructure. There are forms of violence that are directly imposed on the physical and psychological well-being of project-affected people as well as, in some cases, the builders of the infrastructure as well. There is violence built into the system of infrastructural development that limits the ability of affected stakeholders to participate in decisions about the dams themselves. And, moreover, the consequences of these incidents result in long-term impacts that cause slow violence towards nature and people. Table 7 summarises the violence evident from the cases of hydropower development in the Salween River basin.

In the following sections of this chapter, I discuss the nature and relationships of these forms of violence based on the findings of my analysis. In this chapter, I demonstrate how there are interconnected relationships between various forms of violence that overlap. I also show how infrastructural violence influences efforts to achieve environmental justice for the ethnic minorities living in the Salween River Basin.

**Table 7 : Categories of violence produced from the development of the Salween hydropower dams**

| Category of violence | Description of violence  | Actions   | Results   |
|----------------------|--|---|---|
| Direct violence      | Actions that have an impact on an individual or group's physical body(s), which restricts their movements and ability to perform to their potential. | <ul style="list-style-type: none"> <li>• Forced relocation and displacement by the dam project</li> <li>• Forest clearing and floods caused by the dam project</li> <li>• Restriction on movement by the Tatmadaw</li> <li>• Restriction on movement by land mines around the dam sites</li> <li>• Forced labour for dam construction and the Tatmadaw</li> <li>• Torturing and killing</li> <li>• Sexual harassment</li> </ul> | <ul style="list-style-type: none"> <li>• Loss of livelihood</li> <li>• Loss of access</li> <li>• Death, trauma, and other physical harms</li> <li>• Separated from family</li> <li>• Loss of homeland and properties</li> </ul> |
|                      | Actions that have an impact on an individual or group's mental well-being, and which restricts their ability to perform to their potential.          | <ul style="list-style-type: none"> <li>• Threats by the Tatmadaw to follow their orders</li> <li>• Manipulation by the Tatmadaw to accept the dam projects</li> </ul>   | <ul style="list-style-type: none"> <li>• A sense of hopelessness about living under the Tatmadaw's control</li> <li>• A feeling of powerlessness to stop the dam projects</li> </ul>  |

|                     |  |   |  |
|---------------------|--|---|--|
| Structural violence | Actions and policies built into a system that create a situation where poor and marginalised groups are oppressed. | <ul style="list-style-type: none"> <li>• Conflict between the Tatmadaw and ethnic armed groups</li> <li>• Uneven resources and benefit sharing</li> <li>• Lack of participation in decision making</li> <li>• Lack of law enforcement and redress</li> <li>• Systematic use of forced labour</li> <li>• Rape culture</li> </ul> | <ul style="list-style-type: none"> <li>• No chance of participation, no collaborative-management</li> <li>• Unable to raise voice</li> <li>• Grievances unnoticed</li> <li>• Receive no benefit but experience harm</li> <li>• Lives of people undermined</li> </ul> |
| Slow violence       | Actions the results of which are effective on long temporal scale.   | <ul style="list-style-type: none"> <li>• Destruction of natural environment</li> <li>• Destruction of livelihood</li> <li>• Destruction on heritage and culture values</li> <li>• Destruction of socio-economic conditions</li> </ul>   | <ul style="list-style-type: none"> <li>• Loss of way of living</li> <li>• Loss of identity</li> <li>• Disconnection from land</li> <li>• Generational poverty and marginalisation</li> <li>• Changes in climate</li> <li>• Decline in biodiversity</li> </ul>        |

### *6.1.1 Dam-induced direct violence*

The hydropower dams in the Salween River basin are large-scale infrastructure development projects that are an explicit manifestation of violence. The assemblance, circulation and entanglement of infrastructure can embody different forms of violence (Rodgers & O’Neill, 2012). In the section, I begin by discussing, how violence can be directly generated through the mere existence of these infrastructures. Direct violence is an influence on the physical and psychological well-being of the object that prevents them from using their utmost capability to achieve their best potential results (Galtung, 1969). There is a large body of literature that explores the direct human and environmental impacts caused by large dams globally. These impacts include resettlement, land loss, ecological destruction and, at worst, deaths of land defenders (Baird, 2020; Blake & Barney, 2018, 2022; Del Bene et al., 2018).

As is the nature of large dams, the development of the dams in the Salween River basin required extensive land clearing and relocation works, especially when the dams were planned in the frontier of lands contested by ethnic minorities. The first direct violence associated with dam projects is the destruction of the forest and ecosystem through land-clearing for built infrastructure and floods from the reservoirs. A report produced by KDRG captured the perspectives of people affected by the Lawpita Hydropower Project, one of the villagers shared how the dam damaged their forest and riverway:

“The landscape has been changed, forest have vanished, and the rivers have dried up – including many smaller streams that fed into the Baluchaung River from the forests that used to grow nearby. These streams, the river and the environment were a part of the local villagers’ lives.” (quoted in KDRG, 2006)

These land-use changes associated with dam construction result in a “loss of commons”, which are the critical assets of a rural communities that they need to sustain their livelihoods (McCully, 1996, p. 79). The forests provide the ethnic minorities with wood, herbs, medicine and edible flora and fauna while the rivers and streams provide fisheries and the fertile soils that support their farming. The destruction of forests and such lands take away all these natural resources that are essential for their people’s survival. In addition, the proposed Naung Pha and Mong Tong dams are to be built on a major fault line, which exposes the local people to the risk of dam breakage. Dam breakage and collapse has the potential to cause direct catastrophic

violence that will submerge any land and dramatically affect biodiversity existing downstream of the dam (Baird, 2020).

The history of dam development in Myanmar has shown that forced relocation and displacement are inevitable processes in hydropower development projects because of the requirement of “space” for power plants, reservoirs, and associated infrastructure such as access roads and cable lines for the whole hydroelectric infrastructure. This negatively impacts upon the homeland of the people inhabiting project areas. Two examples of the Salween River hydropower projects, the Lawpita Hydropower Project, and the Kengtawng Dam, show how relocation was brutally implemented even before the dams were built and the reservoirs flooded the land (KDRG, 2004; SHRF & Sapawa, 2018). Since 1996, military campaigns in the project areas of the proposed dams have depopulated the villages that once existed there. Experiences of violent relocation were recounted by an individual from a Shan ethnic minority group from the area in which the Mong Tong dam was constructed, and who became a refugee in Thailand:

“I am from Nam Pang village. It was just a small village, with only 12 houses. The Burmese soldiers gave the order to our headman that we must leave our village. If not, we would be shot on sight. Together with my children and grandchildren, I fled to Thailand. We left behind our farm, our property, our animals.” (quoted in SHRF & Sapawa, 2018)

According to the World Commission on Dams (2000), between 40 to 80 million individuals around the world have been relocated and resettled by dam projects, which has been worsened by inadequate resettlement scheme that negatively impacts upon people’s lives over time. Mega dam projects usually involve involuntary resettlement of the communities living in the project areas (Fujikura & Nakayama, 2013). In addition to leaving their homes and farms behind and having their day to day lives destroyed, relocation because of infrastructure is a stressful experience as it is usually undertaken as an order from a group with more power, such as government. This can make people feel powerless and as if they have no control over their living situation (Hwang et al., 2007).

The involvement of government here is a reminder that infrastructure is not a standalone body; rather, it is designed and operated by a range of infrastructure actors (Rodgers & O’Neill, 2012). Through the process of infrastructure development, direct violence is perpetuated by the project proponents, which in the case of the dams in the Salween River basin is the Tatmadaw.

For both past and current projects, the dams in the Salween River basin brought the Tatmadaw into the project areas throughout the various stages of the infrastructure development, and various violent actions towards the local ethnic minority groups followed. According to the findings of this research, the lands of the people living around the dam sites were confiscated, the people were forcefully relocated, their lives were controlled under the command of the Tatmadaw, they were used as forced-labour, and extreme physical harms such as murder and sexual harassment were committed by the Tatmadaw on them. Evidence to support these allegations can be found in multiple documents. For example, the following quote is from a village head who was relocated from his village for Weigy and Dagwin Dam and was used as forced labour:

“After they drove the people out, we had to build houses for the soldiers, we had to make fences for them, and we have to go for Loh Ah Pay (general labour).” (quoted in KRW, 2004)

A Karenni farmer who fled to Thailand after being relocated because of the Lawpita Hydropower Project shared his experience of restriction on movement and witnessing murderous treatment towards the villagers:

“Villagers dared not go out without permission; otherwise they could be arrested or killed. I saw soldiers brutally torture and shoot two persons going out without permission.” (quoted in KDRG, 2006)

A Karenni woman from Htee Ta Nga village, who lived within the Lawpita Hydropower Plants security zone, recounted the vulnerable life of women who were at risk of sexual harassment, or worse:

“When we lived in Htee Ta Nga, I witnessed an occasion when SLORC soldiers came to the village and ordered all the men to stay in one house. This left the women alone and vulnerable in their respective homes. We were very much afraid. Some of the women were raped in their own homes.” (quoted in KDRG, 2006)

Development of hydropower projects not only brings violence on the physical bodies of the project-affected people and their tangible belongings, but also on the psychological realisation of these people. Proponents of the dams in the Salween River basin have used both threats

(fear) and incentives to make locals listen to their orders and support the building of the dams. A Shan villager who was forced to work on the construction of the Tasang (Mong Tong) Dam shared his fear and experience:

“I helped construct a building near the dam site for the soldiers. I received no payment for my work, and I did not want to do the work. But I knew that if I refused, I would be arrested.” (quoted in Akimoto, 2004)

While one proponent of the dams, the Tatmadaw, used force, threats and terror to maintain order, another proponent group, the foreign developers, used incentives to build a positive image of the dams while at the same time, not revealing all the information. For example, this local resident of Mong Tong town explained the approach used by major local construction group MDX:

“MDX is trying to make us believe that building Tasang Dam will improve our lives so that we will support the dam and not try to destroy the transmission lines. They told us that dam will bring lots of visitors and tourists...but they never told us about negative effect.” (quoted in Sapawa, 2009)

This quote and findings from the research align with Galtung’s (1969) discussion of violence on psychological realisation. As the findings show, negative influences (threats, terror, punishments) were used by the Tatmadaw to force the local people to obey the military regime and to perform tasks against their will. The research also shows how local people were manipulated into supporting the dam projects through rewards and incentives (positive influences), while simultaneously, information about the adverse effects of the dams was withheld from those most affected. These actions prevented local people from realising their right to say no (to the dams) and undermined their ability to see the full impacts of hydropower development.

The nature of dam infrastructure destroys the geographical landscape and takes “space” away from local communities, resulting in the loss of forest, water sources and ecosystem services, as well as seizure and destruction of farmlands. These losses, in turn, significantly compromise the ability of local people to grow and collect their own food and generate income, meaning that their livelihood and living standards are degraded to a substantial degree (Aung et al., 2021). The research has also presented evidence of when dam proponents have executed violence on the physical and psychological well-being of local communities. This can be

interpreted as direct violence as these actions were intentional and manifested among the target groups (Imbusch, 2003).

### *6.1.2 Structural violence through dam infrastructure projects*

In addition to the direct violence produced by the nature of dam infrastructure, the research has revealed structural violence has been executed systematically and indirectly throughout the dam development process in the Salween River basin (Farmer, 2004; Rodgers & O'Neill, 2012).

The research has revealed different forms of structural violence exercised through the development of the hydropower dams in the Salween River basin. The first one is *state violence*, where state policies and regulations impose violence during the development of the hydropower infrastructure. As explained in Chapter 2, in the political history of Myanmar, the Myanmar government and Tatmadaw are dominated by the Burman majorities. Oppression by these institutions towards ethnic minorities has existed since independence. Even though there are various actors who have a role to play in Myanmar's water governance, including the government, the Tatmadaw, ethnic armed organisations and project developers (Middleton et al., 2019), the regulation of the large hydropower projects are under the control of the central government and implemented through a top-down governance structure (Michel, 2020). The hydropower projects lie primarily in the Frontier regions, areas that are contested by the minority ethnic groups who live there. The ethnic minorities are the most vulnerable to and most marginalised by the projects and have been – and still are – excluded from the decision-making around hydropower development and management of the local water resource. Findings from the data analysis show various instances of a lack of participation in decision-making by the ethnic minority groups, failures to address grievances raised by ethnic minorities and project-affected people, and unequal benefit sharing from the resource extraction by the hydropower developments in the Salween River basin (KDRG, 2006; Sapawa 2009; SHRF, 2014). The locals were forced out of their homeland without consultation and compensation when the Lawpita Hydropower project was implemented; public consultations were not carried out when the dams were planned and agreements made with foreign investors, and information about the dams was not fully disclosed to the villagers. In addition, the violence committed by the Tatmadaw often went unaddressed and the locals' grievances ignored. State violence occurs when ethnic minorities suffer forms of disadvantages, yet these processes are legitimised under the regulation of State (Sims, 2021). The centralised management of the government of

Myanmar prevents ethnic minorities from fully participating in the resource management of their regions. This has led to the signing of Memoranda of Understanding for dam development in the Salween River basin with foreign investors without consultation with or the consent of local ethnic minorities living in the areas affected by the projects, and decision-making processes with little or no involvement with and participation by the local communities (Zerrouk, 2013). The situation in the Salween River basin resembles findings from other studies wherein people who are sacrificed for the national interest are usually those who belong to marginalised, tribal, or poor community groups (Zaman, 1996).

As well as state violence, another form of structural violence evident in the development of hydropower dams in the Salween River basin is *active infrastructural violence* (Rodgers & O'Neill, 2012) whereby the articulation and functioning of the infrastructure of the dams was intended to generate violence. The hydropower dam projects in the Salween River basin have been built not only as part of efforts to achieve economic development for Myanmar, but also as a strategic movement by the military government to move their armed forces into territories and lands defended by minority ethnic forces. From the Tatmadaw's scorched-earth campaign in 1996 (KDRG, 2006; Sapawa, 2006) to conflict in the Hatgyi Dam area in 2016 (KHRF & KRW, 2016), these findings show the State (military) government's attempts to expand into the ethnic regions through a development agenda. The Tatmadaw has placed landmines around the dam sites not only to secure the infrastructure itself but also to keep villagers in controlled relocation sites and to regulate their movement and rule them. This territorialisation has fuelled the ongoing conflict between the Tatmadaw and armed ethnic minority groups. Dams fuelling conflicts has been one main reason why ethnic minorities have widely objected to the dams. Forced relocation and expansion of militarisation as part of dam construction are among the military strategies used to secure land in the ethnic regions (Michel, 2020). For the Myanmar government, hydropower projects in the Salween River basin have not only strengthened their position in the region, but also made them access to the energy hub in the nation (Zerrouk, 2013). In addition, these developments have fuelled the ongoing conflicts in the Frontier areas and created a violent environment (Gleitsmann, 2012; Hengsuwan, 2013).

Dam developments in the Salween River basin also produce *passive infrastructural violence* (Rodgers & O'Neill, 2012) whereby marginalised ethnic communities have been excluded from or had limited access to the services and benefits of the infrastructure. The findings show that when the Lawpita hydropower plants were built, the locals couldn't access sufficient

electricity. A resident who managed to get electricity referred to this as “name-sake electricity” and claimed that “the light of the bulb is only slightly brighter than a tomato” (KDRG, 2006), while some villagers still do not have access to electricity at all (KDRG, 2006). The electricity from the planned dams with their associated hydropower plants will be exported to foreign countries, which means that locals will be excluded from the benefits of electricity while, at the same time, they will be adversely affected by the negative impacts of the dams; that is, not only will the local communities miss out on the benefits from the resource extraction, they will also lose their land and the ecosystem services derived from the local environments, as well as be exposed to ongoing armed conflicts. The unfairness of dam development is evident in the following quote from a villager who lives near the site of the planned Hatgyi Dam:

“This planned dam will not benefit our country and people in Myanmar. Only poor farmers will be impacted. They will not provide electricity to farmers even if they get electric power. They will only sell the electric to the China and Thailand. So think, who will benefit.” (quoted in KHRG & KRW, 2018)

The planning of dams in the Salween River basin without consultation with local communities or processes to enable their participation has ended up in unequal benefit sharing and compensation (Zerrouk, 2013). It could be argued that public participation and consultation was encouraged and implemented after the transition to democratic governance in 2011, with consulting company SMEC’s attempt at public consultation around the proposed Mong Tong and Naung Pha dams (Action for Shan State Rivers, 2016a, 2016b) and EGAT’s meeting about the Hatgyi Dam (KESAN, 2015) as examples. However, the attempt to conduct EIA in “secrecy”, calling for consultation meetings “a few hours in advance”, announcing meetings “successful” despite receiving many grievances and opposition (Action for Shan State Rivers, 2016), and the fact EGAT did not disclose the specifications of the dams (KESAN, 2015) highlight that public participation was only tokenistic and villagers were not given adequate space to be heard or knowledge to contribute to the dam projects. The priority given to economic interests in Myanmar has led to a lack of transparency and limited the ability of marginalised ethnic groups to take part in decision making about managing of their resources (Suhardiman et al., 2017).

In addition to these forms of violence, forced labour is *rooted in the system and strategically employed by the Tatmadaw* in dam building. Throughout the Salween River basin, villagers have been strategically relocated and kept under Tatmadaw command to be of use at any time.

The villagers were persuaded that working for the dam projects is a patriotic act. In addition, the Tatmadaw also intimidated villagers into forced labour. Despite the ILO calling for the cessation of the use of forced labour, the military government in Myanmar continued to use forced labour in its dam projects (KRW, 2004; Sapawa 2006).

There have been numerous reports of sexual harassment and sexual violence against ethnic minority women living around the dam projects in the Salween River basin. Sexual violence is a form of direct violence and is embedded in the culture of the Tatmadaw. Violence against local women has been used as a way to exert power over ethnic minority groups, to provoke ethnic armed groups, and to secure Tatmadaw presence in the land (Apple, 1998). Violence against women in areas where ethnic minorities live is widely accepted by Tatmadaw troops and soldiers; In many instances, troops and soldiers who married ethnic women were even rewarded (KDRG 2006). The general acceptance of violence towards women, including the poor treatment by soldiers of their (ethnic) wives, was part of the reason why rape cases that occurred during dam development were often unaddressed (Sapawa, 2009). Many studies showed that women and children and other disadvantaged groups in the ethnic regions were vulnerable to and affected by different forms of violence because of hydropower development processes (Yee, 2016).

While the continuous brutality and violence kept occurring in the Salween River basin, the State also tried to repress the expression of objections towards the construction of the dams (Akimoto, 2004). Especially during the military regime, activists against the dams faced threats and ill-treatment. For instance, the risks to dissents and activists was noted by Sai Win Pay, an elected exiled member of parliament from Shan state, in 2000:

“The Tasang Dam in Shan state represents an extreme case of lack of public participation. The military junta’s record on this issue is consistent. They will abuse or kill anyone who dissents.” (quoted in Akimoto, 2004)

Villagers who live near to dam sites are often powerless to raise their voices against project proponents and other supporters of dam infrastructure. The government of Myanmar lobbied dams as an important part of economic development of the country that would bring fortune to local communities. The finding of this research reveals such *epistemic violence* as a common manifestation of oppression towards land defenders (Perrier, 2021). Epistemic violence occurs when the voices of those who express their concerns and objections to dams are silenced by

oppression and a “more powerful discourse” that asserts the development of dams is essential and inevitable is introduced on the other hand (Sims, 2021, p. 1802).

Evidence from this research indicates that in the case of the dams in the Salween River basin, structural violence has been channelled through the infrastructure projects in various oppressive forms, from State violence to marginalization and inequality. According to Galtung (1969), structural violence is built-in, indirect and often invisible. Elaborating on this theory, Winter (2012) argues that rather than structural violence being invisible, it is the repetition of the violence that makes it invisible. The violence is “repeated, reiterated and redeployed over time” (Dilts et al. 2012, p. 193) to the point it becomes approved within institutions. Such repetition, reiteration and redeployment are how marginalised people have been mistreated and excluded in the management of the dams in the Salween River basin. This research also shows that different forms of structural violence overlap, with the result being that one form of violence leads to an opening of another form of violence. For example, State violence oppressed the ethnic minorities, making them a vulnerable group easily targeted by the brutality of the Tatmadaw. There are different actors interacting in the sphere of infrastructure. Materiality, morality, and inequality lie at the centre of infrastructural violence (Rodgers & O’Neill, 2012). Each of these factors by all the actors need to be considered when thinking about equity in infrastructure contexts to enable equal access to resources and services. Structural violence is enabled when there is an inequality in power relations and the groups of stakeholders of a specific quality (religion, ethnicity, cast, etc.) are oppressed and marginalised in terms of obtaining their full potential (Holterman, 2014; Jackson & Beswick, 2011).

While this thesis focuses on the dams in the Salween River basin, there is a vast body of literature that demonstrates similar social and environmental impacts associated with hydropower development in the same region and even globally. For instance, Aung et al., (2021) investigated social impacts of the Shwe Li Dam in Myanmar and identified instances where human rights and labour rights were violated, land was confiscated and labour forced, grievances were left unresolved, people were excluded, and access to electricity was unequal. Nayak’s (2019) case study of the Kaptai Dam in Bangladesh illustrated the entanglement of scorched-earth relocation and sexual violence within the sphere of insurgency and dam development, which parallels the actions of the Tatmadaw in Myanmar. Blake and Barney (2018) presented findings of structural injustices associated with the Theun-Hinboun Hydropower Project in Laos. Overall, the centralised position of the State in water governance

in Myanmar has injected structural violence into hydropower power development in the Salween River basin. This structural violence has undermined the life of ethnic communities by limiting and excluding them from decision-making processes, preventing them from accessing the benefits and services of the hydropower developments, and demolishing their human rights through abuses by the military.

### *6.1.3 Slow violence and hydropower infrastructure development*

Alongside direct and structural violence, the repeated acts of displacement and the destruction of land, the powerlessness of people, and the exclusion of benefits and repression of rights, Salween dam infrastructure also generated slow violence to humans and the natural environment. The consequences of infrastructural violence are repetitive and continue to affect disadvantaged groups of people over a large temporal scale, especially those who are marginalised (Sims, 2021).

Slow violence associated with dam infrastructure projects decreases the level of human security for relocated populations. According to the findings from the case studies of dams in the Salween River basin, the project-affected people who were relocated either moved to resettlement sites or ran away and lived in hiding as internally displaced persons (IDPs). Many IDPs later sought refuge in neighbouring countries, fleeing from the Tatmadaw's violence, and were often targeted for human trafficking (Meyer et al., 2015). According to Fluir (2022), displaced people often experience institutionalisation of harm, trauma, and repression at the hands of the actors in power, while their lives are in states of constant mobility, instability and precariousness. Research that focused on impacts of the Kaptai Dam in Bangladesh demonstrated that the insecurity that displaced people face results in the loss of basic human securities including food, health, livelihood, and socio-economic well-being (Nayak, 2019). These human insecurities described in the Nayak's (2019) Bangladesh case study are also evident in this description by a relocated villager who used to live in the vicinity of the Weigyi and Dagwin dams:

“We had to face several diseases and death when we fled. We did not have any medicine and we did not dare to go anywhere to get such medicine.” (quoted in KRW, 2004)

Dam construction and ongoing conflict can further generate poor public health outcomes for displaced populations who are already prone to infections such as malaria, lymphatic filariasis, typhoid and tuberculosis and so forth (Huanok, 2006). Living with constant fear causes deterioration of personal meaning, which is critical for psychological well-being (Giddens, 1991). Studies have increasingly shown that refugees and resettled communities are prone to serious mental disorders, depression and post-traumatic stress disorder (PTSD) (Fazel et al., 2005; Reavell & Fazil, 2017) Socio-economic impacts and human insecurities were repeated with each dam project relocation scheme, and conflict within the Frontier areas has meant ethnic minorities remain poor and their economies underdeveloped despite their living in a resource-rich environment. This long-term destruction can go unnoticed as the destruction does not occur in a notable explosive way but, rather, occurs gradually and invisibly across time and space (Nixon, 2011). The landmines and the threat of the Tatmadaw exclude the relocated people from their homeland and restrict the relocated population from returning to their villages and farms. This kind of exclusion from their homeland erodes the socio-cultural resilience of a population (Nayak, 2019), compounding the negative impact of the destruction of their homeland through development of dam infrastructure. Infrastructure violence generated as the result of hydropower development projects manifests itself as slow violence because of the long-term destruction of land and landscape through dam construction and flooding of reservoirs.

The Salween River is the life blood of the ethnic minorities living in the basin, as described by this villager who lived downstream of the Salween River:

“It is enough for us to get by day-to-day. We also gather vegetables on our island. We catch the fish in the Salween River. We get everything we need in here.” (quoted in KESAN, 2017)

Damming the Salween River has destroyed the biodiversity and ecosystem of the river basin and the associated social and cultural values of those who live(d) by the river. The destruction associated with the hydropower projects on the Salween River causes slow violence because of dam-induced natural and human consequences that accumulate over time and create a catastrophic disaster across a range of temporal scales (Dixon, 2011). The examples described in this thesis show the devastating impacts that the dams in the Salween River basin have had in terms of deforestation, changes of waterflow and sedimentation, and drastic declines in the local fisheries, and the impacts these changes have had on the livelihood of the ethnic

minorities who live in the basin (for example, see KDRG, 2006). As discussed by Nixon (2011, p. 4), “It is those people lacking resources who are the principal casualties of slow violence” ; when slow violence on an environment occurs, it is the underdeveloped and the poor who suffer the most as they lack the resources to resist and adapt. The livelihoods of river-dwelling people mainly depend on river ecosystems. They catch fish from the river, grow farms on the fertile soil of floodplain, and collect forest products such as medicinal herbs to sustain life (Aung, 2019; Aye & Win, 2019). The river is the source of their livelihood, food and economic security.

Moreover, ethnic minorities have a place attachment to their landscape. Landscape conveys territorial identity and contains symbolic meanings based on the context and the background of the land-dwellers (Antrop, 2012). For Indigenous people, in the case of ethnic minorities in the Salween River basin, relationality is at the centre of relationships between the human and the natural world whereby the local peoples’ history, their language, their songs and their cultural are embedded in the land (Artelle et al., 2018). The flooding of their homelands by the Salween dams has quite literally submerged these values. Paw Tao Ma Ha, one of the victims of relocation in 1996, tried to survive on his land until, at the age of 85, he joined his children Thailand in 2008. As Paw Tao Ma Ha said:

“If the water from the dam floods the land, I’ll be very sad. I don’t want our pagoda and our land to go under the water. I often dream of my homeland. My parents and my relatives are buried there. My spirit is there; I am connected to this land. If I die, my spirit will be there. I don’t want anybody to destroy this land. When the military burned our village and forced us out from our homeland, we still had the land. If the water floods over, we will have nothing left.” (quoted in Sapawa, 2009)

In addition to exclusion through relocation, the destruction of land by the dam projects leads to people becoming disconnected from their homeland, which gradually diminishes their culture for future generations, thus threatening the sense of identity of ethnic minorities of the Salween River basin. An example of such slow violence was vividly described by a villager who was displaced by the Lawpita Hydropower Project and who then fled to a refugee camp in Thailand:

“If the hydropower plan was not built in the first place, I would still be able to see my homeland and live in peace. From the outset, local people were relocated from the power plant site. We lost good farm land and most importantly, a way of life that goes back for generations. In the last 10–15 years, there have been thousands of landmines placed where we once lived. We cannot go back or farm there.” (quoted in KDRG, 2006).

In addition to the impacts on the physical environment around the dams and on the humans who live(d) there, hydropower dam projects produce greenhouse gas emissions during the construction of the dam, as well as through transportation of materials and decay of biomass from reservoirs. The higher the dams, the higher the emission (Aung et al., 2020). Thus, construction of dams contributes to global warming and the climate crisis. Greenhouse gas emissions as a contribution to climate change is a form of slow violence linked to hydropower infrastructure because it gives rise to “delayed effects” (Nixon, 2011, p. 8). The continuation of dam developments in the Salween River basin, especially with the ongoing conflicts, is likely to prolong slow violence in the region.

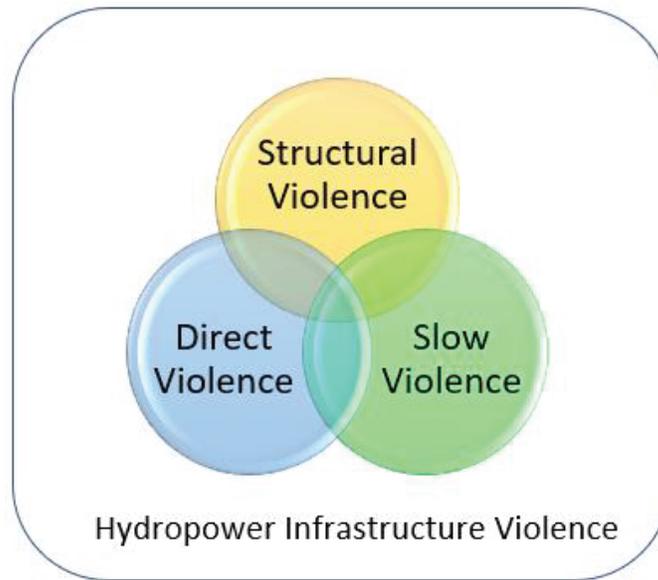
#### *6.1.4 The many violences of the Salween dams*

This study demonstrates that there are different forms of infrastructural violence linked to the development of hydropower in the Salween River basin. They range from direct violence (such as ordering people to do things or torturing people), structural violence (such as repression and exclusion), and slow violence (such as disconnection). This study has shown that the violence arising from the development of hydropower infrastructure was entangled within various actors across time and space (Rodgers & O’Neill, 2012), which means it is insufficient to analyse each form of violence separately. Sims (2021, p. 1802) describes large-scale infrastructural projects as “co-forming systems of power that produce complex and interdependent forms of violence and social inequalities”. This means the various manifestations of violence that exist within the infrastructure system relate to one another instead of standing in isolation (Perrier, 2021).

Different forms of violence can be seen as mutually conjoined in the sphere of the hydropower infrastructure in the Salween River basin; thus, the various forms of violence intersect with each other (Sims, 2021). State violence endorses marginalisation which can lead to both passive and direct violence, while forced relocation is related to both direct and slow violence.

Figure 5 illustrates the intersectionality of violence entangling within the infrastructural violence in the Salween River basin.

**Figure 5 : The intersection of different forms of infrastructure violence generated by the development of hydropower in the Salween River basin**



In the next session, I will discuss the impact that these various forms of violence have on achieving environmental justice in the Salween River basin.

## 6.2 The impact of infrastructural violence on environmental justice in the Salween River basin

As previously noted (see [Chapter 2](#)), Salween River basin in Myanmar is inhabited by ethnic minorities and flows through Shan, Karennei, Karen and Mon states before exiting to the Andaman Sea. Different states are inhabited by different ethnic minorities, who possess different cultural and social practices. The river, and its unique geography are tied to those practices. The infrastructural violence in Salween River basin threatens the environmental justice of ethnic minorities across all three dimensions of justice: distributive justice, procedural justice, and recognition justice. Firstly, this research shows dam development in the Salween River basin fails to attend to the goals of distributive justice. The marginalisation of ethnic communities in water management by the State impacts upon the ability of ethnic communities to achieve environmental justice. The ethnic minorities are considered indigenous

in Myanmar because of their non-dominance in the national context, historical continuity, ancestral territories, and self-identification (Coalition of Indigenous Peoples in Myanmar, 2015, p. 3). The reliance of ethnic groups on the Salween River increases their vulnerability since their livelihoods deeply depend on the river, and dam projects threaten their habitat while offering very few to little benefits in return (Cooke et al., 2017). For river dwellers, the Salween River holds different meanings that extend beyond being through of as an economic resource that could generate economic prosperity. Rather, the River is their whole life (KDRG, 2006). Therefore, recognising ethnic minority groups' culture, sovereignties, and sense of identity is fundamental to environmental justice in the Salween River basin.

Hydropower projects in Salween River basin produce passive infrastructural violence that leads to the exclusion of ethnic minorities from the benefits and services of the projects. This means national profits are generated at the expense of the wellbeing and livelihoods of ethnic minorities. Most of the electricity produced is to be sold to foreign countries while local people bear the loss of their homelands and livelihood without compensation. Distributive justice concerns arise when there is unequal distribution in environmental and social bads and goods that alter the capabilities of communities to achieve their fullest potential (Schlosberg, 2007). Case study investigations undertaken as part of other studies have outlined the unequal distribution of profits and the suffering experience by project-affected people in the Global South across a range of scales – from national scales to transboundary scales. Oftentimes, those people who suffer the most from these injustices are indigenous peoples living in the proximity of project areas (Diamond & Poirier, 2010; Marks & Zhang, 2019; Siciliano et al., 2019). Maldistribution is the outcome of social injustice: to address maldistribution, it is necessary to further investigate how and what is distributed, including who gets a say in decision-making, planning, and construction processes.

As noted in Chapter 3, procedural justice is associated with how environmental management decisions are made and by whom (Schlosberg 2004, 2007; Walker 2012). In this research, there was evidence of procedural injustices whereby opportunities for ethnic groups to influence outcomes was limited, and development proponents largely failed to implement processes to ensure meaningful participation. As noted before, the various forms of structural violence inserted within the system of infrastructural development prevented ethnic minorities from receiving information about the dams, and from meaningful participation, public consultation and access to legal redress for grievances against the state government and Tatmadaw.

Information about the new dams was not fully disclosed, EIA studies were conducted in secrecy, public participation was non-existent, and compensation for past events as well as events in the present, were not discussed or negotiated (Akimoto, 2004; KDRG 2006, KRW, 2004, Sapawa 2006; SHRF, 2016). Lack of participation opportunities for project-affected people has a long history in the context of energy infrastructure (Mayer et al., 2022). Unbalanced power-relations between the state and ethnic minority groups generated unjust and non-inclusive decision-making process throughout all stages of hydropower development in Salween River basin. The ethnic minorities in the Salween River basin have long been oppressed by Tatmadaw to the extent that their socio-economic level declined, and they were often intimidated by Tatmadaw. Fraser (2007, 2009) discusses how existing economic, political, and socio-economic factors are also barriers that prevent marginalised people from participating in decision-making process. From an Indigenous environmental justice perspective, failures by the state to recognise Indigenous people's cultural values, way of living and indigenous knowledge and practices are additional factors that prevent Indigenous peoples from participating in decision making process and provide the foundation for cultivation environmental injustices (Persons et al., 2019).

Recognition and respect for an individual or community's cultural differences is a fundamental aspect of environmental decision-making process (Barnhill-Dilling et al., 2020), and the foundation of environmental justice in hydropower development process (Zanotti, 2015). The culture and identity of the ethnic minority communities who live around the Salween River is often tied to the landscape of the basin. For example, the currently operating Kengtawng dam is built above the Zong Arng waterfall, which is a culturally significant landscape for the Shan ethnic minorities as it is the birthplace of their traditional folklore and they celebrate the story every year in that location. However, the waterfall levels have decreased drastically since the dam was built and the flow of the waterfall is now controlled by the dam operator (SHRF & Sapawa, 2018). Subsequently, the cultural heritage and many community practices disappeared when the Tatmadaw prepared the land for the development. Along with the forced relocation and displacement, lives of many people became unstable and the constant moving destroyed existing social networks, cultural festivals, and local heritage (KRW, 2004; Sapawa 2009). When the new dams are built, the potential flood will submerge the remaining temples, farmlands, and ancestral lands of the ethnic minorities, most of whom are already living as IDPs in jungles or are refugees in border areas, and they will be forever disconnected from their land. One of the displaced Shan villagers described the potential flood and its impact as

“Our temples and pagoda will be flooded. Our animals, buffalos and oxen and all our farmlands will be lost. I don’t care if I lose my life, but this historical temple, pagoda and Buddha images are priceless.” (quoted in Action for Shan State Rivers, 2016a)

From this, it is evident that the values held by ethnic minorities and their cultural heritage are highly important to their identity and way of life. Moreover, it is vital to recognise the ecosystem services derived from the Salween River and which are part of Indigenous people’s lives. These river dwelling people depend on the water from the river and tributaries for their irrigation. This view and the impact of changes brought about dam development is reflected in the quote from a local villager from Karenni state, who spoke of the changes brought following the building of the Lawpita hydropower plant in the 1980s,

“I grew up in the area and my family were mostly farmers. Before the power plant and Moebye Dam were built, we didn’t have many water shortages further upstream. When water levels were higher, farmers did not have to draw water from the main river. Instead, they could use the run-off from the forests as well as smaller streams flowing into the Baluchaung. It was only when water levels were lower, then the farmers would use the old water wheel system to scoop out water to irrigate their crops. We couldn’t believe the drastic changes that occurred when the forests were cleared, the dam was built, and the power plants began operating. Access to water became harder, especially in the drier seasons. Sometimes there was not enough food.” (quoted in KNDG, 2006)

The river’s natural irrigation services, which are essential for the livelihood of the ethnic minorities, will be destroyed when the new dams are built. In addition, the Salween River provides fisheries, essential for protein and floodplain for the farmland of the local people (Lamb et al., 2019). The forests are rich in biodiversity, which the ethnic communities depend on for day-to-day necessities like medicinal herbs, while western medicine are inaccessible for them (Aye & Win, 2019). The river also provides the network for trade, and travel. These cultural and ecological values are what shape life for the Salween dwelling ethnic minorities. Values are “the magnitude of preference” that a person expresses for a particular outcome (Tadaki et al., 2017). While the ethnic minorities’ values on the Salween River basin cannot be measured in monetary values, it is priceless for sustaining their lives. Natural resource management processes, including infrastructural development, need to recognise

these values and cultural identity in decision making processes and affirm and encourage strategies and meaningful engagement to avoid and overcome any harms that destroy these values to promote environmental justice for indigenous people. A step towards achieving this is to adopt bottom-up approaches that are attentive to the existence of diverse knowledges and worldviews (Persons et al., 2019).

Hydropower development in Salween River basin to date has produced infrastructural violence that prevents environmental justice. This leads to the decline in capabilities among ethnic community groups and the river basin itself. Capability in the discourse of environmental justice refers to the basic function of nature, culture, communities, and freedom (Schlosberg & Carruthers, 2010). Sen (2010) explains capability as a freedom of an individual to determine what is essential for them to function in a full human way while Nussbaum (2000) argues capability is a set of social and political principles that guarantee a fully functional life. Ulloa (2017) discusses the importance of maintaining the continuation of lives in both the human and non-human realm to ensure indigenous environmental justice. In Salween River basin, where the ethnic minorities thrive as communities whose livelihoods depend on the basin ecosystem, it is important for them to be able to ensure the continuation of their lives and ecosystem, and cultural and social practices to retain their indigenous sovereignty. Infrastructural violence disables such capabilities of ethnic minorities and prevents them from achieving environmental justice and limits their potential to flourish.

### 6.3 Violence from injustice

I have discussed in this chapter how infrastructural violence severely limits environmental justice and the capabilities of the people upon whom the violence is inflicted. However, infrastructural violence can also generate further violence as the people who are experiencing injustice fight back. Throughout the history of hydropower development along the Salween River, the Tatmadaw and other dam developers are not the only stakeholder groups who have committed violent acts in the basin. The projects and the proponents of the projects also face violence committed by the one of the actors in the area: the ethnic armed groups.

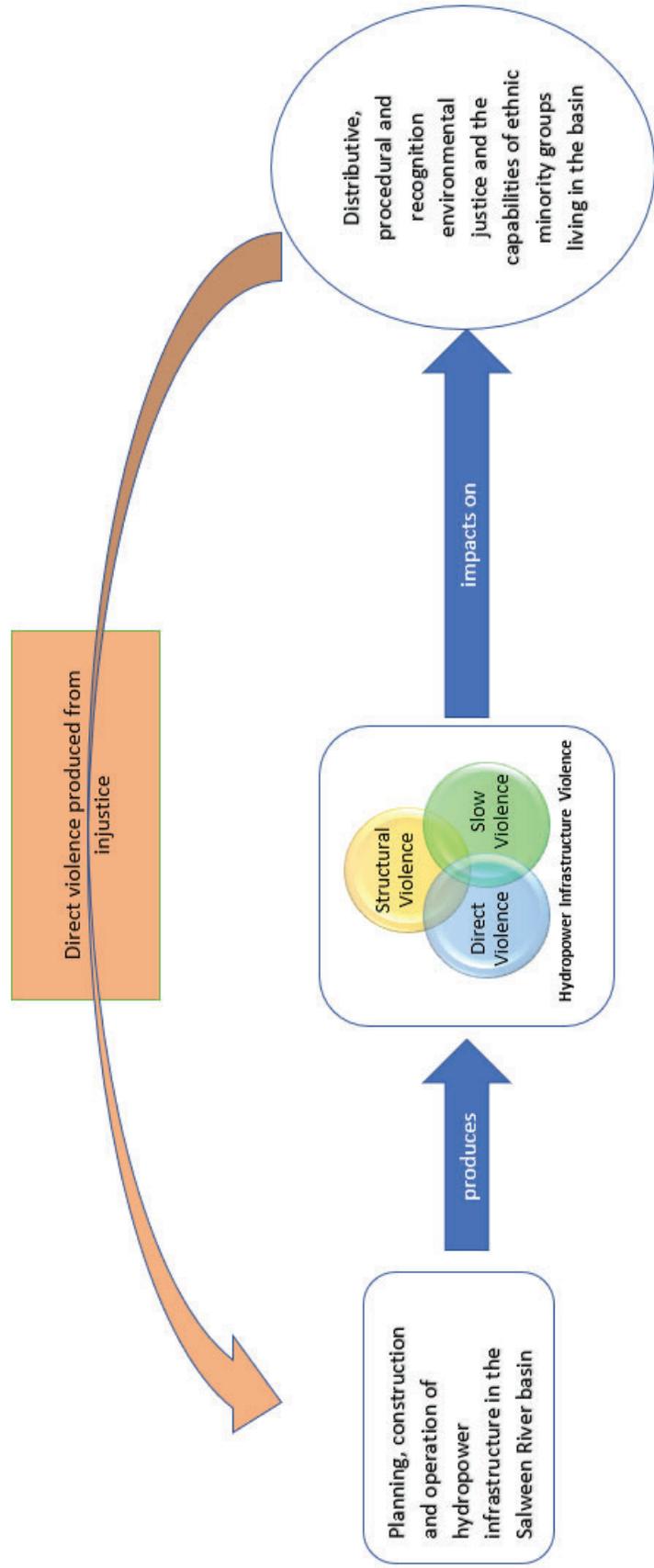
The ethnic armed groups in the Frontier regions are mostly made up of ethnic minority groups whose purpose is to fight for their rights as minorities and furthering their own political agenda. Construction of the hydropower projects in their territories and without their consent, fuels even more conflict between the ethnic armed groups and the Tatmadaw. The marginalisation

of people at the hands of the state, and the violation of ethnic land rights and exclusion from the resource management encourages ethnic armed groups to cause more conflict with Tatmadaw. A similar situation occurred during the development of the Kaptai Dam in Bangladesh when the post-colonial government of Pakistan violated tribal land rights and ethnicity status (Nayak , 2019). Because of these conflicts, several attacks occurred, not only on the Tatmadaw but also on civilians working for the companies involved in the developments; for example, two EGAT staff from the Hatgyi Dam project and three foreign technicians working on the Ywathit Dam site were killed during an attack by armed groups and four engineers from the Mong Tong dam site were kidnapped. And more conflicts have occurred due to the expansion of the military into the project areas (BRN, 2011b). These attacks are deliberate and direct physical violence towards the dam proponents in response to the unfair distribution and unjust decision-making process of the hydropower projects in the contested ethnic regions.

As mentioned in the section 6.2, infrastructure violence generated by the construction of the hydropower dams around the Salween River basin threatens the distributive, procedural and recognition environmental justice of the ethnic communities who live in the area, dramatically reducing their capabilities to function in life and the prosperity of their lands and culture. The minority ethnic communities who live in the Salween River basin often feel powerless against the state violence (KRW,2004), while the ethnic armed groups, who already possess armed power and autonomy in the Frontier regions, respond violently to the injustice caused by the exclusion of local communities from the resource management and the Government's failure to recognise the local people's rights in terms of the dam projects. Ethnic armed groups often respond with and perpetuate violence when they are excluded from the political system, their interests neglected and their grievances not addressed (Cederman et al., 2010). Becker and Vanclay (2003) also argue that direct violence triggered by dam conflict is an act of "revenge" by ethnic minority groups, and the result of poor management of resettlement processes and a lack of information about the projects being disseminated to the affected communities. However, Asal (2016) argues that political exclusion of ethnic groups in resource-rich regions is only the complementary factor towards the armed conflict, and Macauley (2017) argues that the root of ethnic insurgency is based on the unequal security dilemma with the state (Jervis, 1978) and minority groups' defence against the diminishing of their ethnic identity (Petersen, 2011). This leads back to the importance of ethnic recognition as the root of environmental justice for the ethnic minority groups who live in the Salween River basin.

After analysing the relationship between infrastructural violence and environmental justice, my study demonstrates that various stages of infrastructural violence related to development of hydropower projects in the Salween River basin have occurred and that this violence has threatened the achievement of environmental justice for ethnic minorities and compromised their capabilities for well-being and leading functional lives, both now and for generations to come. These environmental injustices have also resulted in armed groups committing direct violence on the infrastructure projects and their associated personnel, in response to defending the recognition of their identity and rights. Figure 6 illustrates the relationship between infrastructural violence and environmental justice in the Salween River basin. The figure describes the two-way relationship of hydroelectric infrastructural violence where the injustices from infrastructural violence can produce violence back to the stages of infrastructure development.

**Figure 6 : The relationship between hydropower infrastructural violence in the Salween River basin and environmental justice and the capabilities of ethnic minority groups living in the basin**



## 6.4 Conclusion

The Salween River basin is a land rich in biodiversity and cultural heritage, inhabited by many different ethnic minority groups and indigenous people of Myanmar. The history of hydropower development in the Salween River basin is a tale of environmental and social impacts on the project-affected areas. In this chapter, I first discussed the different types of infrastructural violence produced from the dam projects and how the violence has resulted in the loss of livelihoods, land, biodiversity, and many social and cultural practices. The marginalisation of the ethnic minority communities who live(d) near the dam sites has also led to the harmful impacts on the people's lives and created barriers to their right to participate in decision making around the water resources of the basin. Secondly, drawing on environmental justice theory, I discussed how infrastructural violence has enhanced and generated environmental justice concerns for ethnic minority groups who live in the Salween River basin and diminished the capabilities of these communities to achieve the full potential of their lives. Finally, I noted how these unjust situations have often encouraged ethnic armed groups to attack the hydropower projects in response to the dam proponents' failure to recognise their rights and unique ethnic identities.

## Chapter 7 Conclusion

This chapter summarises the conclusions from the findings and discussion presented in Chapters 5 and 6 of this thesis, respectively, and addresses the research aim and objectives. The limitations of the research, implications of the study, and suggestions for areas of future research are also provided in this chapter.

My study sought to examine hydroelectric infrastructural violence occurring in the Salween River basin and to explore how different forms of violence influence the ability of ethnic minority groups in the Salween River basin to achieve environmental justice. To achieve this, I first explored the demography of the Salween region, the nature of the indigenous ethnic minority people who live there, the political history between these ethnic minority groups and the Myanmar government, and the history of hydropower development in the Salween River basin, to understand the political situation and power dimension of the actors. Secondly, I studied the notion of violence and infrastructural violence to understand the nature of infrastructure and violence. Drawing on Galtung's (1969) theory on violence, I used his six distinctions of violence to analyse the violent actions that have occurred during the various stages of hydropower development in the Salween River basin, using case studies of two operating dams and seven planned dams. I then analysed these violent acts using Rodgers and O'Neil's (2012) framework of infrastructural violence. Thirdly, by using the environmental justice framework, I explored the relationship between the violence associated with the development of the hydropower dams and the environmental justice concerns of the ethnic minority groups who live in the Salween River basin.

### 7.1 The infrastructural violence and environmental violence generated from damming the Salween River

Despite its reputation as a sustainable solution for green energy production, renewable energy projects, including hydropower, often challenge the environmental and social well-being of local communities by imposing severe destruction on their ecological landscape. Hydroelectric power plants are large-scale infrastructures which are usually implemented by a national government in partnership with the private sector or governments of foreign countries. Therefore, the process of infrastructure development is intertwined with social, political, and

economic factors, which means there is a range of implications on different levels of societal ladders. Unequal power distribution and dynamics within a social order can lead to violence at different stages of the process. This study identifies such violence, which has been generated during the development of hydroelectric infrastructure in the Salween River basin.

The Salween River is a transboundary river that flows through China, Myanmar, and Thailand. It is known as one of the very few free-flowing rivers in Asia. A series of hydroelectric dam constructions is planned along the Salween River. Even though the proposed dam projects in the China part of the Salween River have been postponed, the status of the planned dam projects in Myanmar are still active. As a developing country, energy is crucial for Myanmar's development process and hydroelectric generation is one of the main sources that can fulfil the country's electricity demand. However, due to experiences of dam construction during the military era, civil society and indigenous communities strongly oppose all planned dam projects. Despite the growing number of studies on the environmental and socio-economic impacts of dam projects on the natural environment as well as on the ethnic minority groups communities living in the Salween River basin, very few studies have analysed the impact of dam projects from the perspective of infrastructural violence.

The findings of the research proves that there are three categories of violence produced from the Salween dams namely: direct, structural, and slow violence. The direct violence occurred due to the nature of dam itself and the need for space and the potential flooding of areas for the reservoirs. In addition, the project proponent actor, Tatmadaw, also perpetuated violence towards the project affected ethnic minorities both physically and psychologically. Dam development in Myanmar intertwined with the anti-insurgencies movement and forced relocation. This meant that land for the dams was already depopulated because of authoritarian and military control over the area before construction began. The repression and marginalisation of ethnic minorities are embedded in the political system of the Myanmar government, which leads to structural violence through the dam infrastructure, whereby ethnic minorities were excluded from decision making and management processes relating to the design, construction and operation of the dam projects as well as being excluded from benefiting from the services of dams. The consequences of these impacts create slow violence by causing longer-term effects of ecosystem destruction, removal, resettlement, benefit sharing and loss of identity.

In the next step of the study, I used environmental justice framework to examine how these consequences influence the environmental justice of ethnic minorities. Ethnic minorities in Myanmar are considered as indigenous peoples. Thus, an indigenous lens was applied to understand the indigenous environmental justice. Maldistribution occurred as the ethnic minorities did not benefit from the development but rather they were oppressed by it. Misrecognition of their rights, culture, and values by State, prevented them from attaining meaningful participation to make decisions over their resources. Structural violence by the dam systematically prevented them from taking part in decision making processes, which build upon a long history of marginalisation and oppression as well as creating unfavourable social and political position to be able to participate. This decreases the capabilities of the community to function at their best to achieve a full life. This causes long-term impacts on ethnic minorities' sovereignty and identity, which has intergenerational effects. Moreover, these injustices encourage ethnic armed groups to launch attacks against the Tatmadaw and dam developers to demonstrate their resistance and respond to the unjust. Therefore, the study highlights the two-way relationship of violence between the Tatmadaw and ethnic armed groups. However, for the communities who have little power or control over dam development activities in the Salween River basin, they receive the mutual suffering from the violence perpetuated from the Tatmadaw as well as the conflicts between Tatmadaw and ethnic insurgents.

## 7.2 Limitations, implications, and further research

This study is not without limitations. As my study focused on the general geography of the Salween River basin and relied on secondary data sources only, I may not have captured the detail and place-specific conditions occurring at each dam site. Due to the limitations of the data and the scope of the study, the research has remained within the local context and did not explore transboundary relationships with the neighbouring countries.

My research findings will add to the extant literature because the study has explored the human, environmental and history dimensions of the Salween River basin through the lens of infrastructural violence, a focus that has not been conducted in Myanmar before. I hope that my research findings have highlighted the requirement to see the impact of infrastructure development projects as more than just a social and environmental issue; such projects must also be considered through the notion of violence. From this understanding, I aim to highlight

the necessity of environmental and social impact assessments that can trace back the historical context of a proposed project and project site across different spatial and temporal scales, as past impacts do not always stay in the past.

I have two suggestions for future research based on this study: (1) a case-specific study of infrastructural violence generated from a hydropower project using the relationship framework developed from the study, and (2) in-depth research into public-participation practices used during the development of hydropower infrastructure in the Salween River basin and analyse those within environmental justice framework.

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## Appendices

### Appendix 1 List of reports used in the data collection

|   |  |  |
|---|--|--|
| 1 | <i>Damned by Burma generals : The Karenni Experience with hydropower development from Lawpita to the Salween</i> |  |
|   | Author(s)  | Karenni Development Research Group (KDRG)  |
|   | Publication date   | 2006   |
|   | Description  | This local report provides information about the Lawpita Hydropower project and associated human rights violation, environmental impacts and the experience of the Karenni communities who were impacted by the project. The findings in the report were produced by conducting interviews with the affected communities and ex-soldier.                 |
|   | Source   | <a href="https://www.burmariversnetwork.org/title/resources/publications/dammed-by-burmas-generals.html">https://www.burmariversnetwork.org/title/resources/publications/dammed-by-burmas-generals.html</a>  |
| 2 | <i>From scorched earth to parched earth : Conflict and dams on the Nam Teng in Shan state</i>                    |  |
|   | Author(s)  | Shan Human Rights Foundation (SHRF) and Shan Sapawa Environmental Organization (Sapawa)  |
|   | Publication date   | 2018   |
|   | Description  | This local report provides information about Tatmadaw's terror anti-insurgencies campaigns, the depopulation of Shan state and human rights violations. It also draws on several local and international news sources and reports for information about the environmental impacts of the Kengtawng Dam and potential impacts of the Upper Kengtawng Dam. |
|   | Source   | <a href="https://shanhumanrights.org/from-scorched-earth-to-parched-earth/">https://shanhumanrights.org/from-scorched-earth-to-parched-earth/</a>  |

|                  |   |  |
|------------------|---|--|
| 3                | <i>The Salween under threat : Damming the longest free river in Southeast Asia</i>  |  |
| Author(s)        | Yuki Akimoto  |  |
| Publication date | 2004  |  |
| Description      | This report is a collaborative work by EarthRights International, Image Asia, Friends Without Borders, the Karen Environmental and Social Action Network (KESAN), Salween News Network, Salween Watch and the South East Asia Rivers Network (SEARIN). The report provides information on the history of the longstanding conflict between the Tatmadaw and ethnic minorities, the politics and power behind dam projects in the Salween River basin, conditions in Myanmar following the Tatmadaw's anti-insurgency campaigns and previous hydropower development projects, and threats of the proposed dams. The report is based on statistical data and interviews with local communities. |  |
| Source           | <a href="https://shanhumanrights.org/from-scorched-earth-to-parched-earth/">https://shanhumanrights.org/from-scorched-earth-to-parched-earth/</a>   |  |

|                  |  |  |
|------------------|--|--|
| 4                | <i>Damming at gunpoint : Burma Army atrocities pave the way for Salween dams in Karen state</i>  |  |
| Author(s)        | Karen Rivers Watch (KRW)   |  |
| Publication date | 2004   |  |
| Description      | KRW is a coalition of Karen organisations that work in the field of the environment, women, youth, human rights and development issues in Karen state. The authors conducted interviews with villagers within Karen state and members of the KNU. The report presents details of Tatmadaw offensives and abuses in the areas of the Weigyi and Dagwin dam sites. |  |
| Source           | <a href="https://burmariversnetwork.org/title/resources/publications/damming-at-gunpoint.html">https://burmariversnetwork.org/title/resources/publications/damming-at-gunpoint.html</a>  |  |

5 *Warning signs : An update on plans to dam the Salween in Burma's Shan state*

|                  |  |
|------------------|--|
| Author(s)        | Shan Sapawa Environmental Organization (Sapawa)  |
| Publication date | 2006   |
| Description      | Sapawa is an environmental organisation that advocates for human rights and environmental conservation in Shan state. This report provides information about the Myanmar military government's attempt to dam the war zone in Shan state, following human right abuses. It also reports on the environment and human impacts of proposed dams, using Tasang (Mong Tong Dam) as a case study. The authors collected their data through interviews with local communities. |
| Source           | <a href="https://burmariversnetwork.org/title/resources/publications/warning-signs.html">https://burmariversnetwork.org/title/resources/publications/warning-signs.html</a>  |

6 *Roots and resilience: Tasang Dam threatens war-torn Shan communities*

|                  |   |
|------------------|---|
| Author(s)        | Shan Sapawa Environmental Organization (Sapawa)   |
| Publication date | 2009  |
| Description      | This report, also by Sapawa, is a case study of a particular community, the Keng Kham, who were forcefully relocated by the Tatmadaw since 1996 and the remaining population are faced with the threats of Tasang (Mong Tong ) dam. The authors collected their data through interviews with local communities. |
| Source           | <a href="https://www.burmariversnetwork.org/title/resources/publications/new-report-roots-and-resilience.html">https://www.burmariversnetwork.org/title/resources/publications/new-report-roots-and-resilience.html</a>   |

|                  |  |  |
|------------------|--|--|
| 7                | <i>Development or destruction? The human rights impacts of hydropower development on villagers in Southeast Myanmar</i>  |  |
| Author(s)        | Karen Human Rights Group (KHRG) and Karen Rivers Watch (KRW)   |  |
| Publication date | 2018   |  |
| Description      | KHRG and KRW conducted community-based research in several areas affected by different dam projects planned in the Salween River basin in Karen state, including the Hatgyi Dam. The authors carried out focus group discussions to identify communities' concerns about hydropower dams and to learn about their experiences. |  |
| Source           | <a href="https://www.khrg.org/2018/07/development-or-destruction-human-rights-impacts-hydropower-development-villagers-southeast">https://www.khrg.org/2018/07/development-or-destruction-human-rights-impacts-hydropower-development-villagers-southeast</a>  |  |

## Appendix 2 List of news and briefs used in the data collection

- 1
 

|  |  |
|--|--|
| <i>Fatally flawed: The Tasang Dam on the Salween River</i> |  |
| Author(s)  | EarthRights International (ERI)  |
| Publication date   | 2002   |
| Description  | This publication studies the Tasang (Mong Tong) Dam and its threat to the Salween River basin and the people who live there.   |
| Source   | Source : <a href="https://earthrights.org/publication/fatally-flawed/">https://earthrights.org/publication/fatally-flawed/</a> |
  
- 2
 

|   |   |
|---|---|
| <i>Stop the dam offensive against the Karenni</i> |   |
| Author(s)   | Karenni Development Research Group (KDRG)   |
| Publication date                                  | 2011  |
| Description                                       | A KDRG reporting about the concerns and the threat of Ywathit Dam in Karenni State.   |
| Source  | <a href="https://burmariversnetwork.org/title/resources/publications/stop-the-dam-offensive-against-the-karenni.html">https://burmariversnetwork.org/title/resources/publications/stop-the-dam-offensive-against-the-karenni.html</a> |
  
- 3
 

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|--|---|
| <i>Stop damming in war-zones on Burma's major rivers</i> |   |
| Author(s)  | Burma Rivers Network (BRN)  |
| Publication date   | 2011  |
| Description  | A brief on conflicts at dam sites on the Salween and Ayeyawaddy rivers.   |
| Source   | <a href="https://burmariversnetwork.org/title/resources/publications/stop-damming-in-war-zones-on-burmas-major-rivers.html">https://burmariversnetwork.org/title/resources/publications/stop-damming-in-war-zones-on-burmas-major-rivers.html</a> |
  
- 4
 

|  |                                     |
|--|-------------------------------------|
| <i>Large-scale land confiscation for Salween Dam infrastructure in Northern Shan state</i> |                                     |
| Author(s)  | Shan Human Rights Foundation (SHRF) |
| Publication date   | 2014                                |

|             |   |
|-------------|---|
| Description | This is a brief about land confiscation for building roads to access the Kun Long Dam in Shan state. The authors' field study consisted of interviewing project-affected people.  |
| Source      | <a href="https://burmacampaign.org.uk/reports/large-scale-land-confiscation-for-salween-dam-infrastructure-in-northern-shan-state/">https://burmacampaign.org.uk/reports/large-scale-land-confiscation-for-salween-dam-infrastructure-in-northern-shan-state/</a> |

5 *Concerns about the Naung Pha Dam in the Salween River*

|                  |   |
|------------------|---|
| Author(s)        | Action for Shan State Rivers  |
| Publication date | 2016  |
| Description      | This brief updates the status of the Naung Pha Dam and concerns around the dam project.   |
| Source           | <a href="https://www.burmalibrary.org/en/concerns-about-the-naung-pha-dam-on-the-salween-river-english-shan-burmese-thai">https://www.burmalibrary.org/en/concerns-about-the-naung-pha-dam-on-the-salween-river-english-shan-burmese-thai</a> |

6 *The real motivations behind renewed war*

|                  |   |
|------------------|---|
| Author(s)        | Karen Rivers Watch (KRW)  |
| Publication date | 2016  |
| Description      | KRW is a human rights watch-dog organisation in Karen state. Their brief discusses the conflict that broke out near the Hatgyi Dam in 2016.   |
| Source           | <a href="https://kesan.asia/resource/karen-state-september-2016-conflict-the-real-motivations-behind-renewed-war/">https://kesan.asia/resource/karen-state-september-2016-conflict-the-real-motivations-behind-renewed-war/</a> |

7 *Fatal attack on boat carrying civilians in southern Shan state highlights insecurity of planned Salween dams*

|                  |                                     |
|------------------|-------------------------------------|
| Author(s)        | Shan Human Rights Foundation (SHRF) |
| Publication date | 2018                                |

|             |   |
|-------------|---|
| Description | A brief on a news update about the fatal incident that happened near the site of the Mong Tong Dam.   |
| Source      | <a href="https://shanhumanrights.org/fatal-attack-on-boat-carrying-civilians-in-southern-shan-state-highlights-insecurity-of-planned-salween-dams/">https://shanhumanrights.org/fatal-attack-on-boat-carrying-civilians-in-southern-shan-state-highlights-insecurity-of-planned-salween-dams/</a> |

**8** *Hundreds of villagers forced to build new Burma Army tactical command base east of Lashio near Salween River*

|                  |   |
|------------------|---|
| Author(s)        | Shan Human Rights Foundation (SHRF)   |
| Publication date | 2020  |
| Description      | A brief on a news update about how the Tatmadaw used forced labour in the proximity of the Salween River dams.  |
| Source           | <a href="https://shanhumanrights.org/hundreds-of-villagers-forced-to-build-new-burma-army-tactical-command-base-east-of-lashio-near-salween-river/">https://shanhumanrights.org/hundreds-of-villagers-forced-to-build-new-burma-army-tactical-command-base-east-of-lashio-near-salween-river/</a> |

### Appendix 3 : List of video documentaries used in the data collection

|   |   |  |
|---|---|--|
| 1 | <i>Dams: Development or destruction documentary</i> |  |
|   | Author(s)   | Karen Environment and Social Action Network (KESAN)  |
|   | Publication date                                    | 2018   |
|   | Description   | A video documentary about the conflicts near Hatgyi Dam site and interviews with displaced communities.  |
|   | Source  | <a href="https://youtu.be/freTDQhz7-8">https://youtu.be/freTDQhz7-8</a>  |
| 2 | <i>Drowning a thousand islands</i>                  |  |
|   | Author(s)   | Action for Shan State Rivers   |
|   | Publication date                                    | 2016   |
|   | Description   | A video documentary about the experience and current lives of relocated communities in Shan state and their concerns about the future dams on the Salween River. |
|   | Source  | <a href="https://youtu.be/freTDQhz7-8">https://youtu.be/freTDQhz7-8</a>  |
| 3 | <i>Salween River and my life</i>                    |  |
|   | Author(s)   | Karen Environment and Social Action Network (KESAN)  |
|   | Publication date                                    | 2017   |
|   | Description   | A short video documentary about the life of a fisherman family on the Salween River and their concerns about dams on the river.                                  |
|   | Source  | <a href="https://youtu.be/jPHCmW19Fzk">https://youtu.be/jPHCmW19Fzk</a>  |
| 4 | <i>Sob Moei villagers call for no Hatgyi Dam</i>    |  |
|   | Author(s)   | Karen Environment and Social Action Network (KESAN)  |
|   | Publication date                                    | 2015   |

|             |   |
|-------------|---|
| Description | A short video documentary about the public consultation meeting for Hatgyi Dam and villagers' feedback on the consultation meeting and project. |
| Source      | <a href="https://youtu.be/DZO6ligksio">https://youtu.be/DZO6ligksio</a>   |