Watering down justice

Energy justice in the Inga dams case in the DRC

Ruth Krüger

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LUCSUS
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Supervisor: Sara Gabrielsson, LUCSUS, Lund University

For my grandmother, Trudy Thomas, whose belief in justice burns brighter than the African sun.

Abstract

The focus of this thesis is energy justice and sustainability science, and the argument is based on a case study of the Inga dams. Substantial further development of hydropower is planned at the Inga dams, located on the Congo River in the Democratic Republic of Congo. While the project will add macro-economic benefits through the additional power, benefits are limited for people living nearby, a pattern magnified by the in-migration during dam construction. Erstwhile construction workers are now largely unemployed and therefore directly natural resource dependent, so that they stand to be affected by environmental changes when the next dam is built. The dynamics surrounding the Inga dams suggest injustice, so a study was conducted using energy justice theory to evaluate this. Field work was done along the Congo River, in Kinshasa, Boma, Inga and Muanda. The methods used were interviews, focus groups, participant mapping, a survey, transect walks and participant observation, and the data generated was analysed using open-ended qualitative coding and some descriptive statistics. The existing Inga dams were found lacking in terms of energy justice. Distributional justice is limited as, while local people at Inga receive electricity, housing and water free of charge, service provision is of varying quality and benefits follow a pattern of social stratification. On the national level, only 13.5 % of the population have electricity access, and this causes sustainability challenges. Further, justice as recognition is insufficient, as only traditional right-holders are recognised, but there are many others that are affected. Procedural justice is most severely lacking, as affected people were not consulted or compensated during construction. There are further concerns connected to the new dam that is planned, Inga 3. The primary benefit to be expected for local people is employment, and this is short term in nature. Recognition is unlikely to expand beyond traditional right-holders. There are plans for consultation and compensation, but the extent to which this will meet local expectations is not clear. As such, there are various limits to energy justice with both existing and planned dams. Nevertheless, they are perceived in strongly positive terms across study sites. Even if limited, the potential benefits of the new dam mean that local people must accept its negative impacts, a watered down version of justice. This increases their vulnerability, and highlights the importance of ensuring that the project is aligned with the principles of energy justice so it is sustainable.

Keywords: hydroelectric dams, energy justice, environmental justice, sustainability, Democratic Republic of Congo, post-colonial context

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On a practical level, I come from South Africa, and I wouldn't have been able to get to Sweden or enroll in the LUMES programme if it weren't for the Swedish Institute and their all-inclusive scholarships for South African students. It has been a life-changing experience, and I am forever indebted to the Swedish Institute, and to Sweden in general.

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Abbreviations and foreign language terms

DRC: Democratic Republic of Congo

SNEL: Société National d'Éléctricité (DRC energy company)

Ayant-droit: Traditional right-holder in land, recognised by the DRC Constitution.

Deslestages: Scheduled electricity cuts, a policy of SNEL in the DRC.

Plateau: Section of Inga town, largely inhabited by SNEL workers.

Camp Kinshasa: Section of Inga town, largely inhabited by unemployed people, some of which worked on the construction of the dams.

Camp de chômeurs: Section of Inga town, largely inhabited by ex-SNEL workers. The name translates as "camp of unemployed people".

1 Introduction: Quandaries in Africa

Africa holds a wealth of ecosystem services in her wide plains, her forests, her long rivers and tall mountains (Wangai, Burkhard, & Müller, 2016). There is a need to protect this, both for intrinsic and instrumental reasons (Pascual et al., 2017). But Africa holds people too, a tenuous hold, in a threadbare basket of insufficient socio-economic systems (Kihika, 2009). Conservation imperatives meet developmental ones, and clash, so that there is a great need to develop systems in Africa that function within environmental limits – sustainable systems (Ford, 2016).

It is not enough, however, to say that these new systems must be sustainable from an ecological point of view. They must also be big – big enough to accommodate the need on the African continent and create social sustainability. Mega infrastructural projects are therefore attractive in the African context, and in 2014 the mega projects under construction in Africa were valued at $326 billion (Sebuny, 2015). Examples are a high-speed train in South Africa (van der Westhuizen, 2007), deepwater offshore development in Angola (DorisEngineering, 2014), and various projects on a heritage site island in Kenya (Patinkin, 2014).

However, Africa may not be the best environment for the mega project. The expense means African states must attract external funders. This limits their agency, so that developmental goals may be subsumed by a neo-liberal agenda (Bond, 2008). It also means that local business is stifled by larger external players (Mills, 2010). So, while the European Union has identified Africa as a site to make up their own energy shortfall and work towards renewable energy goals, there are concerns about how many benefits will accrue locally (Showers, 2011). Similarly, Chinese companies are planning to build over 30 hydroelectric dams across Africa, and it is unclear who will benefit (Morgan, 2013).

The case of the Democratic Republic of Congo (DRC) is an excellent example of these dynamics, particularly in the area of energy. Access to electricity in this country is very low, at around 13.5%. This indicates the need for large energy projects, possibly even mega projects. However, the country is one of the poorest in the world, with a GDP per capita of 456.1 USD in 2015, as compared to 5 718.2 USD in the regional hegemon of South Africa, or 50 585.3 USD in Sweden (WorldBank, 2017b). This means that energy mega projects in the DRC, such as the Inga dams, must rely on extensive external funding. The Inga dams are two hydroelectric dams, or hydrodams, that currently provide most of the country's electricity (Kutelama, 2004). Plans are being made for the construction of Inga 3, to be succeeded by

further hydroelectric works up to Inga 8 (Morgan, 2013). The so-called Grand Inga Dam is planned as the largest hydrodam in the world, producing 44 000 MW but needing 80 billion USD in funding (Green, Sovacool, & Hancock, 2015). Even Inga 3 is to have a far larger capacity than the existing dams at 4500 MW. To ensure the project's financial viability, an agreement was signed so that South Africa will buy 2500 MW. However, if so much energy is to go to a regional hegemon this begs the question of justice, given that energy access in the DRC is so low. Further, if Inga 3 creates energy injustice it may not be sustainable, given the intimate connection between social and ecological systems (Kates et al., 2001).

Construction of Inga 3 has not begun yet, but planning is underway (WorldBank, 2011). Therefore, it may particularly pertinent at this moment to consider the past contribution of the existing dams to energy justice in the DRC, as well as the potential contributions from the new dam. Findings may be used to improve the process of the construction and management of the Grand Inga Dam project. There is a certain level of urgency to such a study, given the project's size and therefore also the size of its potential benefits and ills on local, national and regional levels. Such a study is further relevant to energy justice in the many mega projects in Africa, and specifically to the many hydroelectric dams planned by external partners.

In order to meet this need, a study is presented on the Inga dams in the DRC. The lens of energy justice is used to structure this, and the following research questions:

1.1 General direction and objective

How do the Inga dams contribute to energy justice and sustainability?

1.2 More specific research questions

1. How do the existing Inga dams give effect to distributional, recognition and procedural justice?
2. How can Inga 3 be expected to contribute to distributional, recogntion and procedural justice?
3. What does the level of energy justice in the Inga dams case mean for their sustainability?

1.3 Walking through this thesis

Before tackling the research questions, I will provide an outline of how this will be done. Firstly, background will be provided to establish the context of this case. Specifically, a few points of DRC history are discussed, and some background will be given to each of the study sites, particularly with regard to their energy access. More detail will be provided on Inga as the closest town to the

hydrodams, regarding both the functioning of the dams and the living situation at the town. The next section of the thesis concerns the methodology, methods, and limitations of this study. Further, the theoretical background will be discussed, specifically in terms of the relevance of environmental justice, energy justice and sustainability science. These components of background, methodology and theory will set the scene for the results and discussion sections, which have been combined in this thesis. Results will be presented according to the environmental justice framework of Schlosberg (2004), with its components of distributional justice, recognition as justice and procedural justice. For each of these forms of justice, relevant aspects of Inga 1 and 2 will be mentioned first, and then these will be used together with existing data on Inga 3 to discuss justice expectations for this hydrodam. Once all components of the justice framework have been discussed, these will be summarised and the resulting justice finding will be compared to local opinions on the dams. Much of this thesis will be given over to a discussion of the application of energy justice to the Inga dams case, but the case will also be applied to both energy justice and sustainability science. These final sections will consider theoretical developments in light of this case.

2 The context of the Inga dams

2.1 The historical background

The context of the Inga dams lies partly in history. Much as was the case for other African states, the area that is today the DRC was the victim of two hugely destabilising moments of European oppression (Hochschild, 2006). The first of these was the slave trade which followed the arrival of European explorers in the 15th century and severely disrupted the established administrative systems of the day (Thornton, 2001), see Figure 1. The second was Belgian colonialism and specifically King Leopold's reign from 1885 (Hochschild, 2006, p. 87). At the time of slavery and again during

Figure 1: Administrative borders in a portion of West Africa in the 15th century. *(Source: http://www.africafederation.net/Bansi_ya_ntotila.gif)*

colonialism, it is estimated that the local population was reduced by half (Hochschild, 2006, pp. 225-234). Independence from Belgium was achieved in 1960, but the newly established DRC never really established democracy after the first democratically elected prime minister was assassinated by the American CIA (Kinzer, 2016).

This history created a country which today is struggling with poverty and has insufficient systems to realise socio-economic rights (Kasongo, 2014). It is also a country of shaky democracy, which relies extensively on the militarisation perpetuated since the times of King Leopold (Hochschild, 2006). In this context, the Inga dams are greatly important from a socio-economic perspective, but there is a question mark over whether their benefits are democratically distributed.

2.2 Zooming in on the DRC

All study sites for this project were in the DRC, a country in Central Africa (see Figure 3). The DRC is in the tropical climatic zone and is dissected by the equator in its northern provinces. It is the site of the Congo River (see Figure 2), which holds the second most water of any river in the world, after the Amazon River. Due to its geographic positioning, partly south and partly north of the equator, there is always a section of the river experiencing the rainy season and this means that there is little variance to the water level in the river throughout the year.

Within the DRC, the study sites were at Kinshasa, Inga, Boma and Muanda, all of which are located along the Congo River (see Figure 1). Kinshasa is the capital city, and also makes up one of the country's 26 provinces. All other study sites were located in Congo Central, the westernmost province of the country, and the only province with a sea coast. Boma is a large port city, and was the capital for part of the colonial period. Inga is a small town at the site of the hydroelectric dams Inga 1 and Inga 2. Muanda is located at the mouth of the Congo River, where it flows into the Atlantic Ocean. It is the only city in the DRC by the coast, and is the site

Figure 2: The Congo River at Boma. The wooden boats are called *pirogues* and are the mode of transport for many Congolese fishers. *(Source: author)*

of a port at the connected town of Banana. While electricity access in the DRC is very low, all study sites had relatively extensive energy networks. This is partly due to the proximity of the Inga dams, and Kinshasa, Boma and Inga all receive electricity from these hydrodams. Muanda receives electricity from petrol gas burned by a private petrol extraction company functioning in and around the city. Given that only 13.5% of the roughly 81.6 million people in the DRC had electricity access in 2014 (WorldBank, 2017a), the study sites are relatively privileged where this service is concerned.

2.3 Zooming in on Inga

Life at Inga

Inga has been a site of human habitation for generations, but the construction of Inga 1 and Inga 2 in 1972 and 1982, respectively, altered the landscape drastically. Traditionally, people live in small villages of a few hundred people each, situated on a larger piece of land to which a specific clan (or family group) has rights. Settlements are semi-nomadic, as villages may be abandoned as needed and re-established elsewhere within the borders of the clan's land. Such villages still exist today, and may be reached by small dirt roads. However, there is also a far larger settlement which was created for workers on the dam construction and later for its management by the Société National d'Éléctricité (SNEL), the DRC's national energy company.

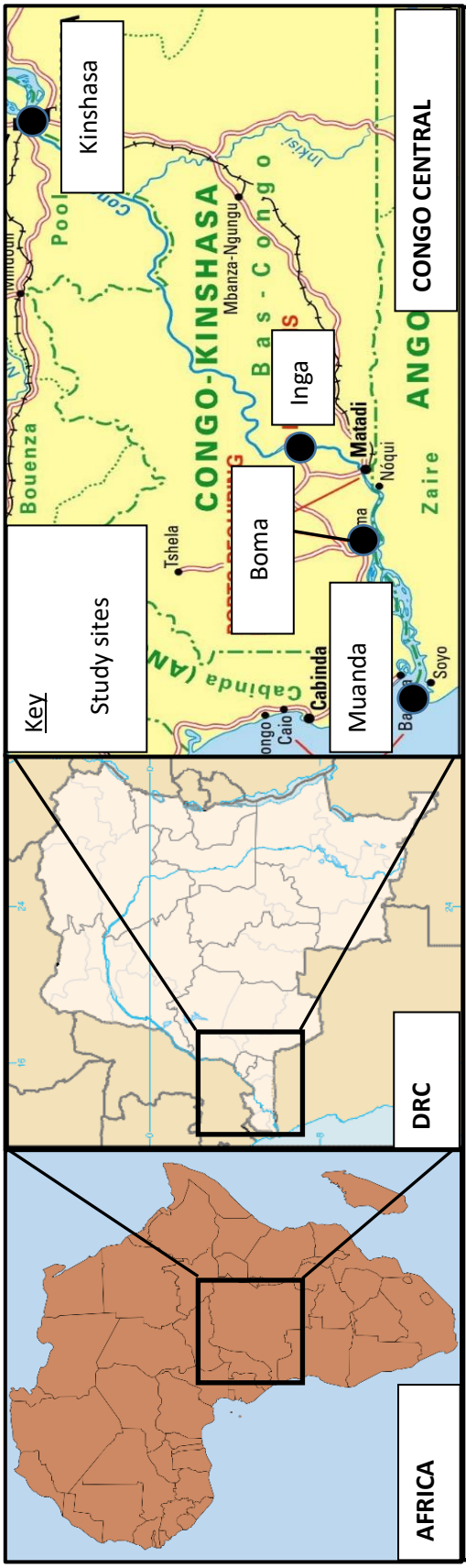

Figure 3: Regional, national and provincial context of study sites. *(Sources from left to right: https://en.wikipedia.org/wiki/Africa; Wikimedia Commons; https://www.africa-confidential.com/The_Atlantic_ports_puzzle)*

The history of Inga town can be seen in its highly segretated landscape. The developers were private companies from other countries, and built both wooden houses for local construction workers, and a separate settlement of brick houses for expatriate workers. The development meant rapid in-migration from around the country, particularly for less technical construction jobs, so the settlement of wooden houses swelled, creating what is today a community of around 9000 people at the so-called Camp Kinshasa (see Figure 4). The brick houses were the beginning of the so-called Plateau, a separate settlement for dam workers several kilometres away from Camp Kinshasa. There is a marked difference between the quality of the houses on the Plateau and of those in Camp Kinshasa (see Figure 5). Housing for foreign contractors on the Plateau is of a particularly high quality, and is located in settlements that are enclosed by fences and guarded. On the edge of the Plateau, there is a so-called ”camp des chômeurs”, or camp of unemployed people. This is an informal settlement where previous SNEL workers live in self-constructed houses.

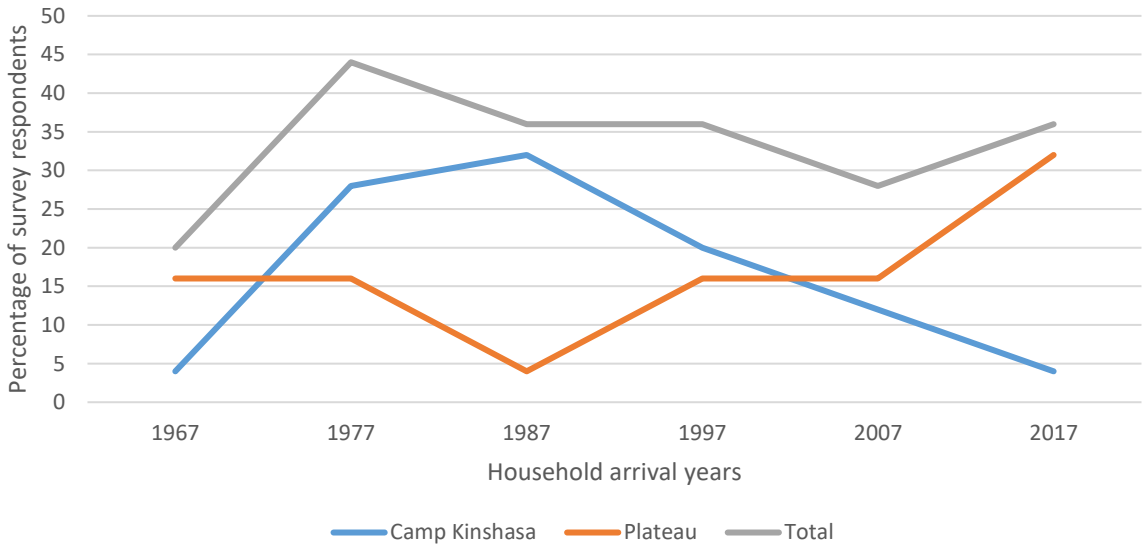

Figure 4: Arrival times at Inga for households of survey respondents. *(Source: author, based on survey data)*

Despite differences in housing quality, there are a number of services that are provided to Inga residents of both the Plateau and Camp Kinshasa. Housing was provided to 92% of survey respondents free of charge, and water and electricity is free for all respondents. Nevertheless, the quality of these services varies greatly between the Plateau and Camp Kinshasa, both of which are split into various ”camps”. While service delivery is the same across Camp Kinshasa, on the Plateau it varies by camp.

Figure 5: The contrast between housing on the Plateau (left) and housing at Camp Kinshasa (right). Housing on the Plateau was built for foreign contractors and current workers at SNEL, while housing at Camp Kinshasa was built for construction workers when Inga 1 and 2 were built. *(Source: author)*

Firstly, the water service at Inga is of greatly differing quality. This is both in terms of the level of individualised access per household, and in terms of whether or not a household faces regular water cuts (see Figure 6). In Camp Kinshasa, the commonly gendered division of labour means that womyn spend much time waiting in the queue for communal taps (see Figure 7). Further, there are concerns as to whether the water is potable. Although most respondents drink it directly, this may be related more to economic limits than cleanliness of the water, as 62% of respondents feel that the water makes them sick. The most common complaint was stomach-related illness. To avoid this, 18% of respondents boil the water, 18% buy water and 4% buy water purifying tables for their drinking water. Those who spent money to make their water drinkable reported using 3-30% of their monthly income on water, with an average expenditure of 16%.

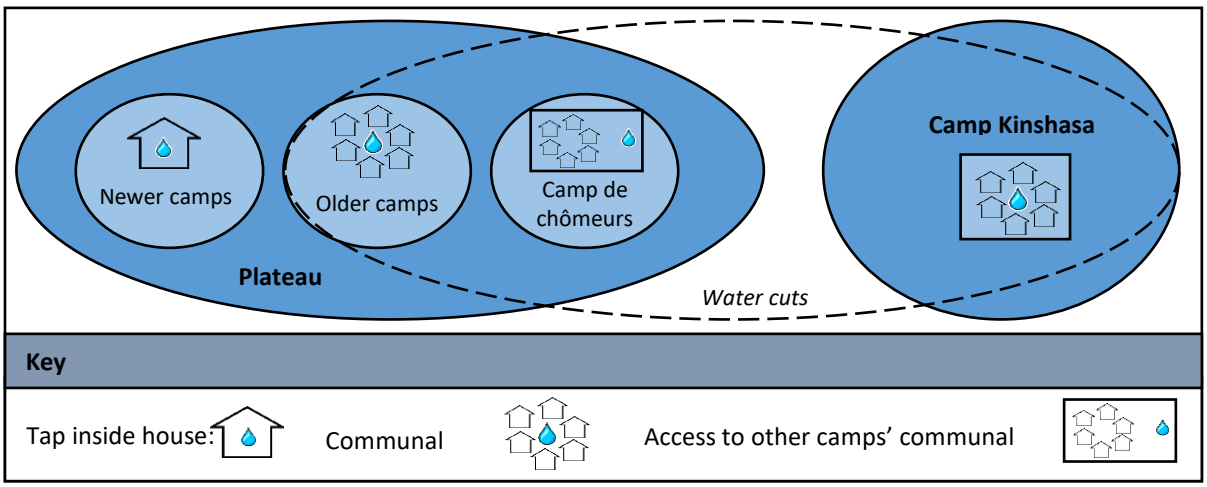

Figure 6: Water access in different sections of Inga town. *(Source: author, based on survey data)*

Figure 7: Womyn and children waiting for a turn to collect water from a communal tap in Camp Kinshasa.

In terms of electricity, there is again a clear difference between the service available to Plateau residents and that available to those from Camp Kinshasa. While electricity is also free of charge for all Inga residents, electricity supply is constant on the Plateau, but Camp Kinshasa is split into two areas which receive electricity by turns. Interestingly, the ”camp de chômeurs” also receives free electricity, and only has an electricity cut on Sundays.

Finally, almost all formal employment at Inga is related to the dam development, and this benefit is limited. Much of the work for Inga 1 and 2 was during the construction phase of the dams, which has long passed. The number of permanent employees in the plants is low. 78% of respondent families arrived at Inga to work for SNEL, but only 32% reported that someone in their household was still employed with SNEL.

Despite the limits to SNEL employment, there is little other employment at Inga, so that unemployment figures are very high. An average of one person is employed per household, with a range of 0-6, a median of 0 and a mode of 0, although households have an average of seven members. Once again, however, the difference between the Plateau and Camp Kinshasa is notable. If an

employment ratio is calculated by dividing the number of employed people by the number of people in a household, the ratio for people living on the Plateau is around 0.32, while that for Camp Kinshasa residents is around 0.06 (see Figure 8). In this context, a ratio of one would indicate that every member of a household is employed, while a ratio of 0 would indicate that none are.

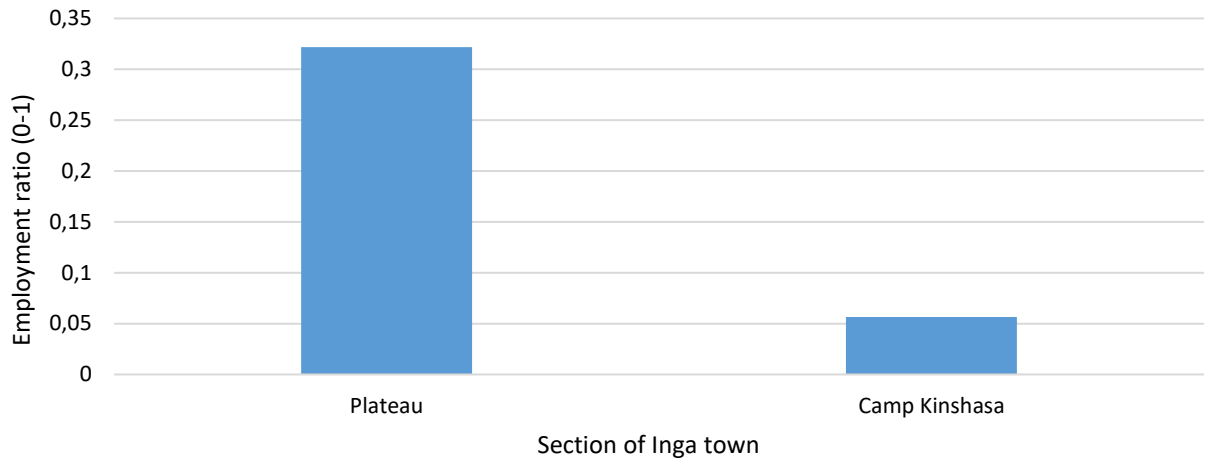

Figure 8: Employment ratio by section of Inga town. *(Source: author, based on survey data)*

Zooming in on the Inga dams

In 1816, the British explorer James Hingston Tuckey recorded that the Congo River between Kinshasa and Matadi (the current capital of Congo Central, downstream of Inga) was non-navigable due to rapids (Hochschild, 2006, pp. 17-18). It was the presence of these rapids that later gave birth to the idea of hydroelectricity. In 1972 and 1982, respectively, Inga 1 and Inga 2 were built, at a site near the Inga town of today (see Figure 10).

The functioning of these hydrodams depends on the canalisation of the Congo River, through which 10% of the flow is directed first to Inga 1 and then Inga 2 (see Figure 9). The first facility, Inga 1, runs on six units which each generate 58.5 MW, or 351 MW in total. Inga 2 is larger, however, with eight units which each generate 178 MW, or 1424 MW in total. After passing through the two hydroelectric dams, the water is redirected back into the Congo River.

SNEL at Inga is currently planning the construction of the next dam, Inga 3 (see Figure 10). Funding for this project has been secured in loans from numerous partners, including the African Development Bank and Chinese banks. A partner is now being sought for the construction of the dam, and two

groups of developers have been short-listed, one in Europe and one in China. Once construction of Inga 3 has begun, it is expected to take six years until electricity can be generated.

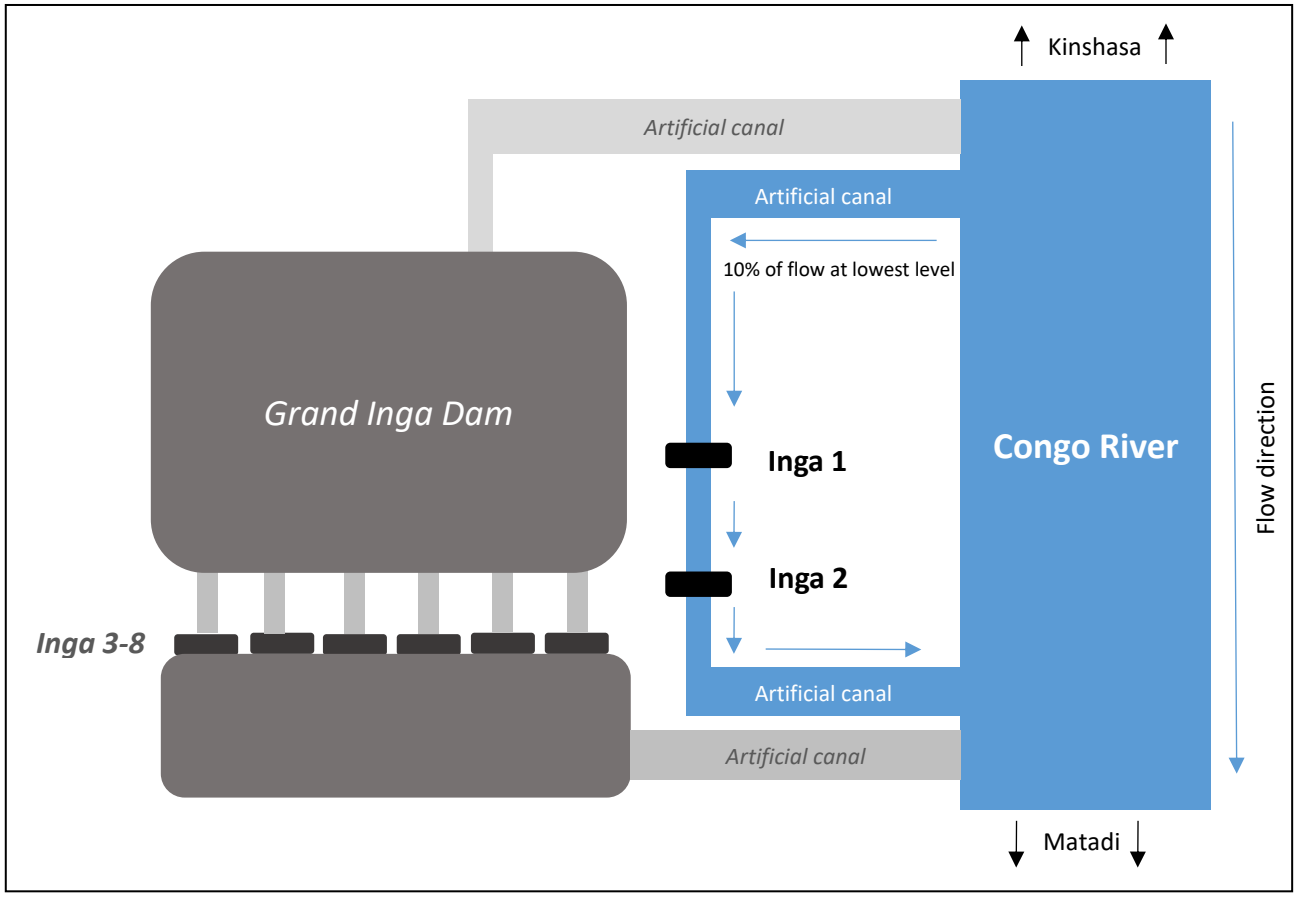

Figure 9: Schematic representation of hydroelectricity production at Inga, with existing structures in blue and black, and planned structures in greyscale. *(Source: author)*

Figure 9: Electricity production at the Inga dams, showing Inga 1 (top), turbine at Inga 2 (bottom left), and maintenance work at Inga 2 (bottom right). *(Source: author)*

3 Methodology

3.1 Methodological background

The research philosophy of this study is constructivist, assuming that meaning is created through social actors (Bryant, 1995, p. 33). This is aligned to the theory of energy justice (McCauley, Heffron , Stephan, & Jenkins 2013), which here concerns the balancing of simultaneous truths and claims to justice related to the Inga dams. Further, it is aligned to the research model adopted for this study, which is based on inductive reasoning in the context of grounded theory. The inductive approach is the preferred method for qualitative research (Bryman, 2016, p. 36), and involves the development of theory based on data that has been collected. Grounded theory is in line with this approach, but further emphasises that the relationship between data and theory is not linear (Glaser & Strauss, 1967). Rather, it is iterative and interactive, and this approach was found to be useful in this study. There are difficulties associated with research in the DRC, given its political difficulties and civil war, so that the existing pool of original research on the country is reduced, and the potential for theory creation is limited. Therefore, theory created in this study was based on empirical research, following inductive reasoning. However, the theoretical base of energy justice did continually inform research methods, so that the interaction of theory and data was important. Beyond just inductive reasoning, grounded theory was therefore a guiding principle for this study.

Further, the methodological approach was one of mixed methods, with a focus on qualitative research and some quantitative elements. Qualitative research was necessary as energy justice is not entirely reducible to facts, figures and measurements, but further rests on social perceptions and demands relating to these (King, 2010; Simcock, 2016). However, quantitative research was useful in broadening understanding of the socio-economic circumstances at Inga, and the community's opinions of the hydrodams. The mixed methods approach is controversial (Bryman, 2016, p. 629), but in this study it enabled triangulation (Newing, Eagle, & Puri, 2011).

3.2 Methods

Data collection

The data for this study was collected using a combination of desktop study and field work. The desktop study was undertaken first, and involved an analysis of the grey literature available about the project,

and a survey of academic journal articles concerning the possible impacts of hydroelectric dams. The trends identified were used to inform study design during field work (see Table 1).

Table 1: Trends in the study of hydrodam impacts.

Categories of impact	Hydrodam impacts	Case examples	Study examples
Ecological impact	Landslides	Three Gorges (China)	Xu, Li, Yu, Ma, and Yu (2015); Yin et al. (2016)
	Sedimentary and geomorphic changes	Three Gorges (China), Massanjore (India)	Pal (2016); Yang (2016)
Social impact	Forced resettlement	Three Gorges (China), Sardar Sarovar (India), Belo Monte (Brazil)	Jain (2005); Li, Waley, and Rees (2001); Randell (2016b); Rekha (2006); Wilmsen (2016)
	Decline and improvement of livelihoods	Belo Monte (Brazil), Sardar Sarovar (India)	Buckland and O'Gorman (2017); Jain (2005); Randell (2016a)
	Intersectional issues: gender, ethnicity	Sardar Sarovar (India)	Kurian (2000)
	Indigenous peoples' rights	Hydro-Quebec (Canada), Belo Monte (Brazil)	Khatri (2013); Willow (2016)
Political and economic context	Concepts of development	Sardar Sarovar (India)	Chattopadhyay (2006)
	Post-colonial context	Sardar Sarovar (India); Hydro-Quebec (Canada)	Marino (2012); Willow (2016)
Resistance	Anti-damming movements	Belo Monte (Brazil), Sardar Sarovar (India)	Dwivedi (1999); Klein (2015)

Field work was conducted during a six-week visit to the DRC. All research participants were identified using a snowball sampling strategy, and the categories of people sought were people affected by the dams, energy company workers, NGO employees, community representatives and conservation workers. Data was gathered during 13 semi-structured interviews, twelve focus groups (four with participant mapping), nine transect walks, ten informal conversations recorded after the fact, two weeks of intermittent participant observation with a local NGO, one day of participant observation at an energy conference, and 50 surveys (see Appendix 1 for full list).

The research period was divided between around two weeks in Kinshasa, five days in Boma, around two weeks in Inga, and four days in Muanda. Work with affected people was largely conducted at Inga, and focused on perceptions of the positive and negative impacts of the dam. Beyond this, parts of the survey concerned the socio-economic status of different sectors of the Inga community, as an indicator of project benefits. Outside of Inga, focus groups and transect walks were held with fisher associations at different sites in order to understand changes to the river and associated social and ecological impacts (see Figure 10). This was done at Kinshasa (upstream of the dams), at Inga (at the site of the dams), at Boma (downstream of the dams), and at Muanda (at the river mouth). Further, the socio-technical challenges associated with the existing dams were discussed with energy company workers, and these actors also provided insight on maintenance operations and the construction of Inga 3. Data collected from NGO employees and a community representative was focused on understanding national perceptions and responses to the dams, as well as energy politics. Finally, possible environmental impacts on the mangroves at the river mouth were discussed with a park manager.

Figure 10: Participant mapping during fisher focus group at Boma. *(Source: NGO worker, Boma)*

Data analysis

Data analysis involved a content analysis of my own notes (Bryman, 2016), transcription and coding of field work records (Newing et al., 2011), and some descriptive statistics (Sirkin). Firstly, during the field word period I made notes of all relevant interactions. The result was a 47-page document, and the first step of my analysis was to identify trends within these notes so as to gain an overview of my data (see Appendix 2). Based upon this content analysis, I drew up a preliminary outline of my thesis. This formed a lens through which to look at my data, allowing me to transcribe selectively. It was necessary to transcribe selectively due to time constraints and the large extent of my data. I then did open-ended qualitative coding of the text from transcriptions. Further, I used simple descriptive statistics to analyse survey data, calculating average, range, mean, mode, percentage and ratios for relevant data sets.

3.3 Scope and limitations

Despite the justifications above for the choices made in methods and methodology, there are various important limitations that must be acknowledged. Firstly, I conducted all research in French, and this is not my first language. Further, translation was necessary from Lingala and Kikongo where research participants were not confident in French. There may therefore be inaccuracies in research results, and these may have been compounded by the necessity of translating quotes into English for this thesis.

Further, there are various limitations relating to cultural context. Social structures at Inga are hierarchical, with clear power imbalances between men and womyn, and great importance afforded to leaders. This meant that those people with higher status spoke most in focus groups, and womyn in particular spoke very little. In addition, the leader of Camp Kinshasa accompanied me for all focus groups and transect walks and surveys in this area, and the statements of research participants may have been coloured by this. Further, these statements were often the result of deliberation and finally consensus, a reflection of Congolese cultural codes. Often, only the points on which consensus had been achieved would be translated for me, so some deliberative nuances may have been lost.

Beyond this, my very identity may have formed a limitation. I am a South African, and this may have affected participants' answers regarding the distribution of electricity to South Africa. Further, I am a white female, and the intersectionalities of this identity are complex (Cho, Crenshaw, & McCall, 2013), given ongoing racist hierarchies that may have increased my status and sexist hierarchies that may have reduced this. In particular, my racial identity combined with the inherent power imbalance

present in the relationship of research participants to researcher may have created a power-related research bias. However, I am also not a native French speaker, and this put research participants at an advantage in a way that may have reduced the imbalance to some extent. This last point reduces the language-related limitations mentioned above.

Finally, the historical context of the DRC is very specific, as outlined in the background section. This limits the extent to which results are generalizable. However, there are still various commonalities between African states and also hydrodam projects, and care has been taken to limit inferences along these lines.

3.4 Ethical considerations

There is much at stake with the Inga dams, and their controversy necessitated careful consideration of my conduct. Before going to the DRC, I made contact with one international NGO working on the Inga case, and three local NGOs. I asked advice about procedures to follow within the DRC, both for my own safety and the safety of my research participants. Following this advice, I obtained an authorization to visit Inga and conduct research there, and registered with local authorities at study sites when this was required. All research participants took part in the study voluntarily, after being informed about its nature. I asked permission whenever I used a recorder. For simplicity reasons, and due to the possible controversy of my research findings, I assumed anonymity of all research participants, and informed them of this. I tried to act in accordance with Congolese cultural codes, for example by asking permission orally rather than using a consent form, and sharing food and drink with participants after focus groups as an expression of appreciation. Finally, I have committed to make this thesis available to my research participants through key contact people.

4 Theory

This section will serve to describe the two theories underlying this study, as well as one broader research field: environmental justice, energy justice and sustainability science. While energy justice is the primary theory that is used, it is a new theory and only partially distinguished from environmental justice, on which it is based. Therefore, much of this section will be devoted to setting out the principles of environmental justice. Then, the connection between energy justice and environmental justice will be discussed. Finally, this theoretical framework will be situated within sustainability science.

4.1 Environmental justice

History

The theory of environmental justice is embedded in the tie-dyed civil society awakening of the 1970s in the USA. It was at this time and in this place that community activists began to draw attention to social impacts of industrial pollution and their inequitable distribution (Davies, 2006; Kurtz, 2003; Maples, 2003; Williams, 1999). A campaign was built around the fact that the environmental impacts of industry are often felt locally, while affected people may not get the benefits. Civil society actors were joined by academics, and studies were conducted to identify the spatial relationship between polluting facilities and poor and marginalised communities (Bryant, 1995; Edwards, 1995). In 1994, legislation was passed in the USA to recognise the inequitable distribution of environmental injustices (McCauley et al., 2013). Soon the issue gained legislative recognition outside of the USA, for example in the EU White Paper on Good Governance (CEC, 2001) and the Aarhus Convention (UNECE, 1999). This was mirrored by academic recognition on the international level, and today environmental justice has been used as a lens to understand social and environmental problems in countries such as South Africa (London, 2003), Sweden (Chaix et al., 2006), the UK (Todd & Zografos, 2005), Turkey (Islar, 2012), Brazil (Hess, Ribeiro, & Wieprecht, 2016) and Taiwan (Fan, 2006).

Components

This research will use Schlosberg's framework for environmental justice, composed of the concepts of distributional justice, procedural justice and justice as recognition (Schlosberg, 2004). This section will give a brief overview of these three theoretical components as they have developed in academia and practice. The order that will be adopted will be that of distribution, recognition and then procedure. This is in line with what was suggested by Kirsten Jenkins, McCauley, Heffron, Stephan, and Rehner (2016), according to whom injustices must first be identified (distribution), so that the reasons for them can be sought (recognition), and finally solutions can be found (procedure).

<u>Distributional justice</u>

Distributional justice was the departure point for environmental justice, and remains its most well-known component. There are historical reasons for this, which have been further underlined on a theoretical basis. Initially, when the concept emerged with social activists, the primary concern was the distribution of ills from pollution, which was attributed to structural and systematic discrimination (Bullard, 2000; Dobson, 1998; Pulido, 1996; Szasz, 1994). Szasz argued that the environmental harm

facing people near hazardous industry was inextricably linked to their economic position (Szasz, 1994, p. 151), and Edwards drew this link further, to include social discrimination. He argued that one could predict the levels of hazardous waste in an area based on its racial composition (Edwards, 1995, p. 40).

Beyond the historical basis for the rootedness of environmental justice in distributional issues, there is a further theoretical component. Environmental justice theorists have sought to link the concept to more established theories of justice (Schlosberg, 2004), leading to strong associations with the philosophy of John Rawls. Rawls' original position is focused on creating societal rules that enable equitable distribution, and is clearly situated within liberal justice theory as it seeks to create rules for fairness without considering the substantive nature of what is "good" (Rawls, 2005). This thinking has been developed more recently by Brian Barry, who feels that agreement is needed on the rules of distributive justice, but that individuals must be free to construct the "good life" for themselves within this (Barry, 1995). In this way, the theoretical association of environmental justice with established theories of justice, and with Rawls in particular, has increased the importance of distributional justice within the theory (Schlosberg, 2004).

Despite the prominence of distribution issues in environmental justice, research has not been conclusive in demonstrating a causal link between poor health in disadvantaged communities and potentially harmful industrial facilities (Dolk et al., 1998; Petts, 2005). This may be due to intervening factors, but the difficulty of making the link suggests that distribution may be overemphasised within environmental justice (Davies, 2006). This provides an opening for arguments about the importance of additional justice aspects, most particularly recognition and procedure, which will be dealt with below. The emphasis here is on understanding the underlying systems leading to injustice, beyond just identifying inequitable distributions (Young, 1990).

Justice as recognition

It is fairly uncontroversial to state that there are differences in the way groupings in society are seen and treated. Privilege and oppression are simultaneous phenomena across the world, and there are patterns to their attachment to social groupings. Iris Young made the useful point that if inequitable distribution is to be challenged then group differences must be recognised (Young, 1990). The call for recognition as a core principle of justice was echoed by Nancy Fraser, who emphasised the role of culture as a justice concern both in and of itself, and in terms of its connection to economic inequality (Nancy Fraser, 2000). It was Schlosberg who forcefully tied recognition not just to justice theory, but specifically to environmental justice theory (Schlosberg, 2004, 2007).

The adoption of this further principle of justice was resisted by several justice theorists. The first objection is that recognition is not distinct from distributive justice, but rather is a necessary pre-condition for it. Notably, this is the argument of D. Miller (2003), who also feels that recognition is a pre-condition for procedural justice. The second, and related, objection is that recognition is just another good to be distributed (Schlosberg, 2004). Schlosberg counters these by stressing that while these objections may be sound on a theoretical level, practical justice is not possible without the consideration of recognition issues, and indeed also procedural issues (2004).

Procedural justice

The third key component of environmental justice involves procedure. Justice in procedure rests on "fair treatment", such that environmental burdens are not disproportionately borne by one group, and "meaningful involvement" so that all people that are affected by a project have a stake in decision-making about it (Bullard, 2000, p. 7).

Procedural justice is closely related to justice in recognition, and it has even been suggested that procedural justice is not possible without recognition (Schlosberg, 2004). In social movements, and particularly among movements for indigenous rights, it has been found that calls for participation and equitable procedure are indistinguishable from demands for recognition (Schlosberg, 2004). Therefore, while demands for environmental justice commonly take the form of calls for procedural rights (Hess et al., 2016), these may represent an underlying and broader demand for change to inequitable and exploitative systems (Acuña, 2015). However, procedural justice forms the platform for broader justice demands, as these are the claims most likely to be recognised in official structures.

4.2 Energy justice

The broader theory of environmental justice has given rise to more specific research agendas in the areas of energy justice (Schlosberg, 2007, 2013), climate justice (Dawson, 2010) and atmospheric justice (Vanderheiden, 2008). These each form a more specific theoretical framework with the purpose of identifying and rectifying injustices within a particular category of human and natural systems (McCauley et al., 2013). In the case of this study, system boundaries have been drawn around the energy system, as the purpose of the Inga dams is to provide electricity. Energy justice is therefore the most relevant theoretical framework for this case. However, the driving principles of energy justice originate in environmental justice, and this is the reason for its extensive description above. The concepts of distributional and procedural justice were adopted in energy justice by Fuller and

McCauley (2016), and recognition was added by McCauley et al. (2013). Kirsten Jenkins et al. (2016) contributed to a more nuanced understanding of procedural justice in energy concerns by suggestion three key focus areas: the mobilisation of local knowledge, full information disclosure and institutional representation.

While the tenets of energy justice mirror those of environmental justice, the new research direction provides scope for a more specific and nuanced focus on energy issues. The theory has been applied together with a systems focus on energy production (Heffron & McCauley, 2014) and consumption (Hall, 2013). It has found relevance to studies of both policy (McCauley et al., 2013) and activism (Fuller & McCauley, 2016). Further, it has been used to advance thinking in the areas of the energy trilemma (Heffron, McCauley, & Sovacool, 2015), energy security (B.K Sovacool, Sidortsov, & Jones, 2013), the political economy of energy (K Jenkins, Heffron, & McCauley, 2016) and climate change (K Bickerstaff, Walker, & Bulkeley, 2013). Benjamin K. Sovacool (2014) made an appeal for the application of social science thinking to energy concerns, and it is this theme that is seen across these focus areas.

In this way, environmental justice has furnished energy justice with its form, while specific energy-related scholarship has filled this with substance. Focus areas have been identified to give direction to structure, and it is in this sense that the related but independent theories of environmental and energy justice will be used to give meaning to the study findings.

4.3 Sustainability science

Beyond the specific thematic focus of environmental and energy justice, sustainability science will be used as a broader lens to make sense of research findings. Sustainability science is about developing human systems that function within environmental limits, and do this long-term (Kates et al., 2001). The dynamic is important in energy systems (Hess & Ribeiro, 2016), particularly in the Global South where low energy access is a human rights concern (International Energy Agency, 2011) and extensive growth is expected in the energy sector in the near future (International Energy Agency, 2015). The manner in which energy systems are developed in Africa is thus important for sustainability globally, so that that a sustainability science perspective may be useful in considering energy projects. There are also various commonalities between sustainability science, and environmental and energy justice, suggesting that the theories are compatible and form a useful interface to evaluate the case at hand. While sustainability science examines the relationships between global and local systems (Kates et al., 2001), energy justice tests these for fairness (McCauley et al., 2013). Both are concerned with systems

thinking, specifically where this concerns the interactions between nature and society, and human agency in steering these (Goldthau & Sovacool, 2012; Kates et al., 2001). Their approach is very similar, as where sustainability science has been termed problem-solving (Polk, 2014), energy justice is evaluative and normative (Kirsten Jenkins et al., 2016).

In this way, there appears to be extensive common ground between the theories. One large difference is that sustainability science has a broader focus, and has in fact been termed a field rather than just a single theory (Kates et al., 2001). Therefore, it has been applied to a broader range of cases. Some of these may fall outside of the system boundaries of energy, but the theories' close relationship in both subject matter and approach means that these will remain relevant to the case of the Inga dams. In this way, energy justice is the most specific of the theories that will be applied to this case, and can make content-specific suggestions regarding study direction and understanding. Sustainability science, however, provides a broader overview and situates this case within sustainability thinking as such.

4 Energy justice in the Inga dams case

Infrastructure persists in time, and through it social, political and economic systems are continually reproduced (McDonald, 2009). While the Inga dams are stable in space, they are structures of the past, present and future. They affect both social and environmental systems across time, as a physical and spatial manifestation of political and economic ideologies (Power et al., 2016). This is further true for the hydrodams that have not yet been built, Inga 3 to 8, which have been real in the discourse surrounding the dams for many years, an important political tool and part of the dominant discourse that creates "truth" (Rutherford, 2007). These components of time and space are intrinsic to the Inga dams, so their discussion in terms of energy justice theory will follow a time-based approach. Past and present impacts from Inga 1 and 2 will be considered along with predictions for energy justice in Inga 3.

4.1 Distributional justice: Where are the opportunities, where are the trade-offs?

Environmental justice is an inherently spatial concept (Walker, 2009), and so, by extention, is energy justice. Beyond this, distributional justice may include elements of scale if both benefits and ills from a project are felt on a more local scale, while it is justified in terms of larger scale benefit. This may particularly be the case for mega-projects with their expectations for large-scale benefits (Shirley &

Kammen, 2015). It is the case for the Inga dams, so that the following section will be organised according to benefits and ills at regional, country and local scale.

At the regional scale

There are grand dreams for Inga, much hope for how it can contribute to the energy pool for the whole region of Africa. This has been critically expressed by NGOs (InternationalRivers, n.d.), academics (Taliotis, Bazilian, Welsch, Gielen, & Howells, 2014), journalists (Jullien, 2013), and also my study participants. The standard tour of Inga 1 and 2 includes a trip to a small room where posters accompany a presentation. One of the posters depicts a number of transmission lines that are planned across Africa, and even one extending to Europe (Figure 10). These hopes are backed up by various regional actors, as seen in a report by a consortium of regional governance and funding agencies, which describes existing projects and calls for funding (ICA, 2011). The resulting discourse about the dam's importance creates a certain pride in the dam among local people, and a sense of ownership and duty. This was expressed by the fisher focus group at Inga as follows,

> *One can't leave the dam completely. Because now, the current development depends on electric energy. There is Africa. There is the DRC itself, which is waiting for electric energy. There is Africa. There is the world, even Europe. The World that needs electricity today. It's among the reasons that Inga 3, 4, 5, until 8, must be constructed.*

Currently, most of the energy that is exported goes to Zambia (ICA, 2011). Up until the late 1990s, however, energy was exported to South Africa, and energy has further been fed to the Republic of Congo. As such, there is some regional benefit from the dam currently, but a great deal more that is planned and hoped for with the development of further dams.

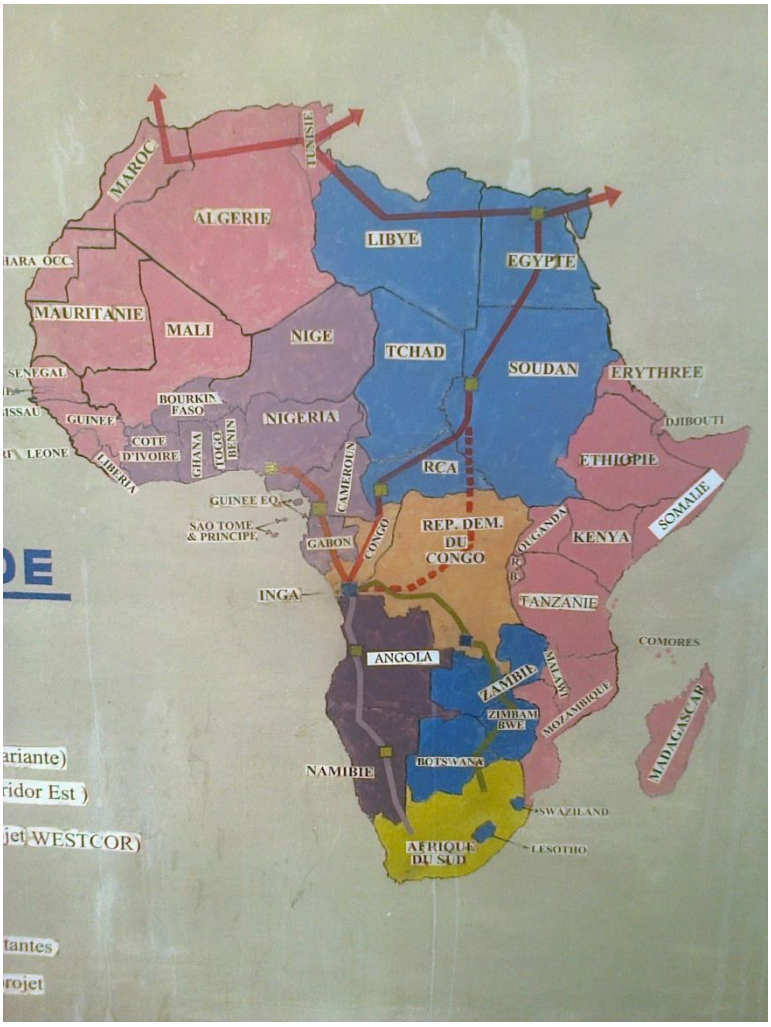

Figure 10: SNEL information poster about existing and planned distribution lines from Inga. *(Source: author)*

At the national scale

Hydropower is an important electricity form globally, amounting to 16.2% of production in 2012 (IEA, 2014, p. 24). This is amplified in the DRC due to the hydroelectric potential of the Congo River (Taliotis et al., 2014), and the fact that the Inga dams produce most of the country's electricity. Their importance is felt keenly by the population, and an NGO employee in Kinshasa cautioned, "If one were to stop Inga 1 and 2 today, the country would be in darkness."

The importance of the hydrodams lies in their contribution to development generally, and industry and electrification more specifically. This connection was stressed by study participants, and the youth

focus group made the connection explicit in stating, “Where there is a lack of energy, it’s under-developed.”

Regarding the hydrodams’ contributions to industry, a large proportion of their energy goes to mining operations at Katanga province. This is seen to be a great contribution to the country’s economy, responsible for the “mining boom” the country is experiencing, according to an NGO worker. Across focus groups, electricity distribution to Katanga was felt to be positive, so it appears that a connection between industrial development and local benefit is assumed in the DRC. However, this relationship is controversial, particularly in post-colonial context such as in the DRC, where neo-colonial economic patterns still exist (McDonald, 2009) and the role of rising economic powers in the energy systems across Africa has been dubbed the “new scramble for Africa” (Brautigam, 2010; Carmody, 2011; Hess & Ribeiro, 2016; Power, Mohan, & Tan-Mullins, 2012). The post-colonial context has been found to be relevant to hydrodam cases more generally, as seen in Table 1 (Marino, 2012; Willow, 2016).

Nevertheless, the Inga dams also contribute to energy access, a factor shown to be linked to development in a study comparing Human Development Index (HDI) in 120 countries (Martínez & Ebenhack, 2008). However, an overall increase in HDI might mask inequalities along the energy supply chain (Torres & Marques, 2001), and unfair distribution may cause injustice in both benefits and burdens (Campbell, 1988). In the DRC, electricity transmission lines are largely limited to urban centres and industry. There is also some electrification of villages along these lines, but this is limited. Study participants mentioned this not only as an injustice, but also as a practical difficulty, encouraging rural-urban migration and overstretching systems in cities. The fisher focus group felt that better electrification would reduce migration, as people would stay “where the beer is cold.” There is support for this relationship in a study on rural-urban migration in Ghana (Twumasi-ankrah, 1995), although elsewhere it has been challenged in light of the need to consider rural electricity production systems more broadly (Pearce & Webb, 1987). Nevertheless, it is clear that electricity systems are relevant to human movements, and therefore sustainability, as urbanisation patterns impact upon the natural and social environment (Boone & Fragkias, 2013).

The director of SNEL at Inga acknowledges that not all villages are electrified, but explains that there is national plan to do this, “petit à petit” – little by little. This progressive aproach to the realisation of recognised socio-economic rights is underlain by resource poverty in the DRC (WorldBank, 2017b). It is similarly being attempted in other post-colonial contexts, such as Ghana (Okyir, 2017), Kenya (Orago, 2013) and South Africa (Dugger, 2007). The approach is slow and may lead to frustration and even

protest (EduConnect, 2015). However, it may be the best solution for countries able to recognise the importance of socio-economic rights, but unable to give effect to them immediately.

In the DRC, this policy of progressive realisation of socio-economic rights may have implications for sustainability, however. This is the case where it is applied in time rather than space, in a policy of scheduled electricity cuts, or ”deslestages”, which again bears resemblance to South African policy (Weavind, 2014). The deslestages policy clashes with sustainability needs, however, as it has the unintended consequence of increasing firewood use for cooking. According to an NGO employee in Kinshasa, this has led to deforestation, much as has been seen in other areas with challenges in electricity access (Tanner & Johnston, 2017). This phenomen demonstrates the connection between social and ecological systems, highlighted in sustainability science (Kates et al., 2001). It shows that social needs may clash with ecological limits if the broader system is not considered (Meadows, 2009).

At the local scale

At regional and national scales, there are benefits from the Inga dams in the form of electricity and associated development. There are few ills, although there are limitations to the electricity network and question marks over the distribution of benefits from industry. On the local level at Inga itself, however, there is a more extensive and complex pattern of benefits and ills. This section will unpack this, focusing on the magnetism of the Inga dams and their employment potential, the land dependency that follows, and the relative privilege in service provision at Inga.

Inga is a great symbol for development and a magnet for those seeking a better life. As described in the background section, many survey respondents arrived at Inga for work, specifically dam construction. This perceived employment potential has been seen in other hydroelectric projects, such as in Canada where employment and revenue benefits for local people were used to justify a hydroelectric dam (Buckland & O’Gorman, 2017). However, Inga’s employment needs cannot accommodate the approximately 9000 people at Camp Kinshasa, or even the families of SNEL workers on the Plateau. This means that unemployment is very high.

However, there is work for foreign contractors and this angers local people. Their feeling of injustice bears similarity to that which has led to xenophobia and violence in contexts as far removed as South Africa (Kangwa, 2016) and Spain (D'Ancona, 2016), and must therefore be taken seriously. At Inga, the feeling of injustice about foreign employment patterns extends to people from other parts of their country. As the community leader of Camp Kinshasa had it:

The government sends workers that come from other provinces, while we in Congo Central, we also know how to do what these people come to do. They send us drivers while we have drivers here. They send us painters while we have painters here. We must use the drivers of this place, because there are enough of them. There are all the technicians as well.

The reason given by the director of SNEL at Inga for employment patterns is that local education levels were low when Inga 1 and Inga 2 were constructed. However, SNEL has a technical school at Inga to educate local children, setting the scene for upward social mobility. The director of SNEL at Inga is proud of this, stating, "I gave courses to children from here today. They are engineers like me!"

However, survey results indicated that the employment of locals at Inga continues to be low. Of the 16 respondents from households of current SNEL workers, none of these workers were born at Inga. Five of these were non-technical workers such as guards and drivers, but not even any of these non-technical jobs was occupied by somebody who was born at Inga.[1] This suggests a persistence of non-local employment patterns beyond real educational restrictions. It may be an example of the perpetuation of political and economic ideologies through energy projects (Power et al., 2016), creating inertia in the system of benefit distribution.

This situation of in-migration at Inga, coupled with low employment potential, means that the resulting community of people is directly dependent on natural resources. This dynamic was mentioned across focus groups for fishers, hunters and cultivators. A participant in the cultivators' focus group stated, "Our fields are necessary for life. Our fields educate our children, are necessary in the case of illness. Our fields help us." This indicates the importance of land-based strategies for generating cash to meet basic needs such as education and healthcare. It is a well-established dynamic among poorer communities with access to land, and has been further researched in South Africa (Shackleton, Shackleton, & Cousins, 2001).

This means it is an important benefit for local people that they may use the land around the dams without difficulty, essentially provided with use rights free of charge. However, these are restricted. Local people are not permitted to use the land immediately surrounding the dams, and complain about this limitation. Fishers are further affected by sedimentary changes, but not by the loss of sediment as seen in other cases listed in Table 1 (Pal, 2016; Yang, 2016). Rather the concern lies with perturbations caused by dredgers which reintroduce sediment to the river after the hydroelectric works. These

[1] This does not include those with monthly rotational contracts with SNEL.

impacts relate to the day-to-day functioning of the dam, but the ayant-droits have further grievances related to its construction. The village focus group described this as follows:

> *We were disturbed. We practice hunting and fishing. So, when the work (on the construction of the dams) was done here, hunting could not be done anymore because there were no more animals. After the explosives all the animals, most of them, left the land. And the fishing too. The way that our ancestors fished is no longer possible. Because when they made a channel in the river, they made the canal, really everything was disturbed. So fishing is not possible the way that our ancestors did it.*

The ayant-droits feel that the dams disturbed their land and their river, suggesting great reliance on these, which is further evidenced by the feelings of fishers and cultivators about their restricted use rights. It appears that hydropower is not compatible with traditional and/or land-based livelihood activities in some cases, which is a concern given that hydrodams are commonly sited in rural areas where people are likely to be more land-dependent (Hess et al., 2016; Shackleton et al., 2001).

The Inga dams both create a town of direct resource dependence and threaten this dependence. However, this town is still privileged. It is sited next to one of the largest development hubs in the DRC, and some benefits do flow from SNEL to the inhabitants in the form of services. Housing, water and electricity are largely provided free of charge, possibly due to the history of Inga town's establishment specifically for the dams. As detailed in the background section, however, each of these benefits is limited. The quality of all services depends on households' employment relationship to SNEL, which is heavily curtailed by the number of jobs available. Essentially, a community is created which is segregated by income and therefore class.

In summary

The spatial and scalar examination above has shown that, at regional and national scales, it is mainly benefits that accrue, while there is a complex and uneven distribution of benefits and ills at local scale, which largely follows a classist distribution. This mirrors the dynamics which sparked the environmental justice movement in the 1970s (Edwards, 1995; Szasz, 1994), and confirms that there are distributional justice concerns in this case.

In the future

Given the particular role of infrastructure in carrying social, political and economic systems forward through time (McDonald, 2009), the patterns described above may have some bearing on the benefits from the dams in the future, specifically the next dam, Inga 3. The most obvious benefit from this dam is its substantial contribution to the DRC's energy pool. However, as mentioned in the background section, most of this will be exported to South Africa, and much will go to the mining industries at Katanga. In this way, Inga 3 will follow the trends established by Inga 1 and 2, whose electricity similarly goes largely to export and industry.

At first glance, it appears that the DRC is failing to take account of the important justice implications of increasing its very low levels of energy access (Kirsten Jenkins et al., 2016). However, there are a number of factors standing in the way of this. Firstly, much as in the case of electricity generation in the Amazon (Hess et al., 2016), there are physical barriers related to the size of the DRC and the positioning of the dams in the extreme West. Secondly, there is limited infrastructure for energy distribution, a significant barrier, given that energy distribution is manifest in the physical siting of infrastructure (Kirsten Jenkins et al., 2016). Thirdly, there are socio-economic barriers. Individual-level poverty limits electricity consumption and therefore also revenues for SNEL. At the same time, the necessity of external loans for construction of Inga 3 heightens SNEL's reliance on a stable customer base. This is the context of the agreement that was signed with South Africa, which will assure the projects' economic viability. According to the director of SNEL at Inga, the sale of electricity from Inga 3 is intended to finance the next dam. In this way, Inga 3 may be a part of the progressive realisation of energy access in the DRC (Dugger, 2007).

Although electricity generation is the primary purpose of Inga 3, this was not the most desired benefit from the project locally, possibly because electricity is free at Inga. In fact, local study participants most often mentioned their hopes for employment, expectations at least partially based on SNEL's promises for 7000 new jobs. However, this benefit may not accrue to all community members equally. The womyn's focus group spoke of jobs only in terms of their husbands and children, never in terms of themselves, and a survey respondent on the Plateau bemoaned the fact that while her husband was employed by SNEL, there were no job opportunities for her. This suggests a gendered bias to employment patterns, so that gender considerations are relevant for this case much as they have been in other hydrodam cases, see Table 1 (Kurian, 2000).

The employment benefit is limited further in that it takes the form of largely short-term construction jobs. When asked about whether this short term benefit was still meaningful, focus groups were overwhelmingly positive. The consensus was that life would continue as normal after the construction, but the money they earned would change their lives. The village focus group described this as follows:

> *Villager 1: Yes, once one has worked, what will one do? One will go back again to the forest, the land…*
> *Villager 2: It will change our lives though. We will be able to have an account. One could build a house in the city. One could put tenants in it.*

The hope for work is strong among Inga inhabitants, even short term work. Nevertheless, the education barriers to local employment mentioned above may continue to play a role in Inga 3. Foreign companies also commonly bring their own workers, limiting SNEL's agency regarding employment. While in a Canadian hydropower project it was possible to align the needs of local people and an energy company with regards to employment (Buckland & O'Gorman, 2017), African states' relative lack of power to negotiate terms with foreign actors might interfere with local and even national-level employment (Power et al., 2016).

In this way, employment is likely to be limited and of a short term nature, and local people themselves assume that they will return to natural resource dependence after dam construction. If this is the case, however, the new dam may limit their livelihoods, much as in other hydrodam cases named in Table 1 (Jain, 2005; Randell, 2016a). The two valleys to be flooded for Inga 3 are used for the livelihood activities of six nearby villages, and are also necessary for their traditional semi-nomadic way of life. In this way, Inga 3 risks following the trends of Inga 1 and 2 in attracting hopeful workers who will ultimately be dependent on natural resources, while these very resources are impacted by the dam.

Despite the extent of potential impact on Inga inhabitants, they have not yet been consulted about the siting of Inga 3, and are understandably concerned. As a participant in the womyn's focus group expressed this, "If one chases us from here, will we still make fields where we go? Will we have houses there? How will we live there? Also, we will abandon our fields, abandon our fruit trees, and many things." The fears of local people are related as much to losing their livelihoods as they are to losing their homes. They exist in the context of their natural resource dependence (Shackleton et al., 2001). As the negative impacts of energy projects often affect those that are already poor and vulnerable

(Todd & Zografos, 2005), this trend regarding their livelihood concerns may to apply to energy justice more widely.

This importance of land means that local people feel compensation for its loss cannot be purely monetary. The village focus group said, “They can give us money, but money finishes. They can give us a million dollars, money finishes. But land, it remains land.” This stands in direct contradition to SNEL’s plans for monetary compensation. As such, there are potential justice concerns related to the siting of Inga 3, and diverging ideas about how they are to be resolved.

In summary, the distribution of electricity from Inga 3 is likely to follow existing trends and flow to industry and export, although this may be justifiable and beneficial considering the necessity of progressivity in the realisation of rights. Employment may be a more immediate benefit, but will likely be short-term in nature, so that local people will return to natural resource dependency after dam construction. The dam will have reduced the land to which they have access, however, and simple monetary compensation is not perceived to be enough to right this.

4.2 Recognition as justice: Who is seen? Who benefits?

Who is recognised currently?

Recognition is fundamental to energy justice, as only those who are recognised can benefit from an energy project, and those that are not risk facing its negative impacts. Both groups of people and their ways of life are relevant to this dynamic, and must be recognised (Schlosberg, 2004).

In the context of the Inga dams, the group of traditional leaders and rightholders, or ”ayant-droits”, are recognised by the Constitution of the DRC (Congo, 2005). They receive some special benefits from SNEL at Inga, such as free medicine, financial assistance in the case of the death of a family member, and some food every year. However, the ayant-droits do not feel they are receiving the benefit they are due. As the community leader said during the focus group of ayant-droits:

> *All those little things there, all those little presents, we call them presents to trick us. It’s to trick us. Simple as that. We understand that very well.*

The background to the ayant-droits’ dissatisfaction may rest on the classist differentiation in services provided to Inga residents. The ayant-droits feel this to be an injustice due to their historical land rights, a grievance that has been seen in other hydrodam cases, see Table 1 (Khatri, 2013; Willow, 2016). During the ayant-droits focus group, the following statement was made:

> *We are in colonialism because we do not benefit at all. People come to exploit, they enrich themselves. But we who are the officials, we don't gain anything. We are in total poverty. Look at the house of the representative of the ayant-droits. How? This is the residence of the ayant-droits. Look. This is total negligence.*

This watered down recongition of the ayant-droits may be a form of Fraser's non-recognition, which together with cultural domination and disrespect make up her three forms of misrecognition (N. Fraser, 1999). The concept of non-recognition is further present in that only ayant-droits are officially recognised, while non-ayant-droits will also be affected, specifically those with land-based livelihood strategies. As they are not recognised, their concerns may not be heard or compensated. This is an example of the "invisibility phenomenon" (Sousa Junior & Bermann, 2012).

Beyond the non-recognition of a group of people, however, their way of life is also not recognised, and this is equally relevant to justice (Schlosberg, 2004). The natural resource dependence of local people is ackowledged as SNEL permits their subsistence activities on the land surrounding the hydrodam, and in the river. However, the fishers' livelihood activities are disrupted by dredgers in the canal which enable the functioning of the hydrodam by depositing excess sand in the river. The fisher focus group at Inga stated: "(The fish) don't want to leave their homes anymore, so that we can catch them (...). There is no depth (to the water) anymore, it's an impact. It reduces our success."

This impact upon the fishers' livelihoods suggests non-recognition of their way of life. Dredging may be necessary to maintain the functioning of the dam, but the sand could be deposited on land or sold for construction, as fishers at Boma suggested, themselves facing a similar problem. SNEL did consult with the ayant-droits when dredging commenced in 2005, but the fact that this consultation did not lead to full consideration of the fishers' needs may be a reflection of the fact that non-ayant-droits were not included. This suggests a linkage between the recognition of groups and of their way of life (Schlosberg, 2004), both of which are lacking in this case.

In addition to Fraser's non-recognition, another form of misrecognition is present: disrespect (N. Fraser, 1999). Specifically, disrespect of the fishers' sand concerns. Several respondents, including an NGO worker in Boma and a park manager in Muanda, were dismissive of these concerns. More important, however, is the attitude of the director of SNEL at Inga. He does not acknowledge that dredging practices may have caused a perturbation, and suggests the solution is to educate riverine communities about planting vegetation on the river banks to prevent erosion. This is reminiscent of the way that energy poverty in the UK was countered through education programmes on energy

savings, a misrecognition that for some time prevented the realisation that the old and infirm have greater energy needs (Catney et al., 2013). Both in the UK and in this case, the official discourse treats people as "'empty vessels' in need of factually accurate information" (Kirsten Jenkins et al., 2016, p. 177). This attitude prevents real engagement with stakeholders, and may lead to misunderstandings and unsuitable policies.

Who will be recognised in the future?

Unless official policy changes, these failings of recognition may continue with Inga 3. There is no indication that official recognition will stretch to non-ayant-droits. However, non-ayant-droits are aware of their non-recognition and wish to manoeuvre within the existing structure to improve this. A non-ayant-droit said,

> *Like the ayant-droits will be displaced, us too, we will be displaced. We have two groups. When they are speaking to the ayant-droits, at that moment, we the non-ayant droits must be able to discuss also.*

Should non-ayant-droits gain greater access to consultation processes, their needs may be better understood. This would lessen the problem of disrespect (Arnstein, 1969; N. Fraser, 1999).

The third category of Fraser's forms of misrecognition is relevant specifically to Inga 3. Cultural domination is present in the official perception of loss of land. The forced resettlement (Table 1) that has created social problems in other dam cases is not planned (Li et al., 2001; Randell, 2016a). To SNEL, the land to be flooded is uninhabited, and the ayant-droits will lose only fields. This misrecognises the traditional use of land, as the ayant-droits are semi-nomadic. Each clan has a large piece of land, but will move the village on this land according to need. To practice their traditional way of life, they need the land surrounding their village as much as the village itself. Cultural domination is present, as SNEL assumes the ayant-droits must have the stationary habitation practices common elsewhere in the DRC, considering their loss only within this paradigm. Traditional and indigenous populations are particularly vulnerable to this form of misrecognition, which is a failure to recognise their way of life (Schlosberg, 2007).

4.3 Procedural justice: Who is part of the process?

Construction of Inga 1 and 2 was entirely top-down. The government did not include local people in this process, or consider its fairness. This may have streamlined construction, as seen in Brazil, where

the largest expansion of hydropower occurred under military dictatorship, when fair and inclusive procedures were not considered (Souza & Jacobi, 2013). Injustice in procedure may not interfere with the conclusion of a project, but it has caused extensive social resistance in Brazil. However, this may be less because of the centrality of procedural rights, and more because these are often the only claims that local people may make, while real problems are systemic (Acuña, 2015).

Even if there is greater depth to energy justice issues than procedure, however, there are procedural issues in many hydropower projects (Hess et al., 2016; Poma & Gravante, 2015). To avoid these all stakeholders must participate in the process from its early stages, but participation is not sufficient (Hess et al., 2016). Kirsten Jenkins et al. (2016) suggested three mechanisms of inclusion for procedural justice: local knowledge mobilisation, greater knowledge disclosure and institutional representation. Of these, knowledge disclosure and institutional representation are particularly relevant to Inga 3, as both have been demanded by affected people.

Regarding knowledge disclosure, there has been only limited consultation with the ayant-droits. The geographical limits of the project have not been disclosed, so that there is much uncertainty and anxiety about this. The village focus group spoke about how they did not know whether their village itself would be affected, or the land they rely on, and how much of it.

Connected to this, the local people at Inga are demanding institutional representation, clearly linking this to just outcomes when they said, “We want justice to be done. That means that we find ourselves around the same table.” Focus groups emphasised the need for inclusive discussion, and also inclusion in the process of the impact studies for Inga 3.

The director of SNEL at Inga said that they will in fact be consulting with affected people, according to their Plan for Environmental and Social Management. However, the form of communication is not clear, and it must move beyond top-down consultation to a more collaborative discussion to truly involve stakeholders (Arnstein, 1969). It also appears that SNEL is unaware of the confusion and fear currently affecting local people, as they have not indicated when they will be speaking to them.

Participation in decision-making is a central concern to the people at Inga, as it has been more generally in energy justice (Schlosberg, 2007). It is considered necessary for a just outcome from an energy project (Moreno Jiménez, 2010). While SNEL’s conception of consultation may be limited, local people are demanding the broader and more inclusive process needed for procedural justice, and are working with NGOs on several scales to access it. It is not certain that local people will succeed, but work at

different scales has improved success rates in environmental justice struggles elsewhere (Karen Bickerstaff & Agyeman, 2009).

4.4 Scorecard: justice and sustainability

There are a number of justice issues in the case of the Inga dams across the past, present and future. In terms of distributional justice, there are benefits from the hydrodams at regional scale. However, those at national scale are limited by a post-colonial context which reduces the country's agency and means socio-economic rights can only be realised progressively. At the local scale, benefits are limited along classist lines, and exist alongside various social and environmental ills. This pattern of benefits from the hydrodams is likely to continue with Inga 3, as it exists within the context of constraining social and economic factors.

Recognitional justice is limited, as not all relevant stakeholders are acknowledged, and nor is their way of life. Both non-recognition and disrespect pay a role in the existing Inga dams, and cultural domination is further relevant to the construction of Inga 3. This is closely related to failures in procedural justice in terms of knowledge disclosure and institutional representation. While procedural justice will certainly improve for Inga 3 as compared to Inga 1 and 2, which did not involve stakeholders at all, these may be insufficiently inclusive and collaborative unless local peoples' demands are considered.

In summary, there are therefore several challenges in the case of the Inga dams which limit their energy justice. These are relevant beyond their moral implications, however, due to the close linkages between energy justice and sustainability science. Linkages exist on a theoretical level, as shown in the theory section of this paper, but also on a practical level in cases such as that of Inga. Distributional justice issues in particular may be manifest in sustainability challenges, such as rapid urbanisation and deforestation in the DRC, or the social implications of environmental change at Inga. This is not to say that recognition and procedural justice are not similarly relevant to sustainability. However, they are less immediately obvious, rather forming the social infrastructure for unequal distributions (Schlosberg, 2004). Being important elements of social systems, they must be considered for sustainability (Meadows, 2009). Procedural justice in particular, however, may be an area to leverage better overall energy justice (Kirsten Jenkins et al., 2016), and therefore also more sustainable systems.

In this way, there are a number of energy justice issues at Inga, and connectedly, sustainability issues. Nevertheless, the opinion of the project is unfailingly positive across all study sites, even Inga, where

most of the trade-offs related to the project occur. Throughout the entire field work period, only one person, a survey respondent at Inga, told me that he felt Inga 3 should not be built. All others were more pragmatic, even NGO actors. There is acute realisation by the Congolese of the coexistence of injustice from the Inga dams with great social need. This need, together with a feeling of national pride and duty, means that people at Inga itself are vulnerable. Their livelihoods are impacted by the hydrodams, and the benefit they receive is limited. In another context, they might refuse to accept the construction of Inga 3. However, they cannot afford to refuse any form or level of benefit, and so cannot do anything but welcome the project with its potential impacts and its limited local benefits. As such, the level of justice they expect is watered down, and this forms a justice concern in and of itself.

In this context, it is all the more important to consider energy justice in evaluating the Inga dams case, as it is not enough for energy supply to improve without justice (Hess & Ribeiro, 2016). The energy justice framework has been used above, but the importance of the project to local people means that it cannot be used as a pass-fail test for the project, as it has been suggested elsewhere (Hess & Ribeiro, 2016). Rather, it must be used as a tool to locate and suggest improvements to the project, with the understanding that technical systems determine civilizational alternatives by presenting themselves as a scene for social struggle, ultimately adapting to social needs (Feenberg, 1992). Energy justice is not just evaluative but also normative (Kirsten Jenkins et al., 2016), and it is in this spirit that the framework has been applied.

4.2 Recommendations

What follows from the use of energy justice as a normative tool to suggest improvements to the Inga dams is that this study may be used to make recommendations for how this might be done. Firstly, in terms of procedural justice, a more inclusive and collaborative process should be crafted, and soon, to address the fears of local people. This process should recognise all stakeholders and their way of life, both ayant-droits and non-ayant-droits, to enable justice as recognition. SNEL should make a commitment to consider the concerns of local people with seriousness and respect. Further, energy justice goes beyond the focus of liberal justice on the rules for fairness, to consider the substance of what is good (Barry, 1995; Rawls, 2005; Schlosberg, 2004). An application of distributional justice leads to recommendations for this. On the national level, the sustainability implications of electricity access should be considered, and emphasis should be placed on improving access insofar as this is possible within economic constraints. On the local level, mechanisms should be considered to better enable a

broad distribution of benefits from the hydrodams, and both SNEL and the DRC government should contribute to this, given Inga's national importance. These mechanisms must stretch beyond preferential employment during dam construction to consider socio-economic systems that will continue to exist afterwards. The government should invest in job creation at Inga which is not related to the hydrodams. Access to education should be improved, possibly through subsidies and transport systems for village children. In general, there should be greater equality in service provision across the different sections of Inga town. Substantive improvements such as these may flow naturally from a more inclusive process, but their recommendation may also be made explicitly in the context of the findings of this study.

4.3 What does this case mean for energy justice?

Schlosberg suggested that environmental justice is gaining importance and meaning more quickly in practical social movements than it is in the academic space (Schlosberg, 2004). It is therefore useful to reflect on the case of the Inga dams and what they may mean for the development of the theory of environmental justice, and specifically energy justice. In this section, various elements of the case will be highlighted that echo developments in the theory or subtly deviate from them.

Since the emergence of environmental justice in the 1970s in the USA (Edwards, 1995; Szasz, 1994), the theory has moved away from the narrower focus of the social impact connected to environmental ills, to incorporate questions about the distribution of benefits and ills from environmentally-related projects more generally. This is seen specifically in the theory's application to renewable energy projects, where clear intentions for both social and environmental benefits may exist alongside a complex pattern of opportunities and trade-offs in both social and environmental systems (Buckland & O'Gorman, 2017; Hess et al., 2016; Lawrence, 2014). The case of the Inga dams adds to this trend of greater complexity in the theory, specifically as regards questions surrounding benefit distribution.

A further important development in the theory of environmental justice was its broadening from a consideration of only distributional justice to a "triumvirate of tenets" (McCauley et al., 2013), in which procedural justice and justice as recognition are weighted equally with distributional justice (Schlosberg, 2004). The concepts are independent, but interrelated (Hess et al., 2016). In the Inga dams case, the most important demands made by local people concerned recognition and procedure, so that the achievement of environmental justice in this case is inconceivable without these concepts.

This underlines the need to expand the theory beyond distributional justice, and the close linkages and dependencies between all three concepts.

In the Inga dams case, the issue of recognition is particularly complex due to the post-colonial context of the DRC. Issues in the recognition of traditional and indigenous leadership structures have been well-discussed in environmental justice literature (Andreucci & Kallis, 2017; Thorkildsen, 2016), and this case adds to this body of literature. In this case, the recognition of indigenous land rights is used as a platform to access benefits, as it is the only recognised avenue open to local people. Beyond this, however, there are competing but largely unconsidered claims for recognition by people outside traditional claims. This suggests that energy projects are an important site for both the entrenchment and contestation of land rights and tradition. Seeing as such land rights issues are similar in practically all African countries due to common colonial history, while many hydroelectric projects are planned in Africa in the coming years (Morgan, 2013), the theory of energy justice has unique relevance to the topic of hydropower in Africa. In order to meet this challenge, a fruitful area of future research might be at the intersection of post-colonial theory and energy justice.

Further, this case contributes to the identity of energy justice as a movement and an area of study that is distinct from environmental justice, while being closely related. In the literature thus far, energy justice is linked to environmental justice, although it has been suggested that there is a difference between the nature of the two movements. Environmental justice is accompanied by an undercurrent of activism, while there is far less civil society engagement in the area of energy justice, and the question has been posed of why this is so (Kirsten Jenkins et al., 2016). The Inga dams case suggests an answer to this question. Here, there is civil society engagement, but it is of a pragmatic nature, as energy activists must also promote energy access. Justice grievances run in parallel to the clear need for energy in the DRC, so that the dam project is encouraged without exception. Demands are for changes to the project, most definitely not for its abolishment. As such, the theory and movement of energy justice may be a site of greater nuance than environmental justice, necessitating careful balance of developmental and environmental needs. It might also be an area of more immediate urgency, due to the vulnerability of people that are enmeshed in energy justice conflicts. In the case of Inga, people are in desperate need of the development that Inga 3 might bring, and that will cause them to accept social and environmental burdens that they otherwise might not. This adds to the responsibility of both academic and activist practitioners in the field of energy justice.

4.4 What does this case mean for sustainability science?

The theories of environmental justice, energy justice and sustainability science have each spoken to the Inga dams case, but the case may speak to these theories in turn. The previous section attempted to situate the case within existing theoretical developments in energy justice and suggest areas of possible expansion. This section will do the same for sustainability science.

Firstly, the case of the Inga dams echoes and entrenches several established principles of sustainability science. Various elements of the case demonstrate the connection between social and ecological systems, a very fundamental principle to the field (Kates et al., 2001). Based upon this connection, a consideration of energy justice in this case establishes the need for the recognition of all stakeholders and their involvement in relevant procedures. This lends support to the importance of inclusivity and consideration of cultural context, principles which form the basis for several concepts in sustainability science such as transdisciplinarity (Polk, 2014), post-normal science (Funtowicz & Ravetz, 1993) and thick sustainability (T. Miller, 2013).

Another established principle in sustainability science is the connection of systems at different scales, specifically the global and the local (Kates et al., 2001). This principle is similarly echoed in the Inga dams case, which feature the scalar connections and injustices that initially led to the environmental justice movement (Szasz, 1994). In this way, the case is an example of the importance of scale for sustainability.

More broadly, the case affirms the relevance of energy systems to sustainability science in terms of all principles mentioned above. By extension, the case may contribute to a typology of systems within sustainability science. For example, the discourse occupied in this energy system is one of pragmatism, and this is in line with the lack of an activist background to energy justice (Kirsten Jenkins et al., 2016). It suggests the alignment of energy systems to a particular discourse within environmentalism, that of reform within existing systems as opposed to revolution (Dryzek, 2013).

Lastly, the case demonstrates the commonalities between sustainability science, and environmental and energy justice. It presents an argument for synergies between these theories, and particularly for the consideration of energy justice in sustainability issues. Quite apart from what is demonstrated in this case regarding the relevance of justice issues to sustainability, the inclusion of all components of a system in sustainability considerations is well-established (Kates et al., 2001; Meadows, 2009). The

expansion of sustainability science to include distributional, recognition and procedural justice is therefore entirely consistent with already established principles.

5 Conclusion

The case of the Inga dams has been applied to the theory of energy justice, and it has been shown that this lens is useful in understanding the opportunities and trade-offs of the project. Beyond a straightforward application of the theory, however, this case has further exemplified and added to certain developments in thinking about energy justice, specifically a greater focus on the distribution of benefits, and the consideration of procedural justice and justice as recognition. The case suggests a unique importance of energy justice in post-colonial contexts, and contributes to the theoretical separation of energy justice from environmental justice. It also demonstrates the close connection between energy justice and sustainability science, and provides support for various principles in this field. Ultimately, this case presents an argument for the consideration of energy justice in sustainability.

There is a great deal of hope for socio-economic benefits from mega projects across the resource poor and post-colonial context of Africa, and specifically also for hydrodams such as the Grand Inga Dam project. However, there are significant justice issues in both the existing Inga dams and the new dam that is planned. While Inga 1 and 2 deliver electricity, housing, water and employment to local people, each of these benefits is limited and their distribution follows patterns of social stratification. Electricity is subject to regular power cuts, housing and water are of low quality, and employment was largely restricted to the construction phase of the dams. On a national level the dams provide most of the country's electricity, but it is still the case that only 13.5 % of the population have electricity access. Therefore, distributional justice is limited, and this may present sustainability challenges. Further, there are challenges to recognition as justice, as only traditional right-holders are recognised, while there are many others that are affected. Of the three tenets of energy justice, procedural justice is the most problematic. The local community was not consulted or compensated during the construction process.

There are further concerns connected to the new dam, Inga 3. The primary benefit to be expected for local people is employment, and this is short term in nature. Recognition is unlikely to expand beyond traditional right-holders. There are plans for consultation and compensation, but the extent to which this will meet local expectations is not clear. However, local people are making clear demands and are

supported by NGO actors, so that procedural justice may improve. If so, it is also possible that energy justice will improve overall, as the requirements of local people may be better incorporated. This will particularly be the case if energy justice is considered within procedures.

Energy justice is currently not realised through the Inga dams. This may improve with the new dam, but there is no certainty about this. Nevertheless, public opinion of the dams is strongly positive. This may be because, while absolute benefit from the dams is low, its relative benefit is high given the lack of alternatives and the general level of need in the country. It is a beacon of hope for the people of the DRC, who must therefore overlook trade-offs which they otherwise would not, and which perhaps they should not have to. This is disempowering and increases the vulnerability of the people who stand to be affected by the dam. It means that their vulnerability must not be exploited in the creation of a project that is not sufficiently to their benefit. They must not be compelled to accept justice that is watered down. The project must be aligned with the principles of energy justice. That is the only way that the dam will contribute to sustainable systems in the DRC.

7 References

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8 Appendices

8.1: Appendix A: Watering down justice

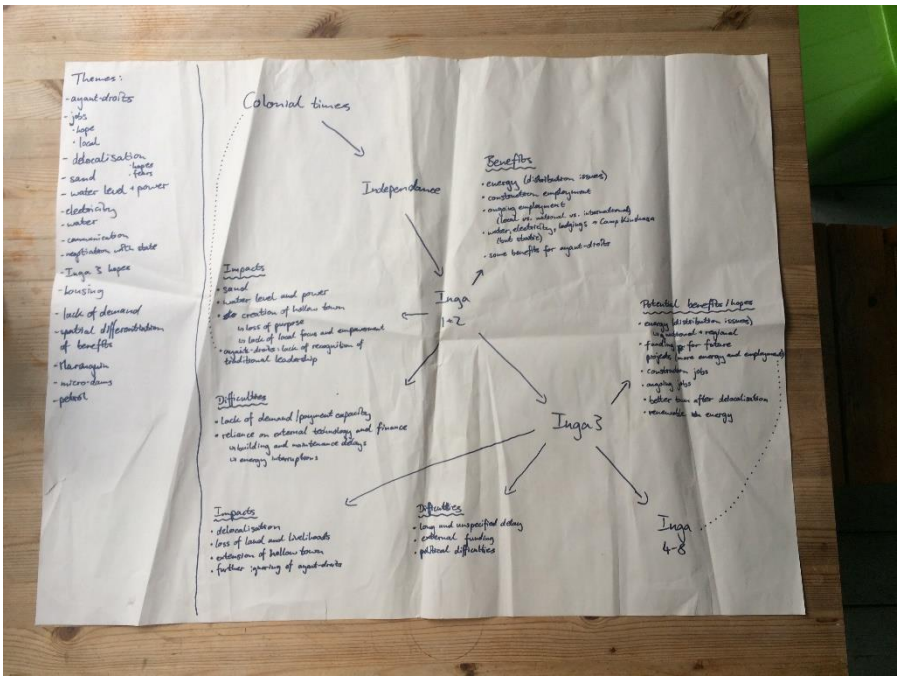
	Date	Location	Method	Participants/description
1	7 February 2017	Kinshasa	Informal conversation	Hotel worker
2	8-22 February 2017	Kinshasa	Intermittent participant observation	National-level NGO in Kinshasa
3	8 February 2017	Kinshasa	Informal conversations	DRC citizen, national-level NGO worker, hotel worker
4	9 February 2017	Kinshasa	Interview	National-level NGO actor
5	9 February 2017	Kinshasa	Interview	National-level NGO actor
6	10 February 2017	Kinshasa	Interview	Banker/International-level NGO actor from Matadi
7	13 February 2017	Kinshasa	Interview	National-level NGO actor
8	13 February 2017	Kinshasa	Informal conversation	Two DRC citizens
9	14 February 2017	Kinshasa	Focus group	Representatives from four national-level NGOs
10	16 February 2017	Kinshasa	Informal conversation	International-level NGO worker
11	18 Feruary 2017	Kinshasa (fishing site)	Focus group	Two representatives from a Kinshasa fisher association, three fishers
12	18 February 2017	Kinshasa (fishing site)	Transect walk	Two representatives from a Kinshasa fisher association
13	20 February 2017	Kinshasa	Interview	National-level community representative in energy issues
14	25 February 2017	Kinshasa	Informal conversation	Hotel guests
15	25 February 2017	Boma (fishing site)	Focus group	Two representatives from a Boma fisher association, around 15 fishers

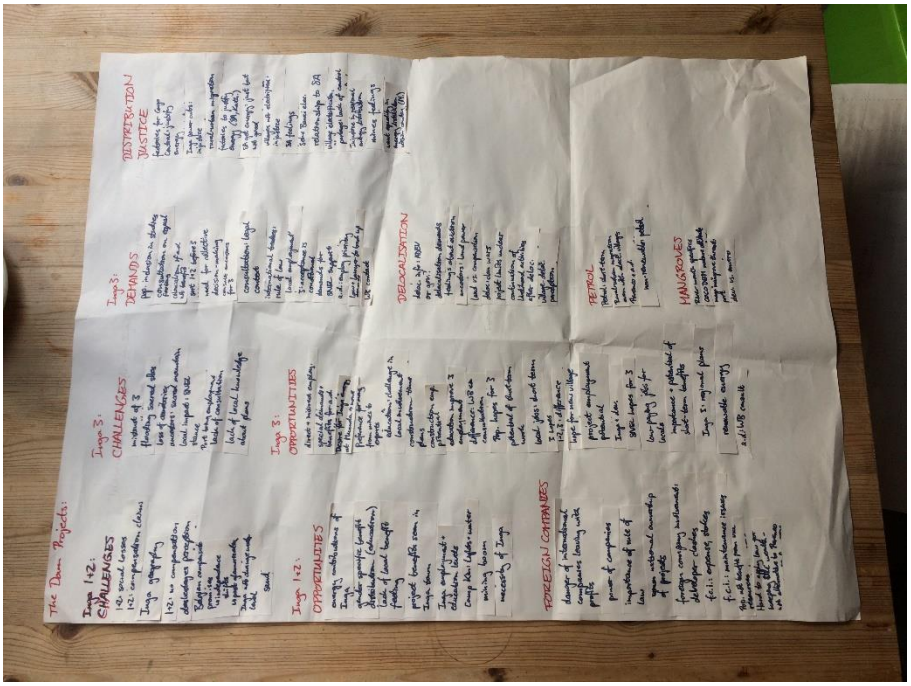
16	25 February 2017	Boma	Interview	Technician in management position at SNEL
17	27 February 2017	Boma	Participant observation	Energy conference, attended by NGO actors, journalists, provincial government
18	27 February 2017	Boma	Interview	NGO actor from Boma, involved in Inga issues
19	28 February 2017	Inga (Plateau)	Transect walk	Plateau, guided by SNEL worker
20	1 March 2017	Inga (Plateau)	Interview	Banker working at Inga
21	1 March 2017	Inga (Camp Kinshasa)	Transect walk	Camp Kinshasa, guided by community leader
23	2 March 2017	Inga (Inga 1)	Transect walk	Guided tour of hydroelectric works
24	2 March 2017	Inga (Inga 1)	Interview	Director of Inga 1
25	2 March 2017	Inga (Inga 2)	Interview (part 1)	Director of Inga 2
26	2 March 2017	Inga (Plateau)	Informal conversation	State auditors
27	3 March 2017	Inga (Inga 2)	Transect walk	Guided tour of hydroelectric works
28	3 March 2017	Inga (Inga 2)	Interview (part 2)	Director of Inga 2
29	4 March 2017	Inga (fishing site)	Transect walk	Path leading to fishing site (on SNEL land), guided by local-level NGO and fishing association representatives
30	4 March 2017	Inga (fishing site)	Focus group	Two fishing association representatives, two fishers, two local-level NGO representatives
31	5 March 2017	Inga (Camp Kinshasa)	Focus group	Around four local-level NGO representatives
32	6 March 2017	Inga (Plateau)	Interview	Director of SNEL at Inga
33	7-11 March 2017	Inga (Plateau and Camp Kinshasa)	Surveys	50 surveys: 25 on the Plateau, 25 in Camp Kinshasa
34	7 March 2017	Inga (Camp Kinshasa)	Interview	Camp Kinshasa community leader
35	8 March 2017	Inga (Camp Kinshasa)	Focus group	Around seven local womyn
36	9 March 2017	Inga (Plateau)	Transect walk	Camp de chômeurs, with resident
37	9 March 2017	Inga (Camp Kinshasa)	Focus group	Around seven local cultivators

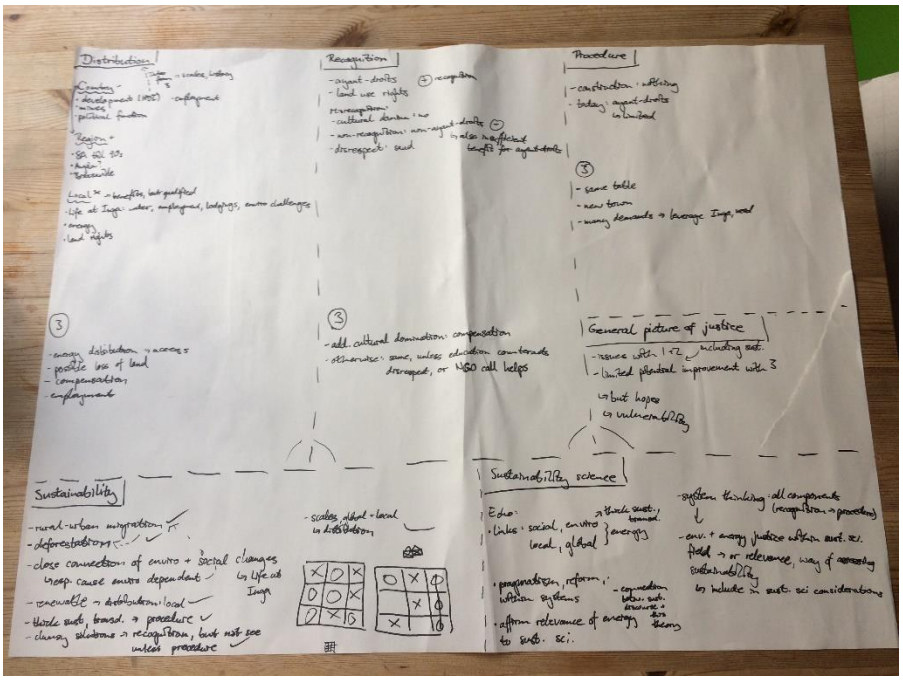
38	9 March 2017	Inga (Camp Kinshasa)	Focus group	Around five local hunters
39	10 March 2017	Lubwaku village (near Inga)	Focus group	Around ten villagers
40	10 March 2017	Inga (Camp Kinshasa)	Focus group	Four local young people
41	10 March 2017	Inga (Camp Kinshasa)	Focus group	Around five traditional right-holders
42	14 March 2017	Muanda	Informal conversation	Hotel guest
43	14 March 2017	Muanda	Interview	Conservation worker at mangrove park
44	14 March 2017	Muanda	Interview	NGO actor
45	15 March 2017	Muanda	Informal conversation	Dredging company employee
46	15 March 2017	Congo river	Transect walk	Guided tour of mangroves with park manager, including visit of villages in mangroves and on an island
47	16 March 2017	Banana	Focus group	Around ten representatives from Muanda fisher association
48	16 March 2017	Banana	Transect walk	Congo River mouth, led by two representatives of fisher association

8.2 Appendix B: Watering down justice

This appendix features photographs of some of the materials I produced when analyzing my data. The first photograph is a graphic representation of the main themes in my data and how these are connected. I created this immediately after returning from field work, before going through my notes, so as to give myself a lens with which to do this. The second and third photographs are of the result of the content analysis I did of my field work notes. I extracted themes, wrote these on a large piece of paper, then cut them out and clustered them according to their topic. Based on this, I made an outline of my argument and used this as a basis for selective transcription. The final photograph features work I did to restructure the argument in my discussion section, to improve its clarity and conciseness.






Distribution
Recognition
Procedure
General picture of justice
Sustainability
Sustainability science

8.3 Appendix C: Watering down justice

This appendix will provide details of my data collection, specifically the questions I asked during surveys, and the guidelines I followed during focus groups and semi-structured interviews. Finally. I will provide excerpts from my interview transcripts.

Survey questions

Surveys were conducted verbally, with 25 people from the Plateau and 25 people from Camp Kinshasa. The following questions were asked, and have been grouped here categorically.

Personal details

1. What is your name?
2. Are you male or female? (This was not asked explicitly. I just made a note.)

Socio-economic systems

3. Which camp do you live in at Inga?
4. How many people live in your house?
5. How much do you pay for electricity?
6. How many electricity cuts do you have in a day? What time do you have them?
7. Where do you get your drinking water? How much do you pay for it?
8. Where do you get water for washing, cooking, etc.? How much do you pay for it?
9. How many water cuts do you have in a day? What time do you have them?
10. Do you think the water makes you sick? What kind of sickness?
11. Do you have any symptoms of river blindness?

Personal history

12. Were you born at Inga?
13. How long has your family lived at Inga?
14. Are you an ayant-droit? Which village do you come from?
15. Why did your family move here?
    a. If they currently work for SNEL: What is your position?
    b. If they used to work for SNEL: What was your position?
    c. If they came for another reason: What was this other reason?

Opinions of the Inga dams

16. Which of the following benefits do you see with Inga 1 and Inga 2: electricity, water, work, money, other.
    a. For yourself personally?
    b. For the country?
17. In the same list of benefits, which do you see coming from Inga 3?
    a. For yourself personally?
    b. For the country?
18. Do you see any negative impacts for yourself or the country?
    a. From Inga 1 and 2?
    b. From Inga 3?
19. What is your opinion of the whole hydrodam project, Inga 1, 2 and 3?
20. Do you think it is a good idea to construct Inga 3?
21. Do you think Inga 3 will help you?

Focus group guidelines

Fisher focus groups

1. How do you fish?
2. Where do you fish? *(Participant mapping of river section and fishing sites was used as an aid to this discussion, and for the remainder of the focus group.)*
3. Have your fishing sites changed in your memory? Why?
4. What are challenges you face in your fishing?
5. What do you think about the Inga dams? Do they affect you?
6. What do you think about Inga 3? Is it a good thing or not? How do you think it will affect you?
7. What do you think about the way the electricity of Inga 3 is to be distributed?
8. What do you need to solve the problems you face in your fishing?
9. Who can help you solve these problems?

Groups of affected people at Inga:

These are the guidelines for all groups of affected people at Inga except for the fishers. The same rough guideline was used for focus groups with cultivators, hunters, womyn, youth and villagers.

1. How many people are ayant-droits?
2. Why did you or your family come to Inga?
3. What do you do for life – hunting, fishing, cultivation, employment? How do you do this?
4. How is your life affected by Inga 1 and 2? Are your livelihood activities affected?
5. How will your life be affected by Inga 3? Will your livelihood activities be affected?
6. What do you want from Inga 3? How can you be compensated for what you will lose?
7. Do you think Inga 3 will be different to Inga 1 and 2?
8. What do you think of the way that electricity will be distributed from Inga 3?

For the focus group of villagers, additional questions were asked about land use practices and rights. For the focus group of ayant-droits, the first two questions were not asked, but further questions were asked, as follows:

1. Does SNEL recognize your right to the land? How? How should this be improved?
2. What do your land rights mean for Inga 3?

National-level NGO focus group in Kinshasa

1. What work do you all do as individual NGOs?
2. What work do you do in collaboration with one another?
3. What role do the Inga dams play in energy policy in the DRC?
4. What is your stance on the existing Inga dams?
5. What is your stance on Inga 3?
6. What do you think about the way electricity will be distributed from Inga 3?
7. What work are you doing now in connection with Inga 3? Who are your working with?

Local-level NGO focus group at Inga

1. How did your NGO begin?
2. What is the composition of your NGO's committee?
3. What work do you do? Who do you work with?
4. What are the challenges of the people you represent in relation to Inga 1 and 2?

5. What challenges do you think they will face from Inga 3?
6. How can the problems be solved? Should the project be continued or abolished?
7. Are there any benefits to the Inga dams for the people you represent? Are many people employed?
8. What do you think about Inga 3?
9. What do you think about the way electricity will be distributed from Inga 3?

Example of transcription: excerpts in original French

In this section of the appendix, examples are provided of my transcriptions in the original French. I have provided excerpts from one interview and one focus group.

<u>Interview with director of SNEL at Inga</u>

(...)

Researcher: Comment est-ce qu'on va partager léléctricité de Inga 3?

Director: (...) Il y a une demande tres importantes des miniers, et puis de la population Congolaise. Donc, les deux axes sur lesquelle c'est basé. Donc, si on peut dire trois grandes axes… Il y a un axes Afrique du Sud, et puis un axes des miniers, et puis la population. Voila les trois grand axes.

(...)

Researcher: Quelle est l'impact de Inga 3 pour l'RDC?

Director: L'impact est tres positive. Parce que les deux phases, Inga 1, Inga 2, et puis la rehabilitation de toutes les machines la, six a Inga 1, huit a Inga 2, nous sommes a 1775MW pour les deux centrales. Maintenant la demande deja croissante. La demande de la population est deja croissante. Donc on doit evolué dans les etats. Donc, la demande est forte. On doit necessairement amener plus de l'energie.

(...)

Researcher: Il y avait des autres qui m'ont dit que les grandes lignes de Inga à Kinshasa passent par les villages, et que les village ne sont pas allumé. Est-ce que c'est vrai?

Director: Madamoiselle, vous voyez, a la bifurcation ici… Si vous voulez seulement, on peut aller a la bifurcation, il y a une village en sortie d'Inga, on a electrifié. La ou il y a ce village la bas. Tu peux

compter. A dix kilometres, un village, electrifier. A 25 kilometres, un village, electrifie. Quand vous foncer, tous les villages qui sont electrifié. Ca, c'est tout un politique de la dirigation de l'electrification rural. Quand vous allez a Kinshasa, vous avez des villages qui sont electrifier.

(...)

Researcher: Est-ce qu'il y a plus des emplois pour les gens locals avec Inga 3?

Director: Peut-etre maintenant on aura a soumissioner, et on a l'entreprise qui va gagner le marche. C'est cet entreprise qui va regarder au temps. Mais ce qui est sur c'est qu'il y aura des emplois direct et des emplois indirect. C'est a dire que la population ici va beneficier et les village environs. C'est ce que nous avons maintenant avec ce projet qui ce passe a Inga 1, Inga 2. Tous les villages environs, ils ont les emplois directes. Pour la rehabilitation. Il y a beaucoup des enfants du village qui sont la, en trein de travailler par rapport au profit. Maintenant, Grand Inga, la construction est encore grand, et ca va… Meme pas seulement ici a Inga, meme Matadi, meme tous le Congo! Ce sont des emplois. Inga 3 fera engager direct, et les emplois indirect. Et les beneficier, il y a la population en environs d'Inga. C'est normal. Puis, Matadi. Parce que pour le moment, meme Inga 1, Inga 2, il y a des gens du village, il y a des gens de Matadi, de Boma. DOnc, quand ca sera Inga 3, ca sera encore plus grand que ca.

(...)

Researcher: Qu'est-ce que ca veut dire, les emplois indirects?

Director: Les emplois indirecte, c'est a dire que… Nous sommes ici avec toi a Inga. Indirect, c'est a dire, les mamas qui vendre au marche la. Quand on paye ce gens la d'emploi direct, le mamas aussi, leur commerce effectue. Et l'hopital, les soigne de sante s'ameliorer. Et on aura des grandes institutions hospitaliers, des pharmacies, parce que... Les gens qui quittent ici pour aller trop loin, la pharmacie sera la. Et les gens du village qui avait un petit pharmacie, comme il y avait que deux personnes, maintenant il y aura plus. Plus, ca va faire quoi? C'est une croissance partagé. C'est a dire que, il y a un problem, on essay d'ouvrir le panier.

Researcher: Est-ce que c'était la meme avec Inga 1 et 2, avec beaucoud d'emplois?

Director: Oui! C'etait ca. Inga 1, c'etait les emplois direct et indirect! Inga 1, Inga 2, tout le monde… Tu vois, Camp Kinshasa. Camp Kinshasa, c'etait des ouvriers qui travaillaient pour Inga 1, Inga 2.

Researcher: Mais l'emploi, c'est seulement pour une periode fixe?

Director: Apres ca, il y a des gens qui ont engage. C'est ca, l'emploi direct.

Researcher: Mais peut-etre moins qu'avant?

Director: (...) En fait il y a… Par rapport a ce temps ancienne la, il n'y avait pas de niveau. Pas des gens tout au tout qui avait etudier, des techniciens. Pour le moment, il y a des ecoles techniques ici que nous allions donner cours, et aujourd'hui les enfants sont etait former ici, a l'ecole technique Inga, ITP Inga. D'autres sont engager a SNEL! D'autres sonts dans les compagnie qui sont en trein de travailler avec nous. Et aujourd'hui, c'est encore mieux ameliorer, parce qu'il y a des engenieurs. Il y a des enfants d'ici qui sont deja des enginieurs. C'est a dire le profile repondant deja a la tant du poste. C'est une grande ouverture que ce qui etait Inga 1, Inga 2. Donc, moi-meme, j'ai donne cours a des enfant d'ici, aujoud'hui. Ils sont des enginieurs comme moi. D'autres sont dans SNEL. Voila un peu la repercussion, et on continue encore a former. Le niveau c'est… Parce que ces enfants ont cette chance la. Si vous voyez aujourd'hui, vous descendez, vous voyez des enfants d'Institut Technique Professionelle d'Inga, qui sont en stage, en central. Eux, ils se preparent chaque annee comme ca. C'est ca le "training". On est en trein de les entrainer. Eux, quand ils terminent le niveau Bac, ils sont deja a la centrale. (Nous facilite la tache, quand on cherche des emplois. C'est monsieur connait, et puis, c'est vite. ?)

Researcher: Est-ce qu'on préfère des gens locaux pour l'emploi?

Director: On prend les gens locals. On prefere ca. Les locaux. Et quand ils repondrent aux profile la. C'est encore mieux les locaux. Mais il faut laisser aussi… Nous sommes national. Nous sommes national, mais le preference est les locaux. En meme critere. Meme profil. Mais on prendrai en locaux.

Researcher: Alors, est-ce que ca sera possible de voir 50% local, 50% national, avec Inga 3?

On prefere plus des locaux, et des nationaux. C'est au critere du profile. Si j'ai une enginieur, deux enginiers qui font le test, ils reusissent. Deux enginieurs qui reussise, mais l'autre est local, je prendrai local, c'est eux qui va…

(..)

Researcher: Est-ce qu'il y a un systeme pour la compensation pour les gens locaux qui sont affecté?

Director: C'est indemnisation, le gouvernement indemnise. Pour Inga 3, il n'y a que des champs. On indemnise. Dans loi congolaise, l'etat est proprietaire de la terre, Quand il y a une authorité qui va passer ici. L'etat viens, il nous contacte pour dit que non, il fait faire passer une autoroute ici. Donc, on devrait quitter, on doit indemniser.

Researcher: On va faire ca?

Director: Oui, c'est prevue. C'est dans le plan de gestion environmental et social.

Researcher: On va consulter?

Director: Oui, on le fait tout le temps.

Researcher: Quand?

Director: On le fait. On le consulte.

Researcher: Maintenant?

Director: Il faut attendre la solution. La solution, alors, pas encore. Donc, c'est dans le plan de gestion environmental et sociaux. Il y a tout un volante.

(...)

Researcher: Mais il y a un grand changement dans le fleuve, avec Inga 3?

Director: Le fleuve ne fera que un apport. Notre quantité, comme on dit, pour le moment… Tu vois que Inga 1, Inga 2 ne prennent pas qu'une minimum. Regarde que le grand fleuve continue… Sinon qu'il y aura pas de l'eau a Matadi… Qnad vous etes au port de Matadi, vous avez de l'eau. L'eau passe d'abord a Inga, en dira de Kinshasa, avant d'aller a Matadi et Boma. Vous comprennez que la vie continue. La peche a Matadi continue. Ce sont des calculi qui sont bien fait, c'est ce qu'on appel des etudes. Pour remplir un grand bassin la, et gere le grand, grand fleuve, qu'est-ce que je fait? Avant de commencer d'alimenter la bas, il y a des couvertes, comme une vanne (a valve). Petit a petit, ca commence, et je ne perturbe pas tellement. Jusqu'a ce que, quand ca sera plein la, quand j'ouvre, il n'y a qu'une petite larme.

(...)

Researcher: Les pecheurs m'ont dit qu'il y a un probleme avec le sable dans le fleuve, qui est causé par les dragues. Est-ce que vous savez de ça?

Director: Le fleuve chari (?spelling) tout a fait normale. Depuis Kinshasa, depuis Kathanga, le fleuve chari. Quand il passe, il prend de terre et autre chose. Tout a fait naturellement. Donc, on ne peut pas defender au fleuve de faire ca.

En fait, les pecheurs quand ils parlent… Quand l'eau coule, ce n'est pas seulement chercher de… ils charisent dans son lit la. Il y a des evoluement qui se font. Mais il charit tout ca. On ne peut pas defender… C'est une question d'educer des gens de riverains, pour qu'ils fassent des plantes pour essayer de ne pas permettre que le sable puissent descender. Mais c'est en haut du Kathanga jusqu'a l'embouchure du fleuve Congo. Mais charit toujours. Parce que l'eau quand tu regarde, peut-etre quand vous allez en Suisse vous allez voir que c'est sur le rocher, l'eau est clair. Mais chez nou c'est pas de cas. C'est adapter, nous nous sommes dans un climat autre. Donc, c'est adapter. Meme le filter, comme nous dans le central, c'est pas les meme filter que a l'Europe. Ce sont les filter adapter a la tropicalisation ici.

Researcher: Est-ce que le barrage est affecté par le changement climatique?

Director: On a deja, en ministere de l'Environnement, on tiens deja une qualifaction par rapport a l'education de la population. En deboisement et reboisement. Tout ca est en chane. Parce que ce qu'on a c'est le Kalahariqui est en trein de venir. Donc, ici deja demander des projets de reboisement. Quand les gens coupent les arbres, on doit faire le reboisement.

Ca ne peut etre qu'un avis positive et favourable. Parce qu'aujourd'hui, ce que Inga 1, Inga 2, ca participle a la vie de la population local. Ca amene un developpement et l'épanouissement de la population d'Inga. Ce population avant n'est pas ce que c'est aujourd'hui. Parce que avec Inga 1, Inga 2, il y a un change. Un change de mentalite, qui fait evolue des gens. Aujourd'hui, la SNEL a donne au gens laocaux, on l'appele ayant-droits, un tracteur. Un tracteur trop puissante, pour essayer de maximaliser leur production. On connait que ce sont les participations. Et les ayant-droits ils ont, autour leurs enfants, ils sont soigné chez nous ici a l'hopital. Et quand quelqu'un, un member des ayant-droit meurt, nous payons. C'est une conversation qui est entre nous et les ayant-droits.

Researcher: Est-ce que vous savez du problème avec les marenguins?

Director: Oui. Nous avons achete un bateau, a Kianga (Kiakinganga?).Et l'OMS (?)… Parce qu'on a prohibe un produit qu'on a utilise par avant la. La SNEL a investi avec un bateau ependeur qui est la a Kinganga quelque kilometre d'ici. Et nous attendons de l'OMS nous donnons de produits pour commencer a traiter. Et ca sera pas seulement Inga. Ca sera tout les villages environs du fleuve Congo.

Fisher focus group at Inga

(...)

Researcher: Quelles sites sont les meilleurs pour pecher?

Fisher 1: Tout les sites sont les meilleurs mais il y a certains pecheurs qui se deplace dans les sites suivant le periode. Si il y a l'etiage, il y a d'autre sites qui donnent plus du poisons, si le fleuve est rempli, il y a encore d;autre sites qui donnent aussi de poisons, donc… C'est vraiment facultative.

Fisher 2: Excuse… En bref, pour la production, a partir de Kianda jusqu'a Nzya, en tout car c'est le site Nzya qui produit plus.

Researcher: Est-ce que la production est mieux avant le barrage?

Fisher 2: Nous autres sommes des nouveaus, sont venus tous apres la construction du barrage. Ce qui etait ici avant la construction du barrage, no sont plus.

Fisher 1: Mais on peut s'imaginer…

Fisher 2: On peut s'imaginer que c'etait mieux.

Community leader: Il y avait pas l'abondance des pecheurs.

Fisher 2: Meme le barrage a produit des impacts. Par exempel a Yalala, par exempel a Msengi…

Community leader: Il y a eu un derangement la.

Fisher 2: Il n'ont plus la meme production qu'on a eu avant le barrage.

Fisher 3: Quelque part, quand on va plus loin la bas, Yalala, la production n'est plus la meme.

Fisher 4: Meme…. Ici, nous sommes. Tout les noms du fleuve… Le sable, le dragage.

Fisher 2: Ca fait deux ans (douze, dix?), depuis le rechauffement climatique a commence, ca fait mal.

Fisher 4: Meme le sable, il derange.

Fisher 2: Il y a un diminution de poissons, a cause de la rechauffement climatique.

Fisher 4: Le sable aussi derange.

Fisher 1: Reglement, avant le barrage, la production etait mieux. Il y avait un abundance. Apres le barrage, il y a eu une dimunition.

Fisher 4: Et puis encore, ce dernier temps… Les dragues, ils ont derange le fleuve avec le sable.

Fisher 1: Il y a des impacts, quelque lui qui fait la peche dans le canal… Pas au grand fleuve. Maintenant, le sable. Il y a l'ensablement. Maintenant il y a diminution de production.

Other fishers: Meme au fleuve-meme! Meme avec le fleuve. Il y en a!

Fisher 2: Il y a le sable du canal, ils jetent ca au grand fleuve. Ce sont des impacts.

Researcher: Comment est-ce que le sable impacter vous?

Fisher 1: Madame Ruth, c'etait quoi avant… Comme il n'y avant pas assez du sable, il y avait la profondeur. La profondeur dans l'eau. Et les poissons aiment la profondeur.

Fisher 2: Mais maintenant, quand l'ensablement est venu, les poissons maintenant se cachent.

Fisher 3: Ils ne veulent plus sortir, pour que nous les pecheurs puissent attrapper les poissons, pour que nos fillets puissent attrapper les poissons. Il faut que les poissons sortent, mais comme il n'y a plus de profondeur, c'est un impact. Ca diminue notre reussi.

Fisher 1: D'autre sorte de poisson ne supporte pas de sable. Et ca provoque la mort de ces poissons ca, le sable.

Fisher 2: Les pecheurs connaissent maintenant les difficulties pour vivre, meme pour la scolarité de leurs enfants. Ici les poissons sortent en grande quantité, mais maintenant voila, voit la reussi…

Researcher: Alors, ca veut dire que les sites avant le barrage, la il y a moins de sable?

Fishers: Oui, la il y a moins du sable.

Researcher: Est-ce que la production des poissons cest mieux la, avant le barrage?

Community leader: C'est a eux de repondre.

Fisher 1: Bon. La a Kianda et a Kiakunga, la production des poissons… Il y a des periodes quand le fleuve diminue, il y a une autre reussite. Quand le fleuve est plein, il y a aussi une autre reussite, Parce que souvent quand le fleuve est plein, ce sont les grand poissons qui circulent. Les petit poissons ne circulent pas assez. Donc, les grands poissons sont rare a attrapper. Ils sont les vieux qui savent comment echapper a le danger, a le piege. Les pieges que nous laissons dans l'eau. C'est la ou on a la periode plus difficile pour nous les pecheurs.

(...)

Researcher: Est-ce que c'est le sable ou le changement climatique qui est un problème plus grave?

Fisher 2: Le rechauffement climatique, ca derange.

Fisher 1: La construction du barrage, l'ensablement et puis, le chauffement climatique. Ce sont des choses qui frappent pratiquement des pecheurs.

Fisher 3: Nombre des pecheurs aussi.

Fisher 1: Meme ce la la, qui ne sont pas les pecheurs de formation. Par manque des travails, se donnent a la peuche pour chercher comment faire vivre leur famille. Il y a des gens qui font la peche, pas parce qu'ils sont pecheurs. C'est parce qu'ils manquent de l'emploi. Ils viennent et tout fait maintenant les pecheurs. Ca diminue aussi la production.

Fisher 2: L'effectif du pecheurs, c'est 153 membres. Dans l'association. Le nombre reconnu c'est 153, mais en dehors de ce 153 la, il y a d'autre pecheurs qui sont plus nombreux, qui se sont fait eux-meme pecheurs. Meme les travailleurs aussi font la peche. Meme les enseigneurs font la peche. Meme les eleves, il font aussi la peche.

Fisher 1: Il y a la manque d'emploi.

Researcher: Si on pense au problem rechauffment climatique, qu'est-ce que ca fait dans le fleuve?

Fisher 2: En tout cas… Meme si vous plantez le manioc. Ca vous donne de manioc, ca vous donne des raciness, les choses ca que vous avez planté, ca deviennent le manioc. C'est grave.

Fisher 3: Ca impact la production en bref. Meme les poissons.

Fisher 4: Les changement climatique nous ammenent vraiment un changement radical, total.

Researcher: Est-ce que les changement avent le barrage et apres sont different dans les sites?

Fisher 1: La difference, il y en a. C'est ce que nous vous disons. Lorsque nos ancetres pratiquons la peche avant nous. Eux etaient avant, mais avec ce qu'on peux nous raconteur, le reussi c'est vraiment le facilement du poissons. Les poissons etaient en abundance. Vous venez attrapper beaucoup des poissons. Mais maintenant les poissons sont devenu difficile a attrapper.

Researcher: Mais comment c'est avec le fleuve avant le barrage, le fleuve qui n'est pas touché par le barrage aujourd'hui?

Fisher 3: Allons-y comprendre que… Meme si on est avant le barrage, mais les impacts affect meme avant le barrage. Parce que c'est different. Quand on ferme ici le prise d'eau, l'eau coule normalement, mais quand on a ouvert, l'eau ne coule plus normalement, naturellement. Meme le coulement de l'eau, il y a un changement. Les poissons aiment le coulement d'eau naturelle. Il a se sentier dans l'eau, il a des chemins. Mais quand l'eau ne coule plus naturellement, ca bouge certains chemins. Et maintenant ca nous complique! En tant que pecheurs ca nous complique. Ca diminue directement la reussite, la production.

Researcher: Est-ce que c'est plus facile de pecher 5 ou 10 kilometres avant le barrage?

Fisher 1: La, ce sont les gens de la qui peuvent repondre. Parce que nous ne pratiquons pas la peche de leur coté. Mais je crois aussi, il y a une reussite, parce que nous allons a Isangila village. Moi, je sais. Ils arrivent, les gens d'Inga meme.

Fisher 3: Alors, il y a une production differente par rapport ici. La, ca produit vraiment.

Fishers: Isangila village.

Fisher 3: Meme a Goma (Ngoma?), a Kikango

Fisher 1: Les impacts qui peuvent faire du mal, c'est tout ca. Avant et apres le barrage.

Community leader: Il y a des anomalis apres la construction du barrage.

Fisher 3: Il y a un changement.

Community leader: il y a un grand changement.

Fisher 1: La production n'est plus la meme. La, l faut qu'on amene.

Fisher 2: Dans le temps avant le barrage… (Kikongo)

Fisher 1: C'est ca le changement climatique.

(Kikongo)

Fisher 1: Avant plus qu'on puisse creuser le prise d'eau, quand c'estait encore fermer, l'eau arrivait meme jusque la, au palmier la. (point to higher point on cliffs) Mais maintenant, depuis qu'on a ouvert ici, ce n'est plus le meme phenomene. L'eau maintenant ne va plus la bas. N'arrivent plus la bas. C'est a cause de la construction du barrage. Ce sont des impacts.

Fisher 2: Et maintenant qu'on va creer le troisieme Inga, je sait qu'il y aurait une diminution de l'eau, qui peut faire peut-etre 50% de cette eau ici parce que, ca va consommer beaucoup de l'eau. Le barrage Inga 3. Ca va consommer beaucoup de l'eau. Parce que plus ou moin cinq machines… Non… *(discussion in Kikongo)* Quarante machines.

Fisher 1: Non! Inga 1 a six machine. Inga 2 huit machines. Ca fait deja quatorze. Mais lui-meme Inga 3 aura quarante-huit machines. Le premier etude… *(Kikongo)* On va aller construit Inga 3 subterennement. Apres les etudes, beaucoup des etudes, ils ont trouver que ca va diminuer l'eau a telle point que Inga 2 puisse plus fonctionner.

Researcher: Et Inga 1?

Fishers: Les deux!

Fisher 1: Ca sera des impacts, meme au niveau de la peche. L'eau va sensiblement diminuer.

Fisher 2: Peut-etre 50%.

Researcher: Alors, les problemes du barrage maintenant sont le sable, diminution du production et aussi de l'eau.

Fishers: Mmmm… C'est ca.

Researcher: Mais le village ou on achete des poissons, c'est loin d'ici?

Fishers: C'est un peu loin d'ici. (Discussion) Kianda c'est 17km.

Fisher 1: *(list towns on the way)* Peut-etre 70km.

Fisher 1: Le changement climatique c'est pas un impact du barrage. Ca c'est general.

Researcher: Quand est-ce que ca a commencé avec le sable?

Community leader: Depuis 2005.

Fisher 1: Le problem de l'ensablement a commence a 2005.

(Kikongo)

Fisher 1: A 2005, il y a eu un deplacement du sable dans le canal. Alors, meme en niveau de la production energetique, du courrant, parce que quand le canal ne donne plus assez d'eau, les machines ont du mal a tourner. Alors, a cause de l'ensablement, du sable, qui est devenu nombreux, en abundance donc, ca a meme affecté la bonne marche du barrage et meme notre production, nous les pecheurs. Et les agent de la SNEL, et nous les pecheurs etaient mise sur tete. Nous avons dit, a, ca c'est grave.

Fisher 3: Maintenant ils ont acheté les dragues pour draguer cette sable la. Et puis c'etait en grand fleuve.

Fisher 1: Maintenant, le sable qui etait rempli ici, les dragues sont en train de draguer, jeter encore le sable a l'autre coté. Mais maintenant, le phenomene qui etait ici, viennent maintenant ca c'est impacter.

Researcher: Et ca c'est ou vous pecher?

Fishers: Oui, c'est partout ici.

Community leader: Pas seulement ici, aussi pour les pecheurs qui pechent la bas. (point downriver) Ca cause un difficulte.

Researcher: Qu'est-ce qu'on peut faire? On laisse le barrage completement?

Fisher 1: Il ne faut pas laisser le barrage completement. Parce que maintenant, le development actuelle depend de l'energie electrique. Il y a l'Afrique. Il y a a RDC elle-meme, qui attend l'energie electrique. Il y a l'Afrique. Il y a le monde, l'Europe meme. Le monde qui aujourd'hui a besoin du courrant. C'est parmi les raisons que Inga 3, 4, 5, jusqu'a 6, doivent etre construit. Vous voyez? Mais

maintenant nous entendons que la population impacté, qui sont deja impacté par Inga 1 et Inga 2, les impacts negatives vont encore se multiplier par rapport a la construction de Inga 3 jusqu'a Inga 8. Toutes les partis prenant… Il faut essayer de nous mettre dans nos droits. Alors, des pensee a cette population impacté, pour que nous soyons pas des vulnerables.

Fisher 3: Pour moi, ce que je constate…. Le sable dragué.

Fishers: C'est notre endroit.

Fisher 2: Moi, je me suivi avec le Director Makap. On avait parle du problem de sable. Le problem de jeter ce sable la… Il y a beaucoup de tome de sable qui sont la. Alors, peut-etre si la meme moyen avec cette drague la il y avait une place ou on devrait faire ca pour aussi vendre le sable.

Fisher 1: Je vous assure, on a eu des difficulte puis qu'on a mis ce des cote. Dans la construction ce sable la dragué, ca ne peut pas…

Community leader: Souvent on a vu les idee de prendre le sable…

Fisher 2: En prise d'eau?

Community leader: Oui, en prise d'eau. C'est a cause de ca.

Fisher 1: Parce que il y a d'autre corps, il y a des saillé (things protruding)/sang (blood), il y a beaucoup, beaucoup, beaucoup, dans ce sable la, qui ne permet pas l'utilisation correcte dans la construction. Il ne faut que jeter cela de l'autre cote, apres ca va couler, on ne sait pas jusqu'ou.

Fisher 3: Ca dérange la pêche.

(...)