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Multi-Causal Pathways of Public Opposition to Dam Projects in Asia: A fuzzy set Qualitative Comparative Analysis (fsQCA)

Scholars overwhelmingly adopt the case study method when analyzing causal conditions inducing anti-dam-protests. We have carried out the first medium-N-study on this topic analyzing public opposition to 12 dam projects in Asia. For this purpose, we employ a fuzzy-set Qualitative Comparative Analysis (QCA) which is based on a thorough review of scholarly writings and press reports on the dam projects at question as well as an online survey and semi-structured interviews. We identify two causal recipes sufficient for the emergence of significant anti-dam-protests. First, lacking social safeguards in combination with the presence of political opportunity structures and higher levels of development are sufficient for significant anti-dam-protests to emerge. Second, lacking social safeguards in combination with rampant corruption and environmental risk induce these protests. Current scholarly literature particularly emphasizes political opportunity structures and development as causal conditions inducing significant protests. Our findings build on this literature to highlight the importance of project-specific conditions.

Keywords: dams; hydropower; social movements; public protests; fsQCA

1. Introduction

Fifty years ago, those constructing large-scale infrastructure struggled the most with the technical challenges of these mega-projects. However, the greatest obstacles faced by such projects today are almost always sociopolitical. Indeed, public protests delay large

infrastructure projects all around the world. This seems to hold true particularly for large dams, perhaps the first infrastructure impacted by the trend (McAdam et al., 2010). Examples of current contested large dam projects are Myanmar's Myitsone Dam (Harvey, 2011), Brazil's Belo Monte Dam (Watts, 2014) and Mozambique's Mphanda Nkuwa Dam (International Rivers, 2016; Sneddon & Fox, 2008). Approximately 3,700 hydropower dams with a capacity of at least 1 MW are either planned or already under construction (Zarfl et al., 2014, p. 161). It is yet to be seen if these projects will be completed. After all, hydropower's "narrowed public acceptance [has already] reduced significantly its role in the energy matrix in numerous states" (Sternberg, 2008, p. 1588), raising the question of whether large dams have a productive place in sustainable development policies.

There are many root causes of public opposition to dam projects explored in the literature. The majority of scholars argue that political opportunity structures are the key causal condition for the emergence of significant anti-dam-protests (Evren, 2015; Foran, 2006; Khatun, 2013; Rothman & Oliver, 1999; Swain & Chee, 2004; Xie & Van Der Heijden, 2010). However, scholars and practitioners also highlighted the importance of a country's overall development (Jain, 2000), the skills among activists (Lopes, 2014; Shaffer, 2013), corruption (Harring, 2013; Radin, 2013; Rothstein, 2011), a project's environmental risk (Hirsch & Warren, 1998; Jain, 2000) or a lack of social safeguards (Biswas, 2012; Dwivedi, 1997; Hirsch, 1998; Jain, 2000; Scudder, 2005) as causal conditions contributing to significant protests. Additional explanations suggested are the history of conflict in a country, a project's cultural impact or major resettlement induced by a dam (Kiik, 2016).

These causal relationships are discussed in more detail in section 2, however, what is common among this literature on anti-dam-movements is that it relies on a case

study method with n = 1 or 2. We did not identify a single article with a sample size greater than 3. The only example found with this sample size of 3 is McCormick (2006) who does not focus on causal conditions inducing dam protests, but the tactical repertoire of anti-dam-movements. Case study research has contributed many impactful studies to the social sciences (Gibbert & Ruigrok, 2010) and this approach is particularly praised for theory development (George & Bennett, 2004). However, the external validity of case studies has been repeatedly criticized; larger samples would be needed for the testing of theories. A particularly famous example featuring this claim may be King et al. (1994, p. 208 ff.). The current paper aims to test the various alleged causal conditions of significant anti-dam-protests via the analysis of public opposition to 12 recent dam projects in Asia. This analysis constitutes the first medium-N-study on anti-dam-movements in the scholarly literature.

We employ a fuzzy set Qualitative Comparative Analysis (fsQCA) for this analysis. fsQCA is particularly suitable "if the phenomenon of interest is best understood in terms of set relations" (Schneider & Wagemann, 2012, p. 12) which implies that causal conditions of interest may be conceptualized in sets. The most basic set relation would be the subset. Although this is barely mentioned by qualitative scholars, most qualitative analyses are fundamentally about set relations (Ragin, 2008, p. 2 ff.). To illustrate with an example relevant for this paper: The current scholarly consensus on the root causes of anti-dam-movements suggests, from a set relations perspective, that dam projects facing significant anti-dam-opposition are a subset of countries with ample political rights and civil liberties.

fsQCA has been criticized for oversimplifying the 'real world', for instance by reducing cases to only a few causal conditions (Rihoux & Lobe, 2009). This reduction is needed in order to be able to manage the medium-N-dataset in the formal, computer-

run part of fsQCA (also see section 3). The interpretive analysis of selected cases is introduced upon the conduct of this part, though, and ensures the 'thickness' characteristic and needed for case-oriented analysis such as fsQCA (Schneider & Rohlfing, 2013). We thus believe that fsQCA is a comprehensive approach to study anti-dam-movements via a medium-N-dataset, while acknowledging that the increase of the sample size implies that various nuances of particular cases are lost.

The remainder of this paper is organized as follows. In section 2, we develop the theoretical framing of this paper. In section 3, we present our research design, in section 4 our results. These are critically discussed in section 5. We summarize our argument in section 6.

Throughout this paper we employ fsQCA terminology. We acknowledge that this terminology is only briefly introduced in section 3 of this paper. Ragin (2008), Schneider & Wagemann (2012) or Legewie (2013) provide additional information and explanations regarding this terminology.

2. Theoretical Framing

The outcome condition of interest in this paper is public opposition (PROT). Public opposition, according to McAdam et al. (2010, p. 414 ff.), may be legal (institutionalized) conflict which occurs within the structures provided by the host country, project developer or lender for voicing concerns regarding a project such as court cases against a project, or political (contentious) conflict, which occurs outside of these structures such as demonstrations. Our analysis concentrates on political (contentious) conflict occurring within the host country which indicates, according to our reading, particularly severe public opposition – the main focus of this paper. Whenever possible, we also collected information regarding legal (institutionalized) conflict in order to complement our judgement of a case. We note that this legal

(institutionalized) conflict can also take place outside of the country the dam is built in. For instance, the project developer could be sued in its country of origin because of a dam project pursued abroad. This could also indicate significant contestation.

A starting point for the theoretical framing of the causal conditions of interest is the distinction between structural and proximate conditions. Most social scientific theories base their reasoning, at least implicitly, on causal conditions that can be divided into structural and proximate conditions (Schneider & Wagemann, 2006, p. 759, 2012, p. 253 ff.). Structural conditions are relatively stable over time and cannot be altered by the actors of interest. Meanwhile, proximate conditions vary over time and can be relatively unproblematically altered by the stakeholders of interest. We call proximate conditions project-specific conditions in this paper to highlight that these are largely within the responsibility of the dam project's key decision-makers. This thought is further developed in section 5 of this paper.

We have briefly introduced eight alleged causal conditions in the previous section of this paper, namely political opportunity structures (POS), development (DEV), corruption (CORRUPT), environmental risk (ENVR), social safeguards (SAFEG), conflict history (CONFL), cultural impact (CULT) and resettlement (RESETTL).

We frame POS and DEV as structural conditions since neither political opportunity structures nor a country's overall development (including economic development and the knowledge base of a movement) are directly influenceable by a dam project's key decision-makers. We label CORRUPT as a structural condition since it is frequently conceptualized as a culture pervasive in an entire country (Miller, Grødeland, & Koshechkina, 2001; Smith, 2008), not just a single project. Yet we acknowledge that it may also be conceptualized as a project-specific condition since

firms involved in constructing a dam may also influence the prevalence of corruption in a specific project via the enforcement of various anti-corruption-policies, for instance. Indeed, a distinction between structural and project-specific conditions is not always definite. Rather, structural and project-specific conditions are the poles of a continuum (Mannewitz, 2013). We label ENVR as a project-specific condition. This labeling may also be contested. Our discussions with an international donor suggest that environmental risk is rather a project-specific condition because environmental risk varies with the dam site chosen (TI7, see *Note* for details regarding interview coding). However, activists may disagree arguing that every large dam project would entail significant environmental risks. SAFEG is an evident project-specific condition; the dam developer may implement best practice social safeguards even in countries with limited or no safeguards (Nordensvard et al., 2015; Scheumann & Hensengerth, 2014). Finally, CONFL is an evident structural condition. CULT and RESETTL are project-specific conditions – both cultural impacts and resettlement can be nullified by those choosing the dam site.

All causal conditions in this paper have been identified and operationalized in an iterative process based on theoretical knowledge as well as empirical insights, as suggested by Wagemann & Schneider (2010, p. 7). We concentrate our theoretical framing in this section and the discussion on POS, DEV, CORRUPT, ENVR and SAFEG, our five focus conditions. These conditions were chosen as focus conditions since these are central in the (broader) current scholarly literature and/or the practitioner's discourse on anti-infrastructure-protests, as we point out below, and since these also emerged as key results of the fsQCA conducted. Choosing focus conditions also reflects the need to keep the number of conditions used within fsQCA at a moderate level (Wagemann & Schneider, 2010). A common practice in a medium-N-

analysis, from 10 to 40 cases, would be to select from 4 to 7 focus conditions (Berg-Schlosser & Meur, 2009). We frame CONFL, CULT and RESETTL as additional possible causal conditions and also discuss them below as well as in section 4 of this paper. We now turn to an extended discussion of our five causal focus conditions.

Political opportunity structures (POS) is the first focus condition chosen. Examples of authors particularly highlighting this condition are Rothman & Oliver (1999), Swain & Chee (2004), Foran (2006), Xie & van der Heijden (2010), Khatun (2013) and Evren (2015). According to these scholars, significant anti-dam-protests emerge only if the country in which the dam is constructed is reasonably democratic; if a country is autocratic, no dam protests emerge. A noted rebuttal of this thinking is Simpson (2013) who argued that an autocratic regime suppressing public opposition domestically induces the rise of transnational activism with activists migrating abroad to voice their views. However, our analysis focuses on domestic protests. POS from a conceptual standpoint are frequently interlinked with the magnitude of civil liberties in the countries analyzed. Examples are Mertha (2008) highlighting both the importance of NGOs and policy entrepreneurs within government and Stratton-Short (2013) particularly emphasizing a minimum level of civil society development as a necessary condition for anti-dam-protests to emerge. The importance of POS, particularly a change in POS, is also highlighted in the broader literature on social movements and widely seen as a key explanation regarding the emergence of protests (Farro et al., 2014; McAdam et al., 2010, p. 404 ff.; McAdam et al., 1996).

We chose development (DEV) as a second focus condition, although we only found it mentioned once in the scholarly literature on anti-dam-movements, namely by Jain (2000, p. 566). If the country is already quite developed and significant economic benefits of a project are not evident, anti-dam-protests may emerge, according to this

author. Yet the broader literature on social movements suggests the inclusion of this condition. This literature, grounded in an article by McCarthy & Zald (1977), proposes a resource mobilization perspective, "the oldest genuine sociological approach to social movements […] that is still widely applied" (Opp, 2009); it is generally considered to be a major theory in the study of social movements (Berntzen et al., 2014, p. 17 ff.). This approach mirrors the argument by Jain (2000) and also proposes its reversal. The counter-argument goes: If countries are not yet very developed, protest is limited because there is little to compete for. Including development as a focus condition in the analysis is also of interest, we find, because the prospect of development is frequently employed by practitioners to mitigate public protests. Consider, for instance, that Jawaharlal Nehru, India's first Prime Minister, famously called the country's Bhakra Dam a 'temple of modern India' (Verghese, 2006). Lastly, we note that resources are not only a target or possible attenuator of opposition, but also an enabler, according to this approach. Indeed, resource mobilization scholars point out that resources also include skills and know-how on participating in political action; these would be needed to stage a movement in the first place (Lopes, 2014, p. 6 ff.; Shaffer, 2013, p. 237 ff.) and would frequently not be available in less developed countries.

Corruption (CORRUPT) is the third focus condition. We note that corruption is not discussed by any scholarly writings on anti-dam-movements we identified. Indeed, corruption in the dam industry overall has been barely documented (Scudder, 2008) since corrupt activities are deliberately hidden (Transparency International, 2014). Matthews (2012) is a rare example of a scholar researching this issue. We still include this condition as a focus condition since researchers have repeatedly emphasized that perceived corruption undermines trust in governmental decision-making (recent

examples: Harring (2013), Radin (2013) and Rothstein (2011)) and may thus drive protests. The inclusion was also suggested by the results of initial fsQCAs carried out.

Environmental risk (ENVR) is the fourth focus condition we investigate, as suggested by Hirsch & Warren (1998b) in relation to the political ecology of dams and Jain (2000). If a project entails significant perceived environmental risk, public opposition occurs. McAdam et al. (2010, p. 411) suggest this causal condition is less prominent within the sociological literature on infrastructure protests. We particularly included it as a key focus condition due to its practical relevance with environmental risks of large dams frequently highlighted by activists. Examples of NGOs writings emphasizing environmental risks of dams are International Rivers (2015) writing about impacts of fisheries. and WWF (2015) writing about droughts. Many of our NGO interview partners also argued that this would be the key driver causing significant anti-dam-protests (examples are TNI2 and FNI10). We note that within environmental risk earthquake risk is particularly noted as a driver of protests (Deetes & Mang, 2015; FNL4). Including environmental risk as a focus condition is also of interest because the prospect of positive environmental impacts is frequently employed by dam advocates to mitigate public protests. For instance, the Hydro Equipment Association (HEA, 2016) writes that "mitigation of climate change is one of the most important areas for sustainable development [;] hydropower is in general one of the lowest GHG emitters within the global energy mix"

Social safeguards (SAFG) is the fifth focus condition chosen. Dwivedi (1997), Hirsch (1998), Jain (2000), Scudder (2005) and Biswas (2012) imply social safeguards as a causal condition. If social safeguards are lacking, e.g. a lack of public consultation as well as insufficient benefit-sharing mechanisms for those adversely impacted by the project, significant anti-dam-protests emerge, according to these authors; if those

adversely-affected by a project are its first beneficiaries, no significant anti-dam-protests emerge. The prominence of this causal condition in the practitioner's discourse also mandates its inclusion as a causal focus condition. Various international organizations and research organizations highlight benefit-sharing with locally affected communities nowadays as an avenue to mitigate public opposition to dam projects. Examples of relevant reports are Égré (2007) and Haas (2009). We now turn to a brief discussion of our additional possible causal conditions.

Conflict (CONFL) is the first additional causal condition investigated. Indeed, Kiik (2016) suggests that the Myitsone Dam protests escalated due to the history of ethnic conflicts in Myanmar's Kachin State in combination with the role of China in the project. The author argues that anti-Chinese-sentiment is prevalent in Myanmar these days, which created conflict for this Chinese-led project which was proposing to export electricity to China.

Culture (CULT) is the second additional causal condition we investigate. This inclusion is based upon the field research we conducted in Myanmar. Various interview partners suggested that the destruction of historical religious buildings would have fueled opposition (e.g. FNL6, FI8). Furthermore, the river the Myitsone Dam is built on, the Irrawaddy, is widely seen as a cultural heritage and lifeline of Myanmar that may thus remain untouched. This is also pointed out in press articles (Asian Sentinel, 2011; Harvey, 2011).

Resettlement (RESETTL) is the third additional causal condition investigated. We included this condition since we were told that Chinese dam developers would now aim to construct large dams only in sparsely populated areas assuming that major resettlement would be a major causal condition for the emergence of significant anti-dam-protests (TNI8).

Kitschelt (2003, p. 54) suggests that there is usually not a single structural or project-specific condition that will explain social science phenomena, "but only the concatenation and configuration of forces". We agree with this view. Hence, we expected prior to conducting the formal, computer-run part of fsQCA that only a combination of structural and/or project-specific conditions would be sufficient for significant anti-dam-protests to emerge.

3. Research Design

This section outlines the fundamentals of fsQCA and justifies our case selection and operationalizing of causal focus conditions as well as the calibration we undertook.

3.1 fsQCA in a Nutshell

Comparative researchers have increasingly turned to QCA in recent years (Thiem et al., 2015, p. 2). QCA was first outlined by Ragin (1987) with crisp set Qualitative Comparative Analysis (csQCA) as its initial variant. It remains the most widely used QCA technique to the present day (Rihoux et al., 2013, p. 175). csQCA operates exclusively with dichotomous conditions. Thus, set values are either 0 or 1 indicating differences in kind, i.e. a dam project may face zero public opposition or violent public opposition. Meanwhile, fsQCA, introduced by Ragin (2000), allows the researcher to also establish differences in degree (Schneider & Rohlfing, 2013, p. 14 ff.), i.e. a dam project may face zero public opposition, limited public opposition, significant, but not violent public opposition or violent opposition. Thus, fsQCA (unlike csQCA) can capture the "different shades of grey" (Schneider & Wagemann, 2012, p. 14) usually encountered by social scientists – a key advantage of this variant. Thus, we chose it as the QCA approach for this paper where there are more nuanced outcomes, albeit still requiring significant simplification from the real world. We note that even fsQCA

fundamentally rests upon the arguments of absence and presence (Schneider & Wagemann, 2012, p. 28; Thiem et al., 2015, p. 11) and thus results usually do not vary significantly if a case's membership value is altered slightly, e. g. from 0.67 to 1 (Schneider & Wagemann, 2012a, sec. 1.5.2).

Hypotheses within fsQCA are implication hypotheses grounded in the notions of necessity and sufficiency (Thiem et al., 2015, p. 11 ff.). A condition is deemed necessary, if, whenever the outcome is present, the condition is also present. Thus, a necessary condition is a superset of the outcome (Schneider & Wagemann, 2012b, p. 57 ff.). A condition is deemed sufficient if, whenever it is present across cases, the outcome is also present. Thus, a sufficient condition is a subset of the outcome. Causal conditions within fsQCA are frequently INUS conditions. An INUS condition is "a single condition that is insufficient for producing the outcome on its own, but which is a necessary part of a conjunction, that, in turn, is unnecessary, but sufficient for producing the outcome" (Schneider & Wagemann, 2012a, Glossary).

fsQCA aims at unravelling causal complexity, according to Schneider & Wagemann (2012, p. 78), which is defined by conjunctural causation, equifinality and causal asymmetry. Conjunctural causation means that different causal conditions do not produce the outcome on their own, but only in combination. Equifinality means that different causal recipes can lead to the same outcome. Lastly, causal asymmetry implies that a combination of certain conditions causing a certain outcome are not necessarily a mirror image of those conditions causing its absence. We discuss the implications of fsQCA's assumption regarding causal asymmetry at the end of this sub-section.

All analyses presented in this paper were conducted with fsQCA 2.0 by Ragin et al. (2009), the most widely used QCA software (compass.org, 2015). Necessary and sufficient conditions ought to be analyzed in separate steps when conducting fsQCA,

with the analysis of necessary conditions first (Wagemann & Schneider, 2010). Our results section reflects this practice. A consistency threshold of > 0.9 is usuallly adopted for necessary conditions (Schneider & Wagemann, 2012, p. 143) with consistency indicating the degree the empirical data is in line with a stated subset relation (Schneider & Wagemann, 2012b, Glossary). As a consequence of this demanding threshold, "identifying a necessary condition is quite rare empirically" (Legewie, 2013).

The truth table sorting of the empirical evidence collected by the researcher into the different logically possible combinations with each combination creating a truth table row is the second step of fsQCA and its widely considered to be fsQCA's core (Schneider & Wagemann, 2012b, Chapter 4). When applying the logical minimization procedure to the truth table rows, three solution terms are produced: The complex solution, the parsimonious solution and the intermediate solution. Results presented in section 4 exclusively focus on the intermediate solution. This solution is advantageous compared to the parsimonious and complex solution and thus recommended to be used since it balances parsimony and complexity via the injection of additional theoretical knowledge in the analysis, according to Schneider & Wagemann (2012, p. 197 ff.).

The logical minimizations carried out for this paper only include truth table rows backed by empirical cases, a common practice in fsQCA. A raw consistency threeshold of rounded ≥ 0.9 was adopted since Ragin (2009, p. 38) recommends using a consistency threshold as close to 1.0 as possible. Directional expectations spelled out in section 2 are used. If prime implicants had to be chosen manually in order to produce the solution formulas (on prime implicants: Legewie (2013, sec. 4.3)), ~SAFEG was selected first due to the fsQCA results on necessary conditions, outlined in section 4. Then, POS was selected, given its emphasis in the scholarly literature, then DEV.

It is a standard of good practice to perform separate analyses regarding the occurrence and non-occurrence of the outcome due to fsQCA's causal asymmetry assumption outlined previously (Schneider & Wagemann, 2012b, p. 114; Berg-Schlosser et al., 2009, p. 9). Yet we do not report any results on the non-occurrence of public protests in this paper due to the chosen focus of our study. After all, every project in our sample faced at least some protests, as outlined in the next section, and the non-occurrence of protests can thus not be analyzed with this sample.

We now turn to a discussion of our cases.

3.2 Case Selection

Our selection of cases was driven by four criteria. The first two criteria are theoretically-guided, while the third and fourth criteria are practically-guided.

First, we required that all cases feature public protest regarding dam construction, with differing degrees of public protest in the sample overall. This may be viewed as a key case selection principle. Indeed, Lijphart (1971, p. 687 ff.) has suggested to focus comparative analyses on comparable cases, which are contested dams in our study, as a means to reduce the number of causal conditions possibly influencing the outcome which, in turn, would address the 'many variables, small N'-problem. Indeed, very different causal conditions may be at play in non-contested dam projects than in contested ones, we hypothesize. We cannot confirm this hypothesis, though, since we find that scholarly analysis on causal conditions of 'silent' dams is largely lacking.

Second, cases in the eventual sample overall had to differ significantly regarding the alleged causal conditions, e. g. both cases with limited political opportunity structures and significant political opportunity structures must be included in the overall

sample. This is needed in order to be able to detect multiple causal pathways to the outcome.

Third, only Asian cases were considered for inclusion in our sample. The decision to restrict our analysis to cases in Asia reflects the fsQCA convention to select based upon a common context (Rihoux & Lobe, 2009), in this case Asia. This convention emerged as fsQCA relies significantly on the context knowledge of those conducting it (Basurto & Speer, 2012); the authors of this paper are most familiar with the Asian context.

Fourth, only cases for which significant amounts of information could be gathered were included. This information could be, following Schneider & Wagemann (2012, p. 32 ff.), from various sources. These sources comprised peer-reviewed papers, press research or interview and survey data collected by the authors. For instance, an online survey was undertaken for this paper targeting experts involved in the various projects such as activists, environmental and social impact assessment (ESIA) consultants or scholars; inputs by 36 experts were recorded. Selected cases were also discussed with experts via semi-structured interviews (both on the phone and face-to-face, see *Note* for details). In addition, the authors of this study have carried out field research on two of the cases investigated in this paper, namely the Myitsone Dam project and the Kaeng Suea Ten Dam project. We would always aim to gather data on each case from several sources. This data triangulation is supposed to enhance the validity of our reading regarding the various cases at hand (Denzin, 1970, cited in: Bryman (2003, p. 1142)).

Applying these criteria eventually yielded 12 cases in 11 countries. These are depicted in Table 1. fsQCA requires a minimum of 10 cases (Legewie, 2013).

Table 1: List of cases

#	Dam project	Country	Start of construction	Height (meters)	Project status
1	Myitsone Dam	Myanmar	2009	150	Suspended
2	Upper Karnali Dam	Nepal	N/A	64	Planning and design stage
3	Three Gorges Dam	China	1993	181	Operational
4	Nam Theun 2	Laos	2006	39	Operational
5	Sardar Sarovar Dam	India	1987	139	Under construction/ operational
6	Son La Dam	Vietnam	2005	138	Operational
7	Kamchay Dam	Cambodia	2008	110	Operational
8	Bakun Dam	Malaysia	1996	205	Operational
9	Upper Kotmale Dam	Sri Lanka	2006	35.5	Operational/under construction
10	Xayaburi Dam	Laos	2012	32.6	Under construction
11	San Roque Dam	Philippines	1998	200	Operational
12	Kaeng Suea Ten Dam	Thailand	N/A	72	Planning and design stage

Our reading of the different cases (including the literature consulted) is presented in the appendix. We now turn to a discussion of our operationalization and calibration decisions. Calibration refers to the assigning of fuzzy set values to conditions of individual cases (Wagemann & Schneider, 2010).

3.3 Operationalization and Calibration of Causal Conditions

We now discuss the operationalization of our conditions (frequently featuring various sub-dimensions) as well as the assigning of fuzzy-set values to conditions for the different cases. Our structural conditions are mostly based on quantitative data, while our project-specific conditions are based on qualitative data. All original data was calibrated qualitatively with a four-value-scheme usually adopted for the sub-dimensions at question with 0, 0.33, 0.67, and 1.0 to indicate "fully out," "more out than in," "more in than out," and "fully in," respectively (Ragin, 2009, p. 7). A four-value-scheme for sub-dimensions is particularly advisable when researchers have a substantial

amount of information about cases, but the nature of evidence is frequently not identical across cases which holds true for many of our sub-dimensions. We were not able to not collect satisfactory non-ambiguous in-depth information on our sub-dimensions earthquake risk and cultural destruction to justify a four-value-scheme. Thus, a two-value-scheme with 0 and 1 was adopted for these sub-dimension. The causal conditions/sub-dimensions funding source/lead developer, electricity export and indigenous people are considered to be naturally dichotomous.

The different operationalizations were developed in an iterative process which particularly relied on semi-structured interviews with experts such as dam developers, international donors and activists. These were repeatedly consulted to discuss causal conditions of significant anti-dam-protests and possible operationalizations. In a second step, these experts were then also asked to voice their views regarding identified qualitative sub-dimensions via an online survey. Multiple sub-dimensions were originally seen as causal conditions. Following further review of the literature and discussion with experts, these were grouped in the five focus causal conditions and additional possible causal focus conditions, outlined in section 2 of this paper. This ongoing refinement and the reduction of the number of conditions via the development of higher-order constructs is central to fsQCA (Ragin, 2000, p. 322; Schneider & Wagemann, 2012, p. 277).

We now turn to a discussion of our operationalization and calibration of scores with a particular focus on the qualitative anchor which qualifies cases as members of a set (Schneider & Wagemann, 2012, p. 277 ff.).

We operationalized PROT via a review of press reports, scholarly literature and inputs via the online survey we conducted. An in-depth justification for the calibrations

of this sub-dimension for each case is provided in the case descriptions in the appendix. Verbal explanations regarding our four-value-scheme are in Table 2.

Table 2: Operationalizing Public Protest

Outcome	Operationalization	
Public protest (PROT)	0	No evidence of protests
	0.33	Few peaceful demonstrations, and/or limited legal opposition (e. g. petitions)
	0.67	Many peaceful demonstrations with significant attendance and/or significant number of arrests, injuries, and damage to the dam project, and/or significant legal opposition (e. g. significant number of court cases against the project)
	1	Violent demonstrations with a significant number of arrests, injuries, or deaths and damage to the dam project, and/or construction permit denied, lender pulling out of investment

We conceptualize POS as a composite of political rights and civil liberties (with civil liberties also including freedom of the press), based upon the dual emphasis in the scholarly literature, outlined in section 2 of this paper. For both of these composites, we draw on the index compiled by Freedom House (2015) which is commonly employed by scholars (Giebeler, 2015; Møller, 2009). The index ranks countries on a scale from 1 to 7 with 1 representing the most free and 7 representing the least free. Drawing on the in-depth-explanation of this scale by Freedom House (2015b) and a review of the relevant data, calibration was undertaken (see table 3 and appendix for details).

We conceptualize DEV as the country's overall development, operationalized by the Human Development Index (HDI) which is widely used by scholars and practitioners alike to measure development (Kovacevic, 2011). It measures life expectancy, education and income and is thus an indicator that corresponds closely with resource mobilization theory which also considers both educational and income resources, as outlined in section 2. We note that McAdam et al. (2010, p. 413 ff.) also employed HDI to operationalize resource mobilization in their fsQCA. HDI cut-off

points have been established by HDI (2015). These were reviewed, deemed reasonable for our cases and thus adopted.

We conceptualize ENVR as a composite of the environmental impact of the dam at question, earthquake risks associated with it as well as its height. We undertook press research and a review of the scholarly literature to identify a project's environmental impact. We also included a question on environmental impact in our online survey. A justification for the calibration of this sub-dimension for each case is provided in the case descriptions in the appendix. We undertook press research and a review of the scholarly literature to identify earthquake risks. We chose height as third composite assuming that particularly large dams pose particularly grave environmental risks. This notion was suggested and confirmed in expert interviews we conducted (TNI2; FNI10). Any dam with a height above 15 meters is defined as a large dam (ICOLD, 2015). Since all dams in the sample feature a height above 15 meters, this definition was not usable for calibration. A mega-dam is a dam with a height of at least 150 meters (International Rivers, 2015c). Thus, these dams were coded 1 in the sample and served as a starting point for calibration.

Furthermore, we conceptualize SAFEG as a composite of public consultation and benefit-sharing. We undertook press research and a review of the scholarly literature to calibrate these composites. We also included two question on these sub-dimensions in our online survey. An in-depth justification for the calibrations of this sub-dimensions for each case is provided in the case descriptions in the appendix.

Lastly, we conceptualize CORRUPT as perceived corruption in a country, operationalized by the Corruptions Perceptions Index by Transparency International (2015), the most widely used indicator for corruption worldwide (Transparency International, 2014). The index is based on a scale from 1 to 10 with 1 indicating that a

country is most corrupt. Cut-offs have been established by Transparency International (2015). These were reviewed, deemed reasonable for our cases and thus adopted.

Information on the sub-dimensions, operationalizations and sources of the three additional likely causal conditions is to be found in Table 3 and the appendix. The five causal focus conditions are also summarized in Table 3. Our raw data matrix including all raw data used in this paper is also included in the appendix.

We have averaged the calibrated values for the different sub-dimensions outlined in order to obtain values for our eventual analysis. We note that Schneider & Wagemann (2012, p. 7) warn against "averaging information across different dimensions of a concept"; this could introduce misfits between the verbal meaning of a concept and its operationalization. We acknowledge this risk. Thus, we thoroughly reviewed all averaged calibrations of our four causal conditions. We changed or recalibrated sub-dimensions if we found that our overall impression regarding causal focus condition did not correspond to its averaged operationalization. We believe this approach is superior to a qualitative calibration of our causal focus conditions via a four-value-scheme since it allows us to maintain the nuances in the data captured by our sub-dimensions. Our approach chosen mirrors the approach by Pahl-Wostl & Knieper (2014). We also evidence its robustness via a sensitivity analysis in the next section.

Table 3: Possible causal conditions of anti-dam-protests

Causal condition	Sub-dimension	Operationalization		Source
Political opportunity structures (POS)	Political rights	0	Countries with few or no political rights (with a ranking of 7)	Freedom House
		0.33	Countries with significantly restricted political rights (with a ranking of 5 or 6)	
		0.67	Countries mostly protecting political rights (with a ranking of 3 or 4)	
		1	Countries with (largely) a wide range of political rights (with a ranking of 1 or 2)	
	Civil liberties	0	Countries with few or no civil liberties (with a ranking of 7)	Freedom House
		0.33	Countries with significantly restricted civil liberties (with a ranking of 5 or 6)	
		0.67	Countries mostly protecting civil liberties (with a ranking of 3 or 4)	
		1	Countries with (largely) a wide range of civil liberties (with a ranking of 1 or 2)	
Development (DEV)	Overall development	0	Undeveloped countries in Asia (with a score < 0.40)	Human Development Index (HDI) by UNDP
		0.33	Developing countries in Asia (with a score ≥ 0.4 and < 0.6)	
		0.67	Significantly developed countries in Asia (with a score ≥ 0.6 and < 0.8)	
		1	Very highly developed countries in Asia (with a score ≥ 0.8)	
Environmental risk (ENVR)	Environmental impact	0	No environmental impacts in the construction and reservoir area as well as downstream	Press research, peer-reviewed papers, online survey
		0.33	Limited environmental impacts in the construction and reservoir area as well as downstream	
		0.67	Considerable environmental impacts in the construction and reservoir area as well as downstream	
		1	Significant environmental impacts (e. g. destruction of biodiversity hotsort, severe impacts on fisheries) in the construction and reservoir area as well as downstream	

	Earthquake risk	0	No evidence project is close to fault line	Press research, peer-reviewed papers
		1	Evidence that project is close to a fault line	
	Great project size	0	Dams with a height < 50 meters	Press research
		0.33	Dams with a height ≥ 50 meters and < 100 meters	
		0.67	Dams with a height ≥ 100 meters and < 150 meters	
		1	Dams with a height ≥ 150 meters	
Social safeguards (SAFEG)	Consultation	0	No public participation took place	Press research, peer-reviewed papers, online survey
		0.33	Basic project information was provided to impacted communities, no feedback collected	
		0.67	Project information was provided to impacted communities, feedback was collected and (at least partially) incorporated	
		1	Project information was provided to impacted communities, feedback was collected and incorporated to the maximum extent in a collaborative process	
	Compensation	0	No compensation was given to affected communities	Press research, peer-reviewed papers, online survey
		0.33	Insufficient compensation was given to affected communities, compared to international standards	
		0.67	Largely sufficient compensation was given to affected communities, compared to international standards	
		1	Compensation was given to affected communities according to international standards	
Corruption (CORRUPT)		0	No corruption perceived in the country (score of ≥ 4)	Corruptions Perceptions Index (CPI) by Transparency International
		0.33	Limited corruption perceived in the country (score of ≥ 3 and < 4)	
		0.67	Corruption perceived to be a significant challenge in the country (score of ≥ 2 and < 3)	

		1	Corruption perceived to be pervasive in the country (score of < 2)	
Conflict (CONFL)	Conflict history	0	Countries with no history of conflict	Conflict Barometer by Heidelberg Institute for International Conflict Research
		0.33	Countries with a limited history of conflict	
		0.67	Countries with a considerable history of conflict	
		1	Conflict-ridden countries	
	Funding source/lead developer	0	Funding source or lead developer is not Chinese	Press research
		1	Funding source or lead developer is Chinese	
	Electricity export	0	Majority of the dam's electricity is not exported abroad	Press research
		1	Majority of the dam's electricity is exported abroad	
Cultural impact (CULT)	Cultural destruction	0	Limited cultural destruction due to the project	Press research, peer-reviewed papers, online survey
		1	Significant cultural destruction due to the project	
	Indigenous people	0	Indigenous people not displaced because of the project	Press research
		1	Indigenous people displaced because of the project	
Resettlement (RESETTL)		0	< 1,000 people displaced because of the project	Press research
		0.33	≥ 1,000 - < 50,000 people displaced because of the project	
		0.67	≥ 50,000 - 1 million people displaced because of the project	
		1	> 1 million people displaced because of the project	

Note: Sources for press research are provided in the case descriptions in the appendix.

4. Results

The absence of social safeguards is the only causal condition identified meeting the threshold for a necessary condition with a consistency value of 0.92 and a coverage of 0.83. Of the other causal conditions, the presence of environmental risk reaches a consistency value of 0.82. None of the additional conditions introduced in this section for the sensitivity analyses pass the 0.8 threeshold. The presence of political opportunity structures, highlighted by the scholarly literature as a necessary condition for the emergence of anti-dam-protests, only reaches a consistency value of 0.74.

When applying the logical minimzation procedure to the truth table rows featuring the five causal focus conditions outlined previously, two causal pathways are identified (Table 4). First, lacking social safeguards in combination with higher levels of development and the presence of political opportunity structures are sufficient for significant anti-dam-protests to emerge. Second, lacking social safeguards in combination with rampant corruption and environmental risk also induce these protests. All six cases with significant anti-dam-protests can be explained via these two causal pathways with a few cases over-determined (details in the truth table in the appendix).

Table 4: Intermediate solution for the emergence of significant anti-dam-protests

Causal pathway	**~SAFEG*POS*DEV**	**~SAFEG*CORRUPT*ENVR**
Consistency	1.00	0.95
Raw coverage	0.63	0.60
Unique coverage	0.30	0.26
Cases covered	Bakun Dam, San Roque Dam, Kaeng Suea Ten Dam	Myitsone Dam, Xayaburi Dam, Sardar Sarovar Dam
Solution formula	~SAFEG*(POS*DEV + CORRUPT*ENVR) → PROT	
Solution consistency	0.96	
Solution coverage	0.90	

Note: * = and; + = or; ~ = absence of; → sufficient for.

Before these various results are discussed in the next section, their robustness is tested. Consistency and coverage in Table 5 indicate solution consistency and solution coverage.

Exhaustive enumeration is the most common approach to fsQCA sensitivity analyses (Thiem et al., 2015, p. 2). The main analysis is deemed robust "if they involve similar necessary and sufficient conditions and if consistency and coverage are roughly the same across different model specifications" (Schneider & Wagemann, 2012a, sec. 11.2.1). In order to test the robustness of findings, (a) cases may be dropped from the sample (Goldthorpe, 1997, p. 5; Schneider & Wagemann, 2012a, sec. 11.2), (b) additional possible causal conditions may be introduced (Schneider & Wagemann, 2012b, p. 284 ff.) and (c) alternative measures for a concept can be employed (Basurto & Speer, 2012).

First, we excluded the Kaeng Suea Ten Dam from our analysis. Since the Kaeng Suea Ten Dam is the only dam in our sample whose key purpose is not electricity generation, but flood control, as outlined in the appendix, it could be argued that this dam is different in kind and thus unsuitable for this sample. The exclusion of this dam slightly changes the solution formula which now suggests that the absence of social safeguards and the presence of environmental risk either in combination with corruption or the presence of political opportunity structures and development induces significant public protest (Table 5, row 2). Thus, the importance of environmental risk is emphasized.

Second, we excluded the San Roque Dam from our analysis. Our case description showcases that information collected for this dam was more ambiguous and limited than for the other dams in our sample. For instance, our value assigned for environmental impact of this dam only rests upon one data point. Thus, our calibration of this case may feature various measurement errors, a key criticism of Hug (2013) regarding fsQCA. The exclusion of the San Roque Dam does not change the solution formula, though. Solution consistency and coverage values also remain virtually unchanged (Table 5, row 3).

Third, we excluded the Xayaburi Dam from our analysis. Our case description showcases that information collected on this project – particularly regarding the outcome

condition – was ambiguous. Furthermore, one of the anonymous reviewers of this paper challenged our claim that the project is a contested one. The exclusion of this project does not challenge the results of the main analysis, though (Table 5, row 4).

Fourth, we included CONFL as an additional causal condition to our analysis for reasons discussed in section 2. Our solution formula remains unchanged, though, compared to the main analysis (Table 5, row 5).

Fifth, we reran the previous sensitivity analysis only including data from the Heidelberg Conflict Barometer (2015). Indeed, it could be argued that the two composites beyond the Heidelberg Conflict Barometer only introduce noise to the operationalization. First, not every country in the sample may face significant anti-Chinese sentiment and thus Chinese involvement may not always contribute to conflict. Second, electricity exported abroad may yield significant governmental returns (for instance, the sale of hydroelectricity to India contributes to 40% of Bhutan's fiscal revenues (Singh, 2013, p. 460)) which may then be used for developmental purposes such as the construction of schools or hospitals and thus also not contribute to conflict. Our solution formula remains unchanged, though, compared to the main analysis when this adjusted operationalization is introduced (Table 5, row 6).

Sixth, we introduced CULT as an additional causal condition. We find that CULT is now also part of the solution formula from the main analysis (Table 5, row 7). However, the coverage is now only at 0.63. Values below 0.75 indicate a badly specified model which may be caused by the inclusion of irrelevant conditions (Legewie, 2013). Cultural destruction may be a case in point with 5 out of 6 cases with significant anti-dam-protests also featuring significant cultural destruction, while 3 out of 6 cases with limited anti-dam-protests also feature significant cultural destruction. We further discuss this condition in the next section.

Seventh, we introduced RESETTL as an additional causal condition. No significant changes compared to the main analysis are observed (Table 5, row 8).

Eight, we calibrated our four focus causal conditions qualitatively on a four-value-scheme instead of averaging their sub-dimension scores. This is an attempt to address the concern by Schneider & Wagemann (2012, p. 7), outlined in the previous section. The raw data for this analysis is included in the appendix. Again, the solution formula from the main analysis remains unchanged, while the consistency score is slightly lowered (from 0.96 to 0.94) (table 5, row 9).

Ninth, we replaced ENVR with its sub-dimension earthquake risk (EARTHQR) due to the emphasis of EARTHQ by NGOs and practitioners interviewed, outlined in section 2. The solution formula from the main analysis remains unchanged with an increase in consistency (from 0.96 to 1.00) and a slight reduce in coverage (from 0.90 to 0.89) (Table 5, row 10).

Tenth, we replaced POS with its sub-dimension political rights (POLR). This variation of the main analysis was chosen since the current literature largely focuses particularly on the presence of political rights as the key necessary condition for the emergence of public protests. The solution formula from the main analysis remains unchanged (Table 5, row 11). Indeed, the sub-dimension indicators chosen for POS are highly interrelated, with Freedom House (2015b) noting that "the gap between a country's or territory's political rights and civil liberties ratings is rarely more than two points".

Table 5: Solution formula and results of the sensitivity analyses

Row	Analysis	Solution formula	Cons.	Cov.
1	Main analysis	~SAFEG*(POS*DEV + CORRUPT*ENVR) → PROT	0.96	0.90
2	Kaeng Suea Ten Dam dropped	~SAFEG*ENVR*(POS*DEV + CORRUPT) → PROT	0.95	0.83
3	San Roque Dam dropped	~SAFEG*(POS*DEV + CORRUPT*ENVR) → PROT	0.96	0.88
4	Xayaburi Dam dropped	~SAFEG*(POS*DEV + CORRUPT*ENVR) → PROT	0.96	0.88
5	*CONFL* added	~SAFEG*(POS*DEV + CORRUPT*ENVR) → PROT	0.96	0.90
6	*HEID* added	~SAFEG*(POS*DEV + CORRUPT*ENVR) → PROT	0.96	0.90
7	*CULT* added	~SAFEG*CULT*(POS*DEV + CORRUPT*ENVR) → PROT	1.00	0.63
8	*RESETTL* added	~SAFEG*(POS*DEV + CORRUPT*ENVR) → PROT	0.96	0.90
9	Qualitative cal. of causal cond.	~SAFEG*(CORRUPT*ENVR + DEV*POS) → PROT	0.94	0.90

10	*EARTHQR* rather than *ENVR*	~SAFEG*(POS*DEV + CORRUPT*EARTHQR) → PROT	1.00	0.90
11	*POLR* rather than PSO	~SAFEG*(POLR*DEV + CORRUPT*ENVR) → PROT	0.96	0.90

Note: A consistency threshold of (rounded) 0.89 was adopted in row 8; too few cases would have been included in logical minimization procedure with a 0.9 threshold

5. Discussion

The results presented in the previous section are of relevance to the ongoing sustainable development discourse. Indeed, infrastructure development is an integral component of sustainable development. The first target within the Sustainable Development Goals' goal 9 is to "develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic and human well-being" (United Nations, 2016). Dams provide multiple benefits at scale (Kirchherr & Charles, 2016) that are needed to support economic and human well-being. For instance, the five largest power plants in the world are all hydro-electric ones (Platts, 2015). Biswas (2012, p. 6) claims that no country "has ever managed to make significant economic progress without harnessing adequately its water resources".

Yet dams' negative impacts can be "locally disruptive, and often irreversible" (WCD, 2000) and thus potentially undermine the sustainability of the hydropower sector (Tilt & Gerkey, 2016). Various negative impacts of dams have been conceptualized as causal conditions possibly inducing significant anti-dam-protests. Examples are dams' environmental or cultural impacts. The scholarly literature on anti-dam-protest particularly highlights dams' resettlement impacts (Kirchherr et al., 2016, p. 5) with Scudder (2012) finding that displacement mostly results in communities' impoverishment. We have conceptualized this impoverishment as lacking social safeguards throughout this paper and found that such a lack of social safeguards – implying the side-lining of communities during the planning and construction of a large dam – is linked to significant anti-dam-protests.

We now turn to a discussion of the significant anti-dam-protests against Thailand's Kaeng Suea Ten Dam and Myanmar's Myitsone Dam to illustrate how lacking social safeguards may interact with the additional causal conditions identified in the two fsQCA causal recipes found. These discussions showcase how the two sub-composites of lacking social safeguards – consultation and compensation –interact.

For Thailand's Kaeng Suea Ten Dam, our field research supports the fsQCA result that ~SAFEG in combination with POS and DEV results in significant anti-dam-protests. We found that a lack of social safeguards initiated the protests against the dam, and are why the protests are continuing until today. We find that both sub-dimensions of social safeguards induce protests; yet perceptions regarding insufficient compensation may be driven by a lack of consultation.

Villagers interviewed stated they would oppose the project primarily because they fear losing their livelihoods (FAA13; FAA18; FAA19; FAA28; FAA29). "We will lose everything. Agriculture, homes, culture", a villager said (FAA28). The government outlined compensation to the villagers, but these compensation promises were not viewed to be credible and/or sufficient (FAA18; FAA24; FAA28; FAA29). The root cause of the villagers' distrust towards the government was the fact that consultation was not carried out, according to our field research. Indeed, the government did not even inform the villagers about the project initially, the minimum consultation standard (IAP2, 2007); rather, villagers were asked to mark the forest to be flooded without decision-makers telling them why these measures were undertaken (FAA29). Once the villagers learnt why the forests were marked, trust was shattered.

Thailand's political opportunity structures then provided the space to voice opposition because of lacking social safeguards. For instance, villagers undertook demonstrations in Bangkok and Chiang Mai jointly with villagers from all across Thailand that also fear

displacement because of dam construction (FAA8; FAA13; FAA22) prior to the 2014 coup d'état (BBC, 2014b; FAA42). Ad-hoc demonstration were also staged if government officials approach the envisaged dam site (FAA10). Yet such demonstrations were not undertaken in the early days of the protest. As one villager acknowledged, "in the beginning, we had no system. We were just crazy protesters" (FAA24).

However, NGOs started collaborating with the villagers and helped them to develop their "great system of protest" (FAA16). The involvement of NGOs illustrates the interrelatedness of the causal conditions POS and DEV. The NGOs – a player within Thailand due to the country's POS – boosted the capabilities of the villagers protesting, which, in turn, further amplified the protests. In particular, Assembly of the Poor (AoP) (on AoP: (Missingham, 2002)) was credited with teaching the villagers how to campaign (FAA40)and Living River Siam Association introduced *Thai Baan* research (on *Thai Baan* research: Käkönen & Hirsch (2009, p. 346)), which helped the villagers to detail the anticipated negative impacts of the project (FNL18).

These enhanced human resources are an explanation suggested by scholars adhering to the resource mobilization approach, as outlined in section 2 of this paper. Overall, this identified recipe largely endorses the current scholarly literature on the topic which particularly emphasizes POS and DEV as causal conditions inducing significant anti-dam-protests. Yet our case study conceptualizes DEV (and within DEV, capable human resources) as a consequence of POS and complements both conditions with SAFEG as a necessary (initiating) condition for significant anti-dam-protests.

The case of Myanmar's Myitsone Dam illustrates the second causal recipe found via the fsQCA. According to this recipe, the significant anti-dam-protests are the result of ~SAFEG in combination with CORRUPT and ENVR. We believe this causal recipe may particularly complement insights from the current scholarly literature.

Lacking social safeguards may also be seen as the root cause of the protest against the Myitsone Dam. Indeed, the person who claimed to have initiated the protests feared that the village's livelihoods may be lost upon displacement (FAA1). KDNG (2007, p. 1) also emphasized that people would lose their livelihoods because of the project. Meanwhile, displaced communities interviewed voiced that the compensation provided was insufficient (FAA1; FAA2; FAA5). Distrust regarding the project and its compensation policy was likely fostered because of the lacking community involvement during the early stages from the project – a mechanism comparable to the Kaeng Suea Ten Dam case study. Communities only learnt about the project by chance – with the leader finding plans of the project in a restaurant in Myitkyina; these had been forgotten by an engineer (FAA1; FNL21). This shattered trust towards decision-makers. The village leader was informed by the government regarding the displacement and compensation policy only months prior to the resettlement (FAA5). A Chinese dam developer also confirmed that no consultation beyond informing took place (TP24).

The early protests were largely restricted to Kachin State (FNL21) and comprised activities such as open letters, anti-dam-graffiti and prayer services against the dam with up to 300 villagers participating (KDNG, 2009). The Kachin National Organization (KNO) also organized various protests in front of Burmese embassies in the United Kingdom, Japan, Australia and the United States (Kachin News, 2010) – this transnational activism was induced by the limited political opportunity structures in Myanmar prior to the regime change (Simpson, 2013).

The project's environmental risk, particularly earthquake risk, helped to spread protests across Kachin State and further intensified them, according to our reading. "We are going to be killed if this dam is built", an activist said (FNL4). The dam is less than 100 kilometers from a major fault line and located in a region recognized as one of the world's top

biodiversity hotspots and (Deetes & Mang, 2015). Environmental impacts of the project were also highlighted by KDNG (2009), e. g. the project's impacts on biodiversity due to the reservoir created.

The protests reached Yangon, Myanmar's commercial center, and intensified once the November 2010 elections had taken place (TNL17; FNL21), the country's first election in 20 years (BBC, 2014a). The project was suspended in September 2011, six months after Thein Sein took office as President. We thus acknowledge that POS is also part of the Myitsone Dam protest narrative. Opposition spread in Yangon since "this was one of the few not-so-political issues out there. Protesting against the Myitsone Dam was certainly less dangerous than protesting for the release of political prisoners" (FI8). The campaign overall was called "disjointed" (Kirchherr et al., 2016, p. 4) potentially resulting from a lack of DEV.

Protests in Yangon were not primarily driven by livelihood or environmental concerns, but by CORRUPT as well as CULT, according to our field research. Revenues generated via the electricity exports were expected to only benefit the country's elites, not the people of Myanmar and their development (FNI11). A former civil servant who had worked in the Office of the President of the Union of Myanmar argued that "this project creates [illegitimate] generational wealth for many public sector individuals" (TG3). The project's intransparency likely fostered these corruption allegations; at the time of publication, none of the contractual details of the Myitsone Dam project are published (Kirchherr et al., 2016, p. 3 ff.).

Beyond CORRUPT, many of those interviewed framed the Myitsone Dam as an emotional issue which would threaten the cultural heritage of Myanmar (FNL3; FNL6; TNL13; FNL20; FI8). "This dam impacts our holy river [the Irrawaddy], the heart of this country", an activist said, for instance (FNL3). "Damming the Irrawaddy – this really touched the psyche of the entire nation" (FI8). We note that these field research findings do not

contradict the results of the fsQCA since CULT was also found as part the causal recipe inducing significant anti-dam-protests, as showcased in Table 5. The limited coverage found with this model may suggest, though, that CULT does not hold across numerous cases, but may only be a causal condition in specific anti-dam-protests such as the Myitsone Dam case.

The Myitsone Dam case study overall suggests that ~SAFEG in combination with ENVR can drive protests even in countries with ~POS and ~DEV. Yet changes in Myanmar's POS intensified these protests. CORRUPT and CULT widened the movement's base upon Myanmar's regime change and thus further intensified the protests once protests had reached Yangon. 85% of people in Myanmar are reported to oppose the project (FNL3).

6. Conclusion

When developing large infrastructure projects, "the local population should have a special place at the table. […] Environmental impact assessments should not come after the drawing up of a business proposition". These lines are to be found in the most recent encyclical letter of Pope Francis (2015), indicating the degree to which social safeguard principles needed for sustainable infrastructure development have expanded beyond environmental activists and policy-makers. Our fsQCA results particularly highlight the signifiance of social safeguards. Lacking social safeguards in combination either with significant political opportunity structures and higher levels of development or with rampant corruption and environmental risk are sufficient for significant anti-dam-protests to emerge.

These findings are relevant for three reasons. First, they complement the current scholarly consensus that political opportunity structures are a necessary condition regarding the emergence of significant anti-dam-protests. Political opportunity structures can be part of a causal recipe which induces massive protests. However, we identified an additional causal path inducing such protests. This path emphasizes lacking social safeguards, significant

rampant corruption and environmental risk as causal conditions; Myanmar's Myitsone Dam, Laos' Xayaburi Dam and India's Sardar Sarovar Dam represent examples of this path.

Second, our findings challenge the universality of the resource mobilization approach that is also widely used in contemporary social movement theory. We note that the second pathway identified also does not feature higher levels of development. Rather, corruption – indicating inequitable development – is highlighted by this path as a causal condition contributing to significant anti-dam-protests.

Third, we believe these findings are not only of scholarly interest, but potentially also of great practical relevance. Understanding the causal recipes inciting public opposition may be the first step of mitigating them in order to avoid looming infrastructure deadlock in many emerging economies (Dobbs et al., 2013). Our analyses particularly highlight project-specific conditions such as CORRUPT, ENVR and ~SAFEG as potential triggers of massive anti-dam-protests. fsQCA's assumption of causal asymmetry forbids to infer that the inversion of the causal recipes identified would lead to the non-occurrence of anti-dam-protests. Yet it is particularly notable that the causal conditions identified in the second recipe are the reverse of good governance principals considered to be an essential component of sustainable development (de Graaf & Paanakker, 2014; Doeveren, 2014).

More research will be needed to reveal whether the application of good governance principles can circumvent the emergence of significant anti-dam-protests and thus help facilitate sustainable infrastructure development. We also acknowledge regarding our findings that our sample size of 12 is still limited which mandates caution regarding external validity. Furthermore, the various values assigned during this fsQCA can be contested. We have attempted to validate our data via triangulation, basing our analysis on peer-reviewed papers, press research, an online survey we ran for this analysis, semi-structured interviews, and feedback from reviewers. We have provided all relevant data of our analysis in the appendix

of this paper and encourage scholars also studying anti-dam-movements to replicate our findings and possibly expand our sample with additional dam projects. We hope that this paper contributes to the cumulative development of a knowledge base on this timely topic. Medium-N-analysis regarding the root causes of anti-dam-protests in Africa or Latin America may be particularly interesting as a next step to test whether the causal recipes identified in this paper hold across multiple regions.

Note

This paper is part of a larger research project investigating the politics of dam construction in Asia. More than 150 semi-structured interviews have been carried out for this project to date. Interview partners are scholars, adversely-affected communities, government officials, international donors, international and local NGOS as well as various private sector players such as dam developers and consultants. Only those interviews directly used in this paper and the appendix are listed in the table below (Table 6).

Interviews in the field (Myanmar, Thailand and Singapore) were carried from June to August 2015 and from February to April 2016; furthermore, telephone interviews were carried out from April and August 2015 and from February to April 2016. Given the sensitive nature of the topic, all interviewees were assured anonymity. Thus, all interviews are coded with the first letter indicating the mode of interviews (T for telephone, F for face-to-face, O for online survey/e-mail), the second letter indicating the type (A for academia, AA for adversely-affected people, G for government, I for international donor, NI for international NGO, NL for local NGO, P for private sector) and the sequence of numbers indicating the overall interview number within a type.

Table 6: Interview overview

#	Interviewee	Organization	Code
1	Scholar	British university	TA1

2	Resettlee	Aung Myin Thair relocation camp	FAA1
3	Resettlee	Aung Myin Thair relocation camp	FAA2
4	Resettlee	Aung Myin Thair relocation camp	FAA5
5	Female, adult	Don Chai/Don Chai Sak Thong	FAA8
6	Female, adult	Don Chai/Don Chai Sak Thong	FAA10
7	Female, adult	Don Chai/Don Chai Sak Thong	FAA13
8	Female, adult		FAA16
9	Female, adult	Don Chai/Don Chai Sak Thong	FAA18
10	Female, adult	Don Chai/Don Chai Sak Thong	FAA19
11	Male, adult	Don Chai/Don Chai Sak Thong	FAA22
12	Male, adult	Don Chai/Don Chai Sak Thong	FAA24
13	Male, adult	Don Chai/Don Chai Sak Thong	FAA28
14	Male, adult	Don Chai/Don Chai Sak Thong	FAA29
15	One of the leaders within the anti-dam-movement	Don Chai/Don Chai Sak Thong	FAA42
16	Former employee	Office of the President of the Union of Myanmar (Burma)	TG3
17	Civil servant	International donor	TI4
18	Senior official	International donor	TI7
19	Senior official	International donor	FI8
20	Activist	Major international NGO	TNI2
21	Activist	International NGO	TNI8
22	Burmese staff	European foundation in Myanmar	FNI10
23	Burmese staff	European foundation in Myanmar	FNI11
24	Leading activist	Burmese NGO	FNL3
25	Activist	Involved in various anti-dam movements in Myanmar, especially against the Myitsone Dam	FNL4
26	Activist	Involved in protests against the Myitsone Dam	FNL6
27	Staff	Burmese NGO	TNL13
28	Leading activist	Kachin NGO	TNL17
29	Activist	Thai NGO	FNL18
30	Managing director	Major environmental NGO in Myanmar	FNL20
31	Activist	Kachin NGO	FNL21
32	Activist	Kachin NGO	FNL23

33	Former employee	Chinese dam developer	TP24

Disclosure statements

No potential conflict of interest was reported by the authors.

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Appendix

Appendix A: Raw data matrix

	PROT	POS		DEV	ENVR			SAFEG		CORRUPT	CONFL			CULT		RESETTL
		Political rights	*Civil liberties*	*HDI*	*Environmental impact*	*Earthquake risk*	*Project size*	*Consultation*	*Compensation*		*Conflict history*	*Funding source*	*Electricity export*	*Cultural destruction*	*Indigenous people*	
Myitsone Dam	0.67	7	5	0.52	1	1	150	0.33	0,33	1.7	0.67	1	1	1	1	12,000
Upper Karnali Dam	0.33	4	4	0.55	0	1	64	0.67	0.67	2.9	0.00	0	1	0	0	224
Three Gorges Dam	0.33	7	6	0.60	1	1	181	0.33	0.33	3.1	0.00	0	0	1	0	1,350,000
Nam Theun 2	0.33	7	6	0.53	0.67	0	39	1.00	1.00	2.1	0.00	0	1	0	1	6,738
Sardar Sarovar Dam	1.00	2	3	0.44	1	1	139	0.00	0.33	2.8	0.00	0	0	1	1	127,000
Son La Dam	0.33	7	5	0.61	0.67	1	138	1.00	0.33	2.6	0.00	0	0	0	1	91,000
Kamchay Dam	0.33	6	5	0.57	1	0	110	0.33	0.33	2.0	0.33	1	0	0	0	0
Bakun Dam	0.67	4	4	0.73	1	0	205	0.00	0.33	4.9	0.33	1	0	1	1	10,000
Upper Kotmale Dam	0.33	4	4	0.72	0	0	35.5	0.67	0.67	3.3	0.67	0	0	0	0	1,880
Xayaburi Dam	0.67	7	6	0.57	1	1	32.6	0.33	0.33	2.4	0.00	0	1	0	0	2,100
San Roque Dam	0.67	2	3	0.62	0.67	1	200	0.33	0	3.0	0.33	0	0	0	1	20,000
Kaeng Suea Ten Dam	0.67	4	4	0.66	0	0	72	0.00	0.33	3.3	0.00	0	0	1	0	5,000

Appendix B: Calibrated raw data matrix (sensitivity analysis, table 5, row 1)

	PROT	POS	DEV	CORRUPT	ENVR	SAFEG	CONFL	CULT	RESETTL
Myitsone Dam	0.67	0.17	0.33	1	1	0.33	0.89	1	0.33
Upper Karnali Dam	0.33	0.67	0.33	0.67	0.44	0.67	0.33	0	0
Three Gorges Dam	0.33	0.17	0.67	0.33	1	0.33	0	1	1
Nam Theun 2	0.33	0.17	0.33	0.67	0.22	1	0.33	1	0.33
Sardar Sarovar Dam	1	0.84	0.33	0.67	0.89	0.17	0	1	0.67
Son La Dam	0.33	0.17	0.67	0.67	0.78	0.67	0	1	0.67
Kamchay Dam	0.33	0.33	0.33	0.67	0.56	0.33	0.44	0	0
Bakun Dam	0.67	0.67	0.67	0	0.67	0.17	0.44	1	0.33
Upper Kotmale Dam	0.33	0.67	0.67	0.33	0	0.67	0.22	0	0.33
Xayaburi Dam	0.67	0.17	0.33	0.67	0.67	0.33	0.33	0	0.33
San Roque Dam	0.67	0.84	0.67	0.33	0.89	0.17	0.11	1	0.33
Kaeng Suea Ten Dam	0.67	0.67	0.67	0.33	0.11	0.17	0	1	0.33

Appendix C: Raw data matrix (sensitivity analysis, table 5, row 9)

	PROT	POS	DEV	CORRUPT	ENVR	SAFEG
Myitsone Dam	0.67	0.33	0.33	1	1	0.33
Upper Karnali Dam	0.33	0.67	0.33	0.67	0.33	0.67
Three Gorges Dam	0.33	0.33	0.67	0.33	1	0.33
Nam Theun 2	0.33	0.33	0.33	0.67	0.33	1
Sardar Sarovar Dam	1	1	0.33	0.67	1	0.33
Son La Dam	0.33	0.33	0.67	0.67	1	0.67
Kamchay Dam	0.33	0.33	0.33	0.67	0.67	0.33
Bakun Dam	0.67	0.67	0.67	0	0.67	0.33
Upper Kotmale Dam	0.33	0.67	0.67	0.33	0	0.67
Xayaburi Dam	0.67	0.33	0.33	0.67	0.67	0.33
San Roque Dam	0.67	1	0.67	0.33	1	0.33
Kaeng Suea Ten Dam	0.67	0.67	0.67	0.33	0	0.33

Appendix D: Truth table (for the main analysis, table 5)

SAFEG	ENVR	POS	DEV	CORRUPT	NUMBER	PROT	Raw consist.	PRI consist.	SYM consist.
0	0	1	1	0	1	1	1.000	1.000	1.000
0	1	1	0	1	1	1	1.000	1.000	1.000
0	1	1	1	0	2	1	1.000	1.000	1.000
0	1	0	0	1	3	1	0.931	0.785	0.785
1	0	1	0	1	1	0	0.892	0.323	0.323
1	1	0	1	1	1	0	0.890	0.320	0.320
0	1	0	1	0	1	0	0.877	0.320	0.320
1	0	0	0	1	1	0	0.870	0.244	0.244
1	0	1	1	0	1	0	0.858	0.244	0.244
0	0	0	0	0	0				
0	0	0	0	1	0				
0	0	0	1	0	0				
0	0	0	1	1	0				
0	0	1	0	0	0				
0	0	1	0	1	0				
0	0	1	1	1	0				
0	0	0	0	0	0				
0	1	0	1	1	0				
0	1	1	0	0	0				
0	1	1	1	1	0				
1	1	0	0	0	0				
1	0	0	1	0	0				
1	0	0	1	1	0				
1	0	1	0	0	0				
1	0	1	1	1	0				
1	0	0	0	0	0				
1	1	0	0	1	0				
1	1	0	1	0	0				
1	1	1	0	0	0				
1	1	1	0	1	0				
1	1	1	1	0	0				
1	1	1	1	1	0				

Appendix E: Case studies

Note: Calibration justifications are provided for the following causal outcome conditions/sub-dimensions: Degree of public protest, environmental impact, consultation, compensation and cultural destruction. Information on this causal outcome condition/these sub-dimensions was collected via our online survey, as indicated below.

Case	**Myitsone Dam**	
Country	Myanmar	
Construction time	2009 – ongoing	
Brief description	The Myitsone Dam project is currently developed by China Power Investment Corporation (CPI) as well as Asia World, a Burmese dam developer, "owned by regime crony Steven Law" (U. S. Embassy, 2011). If completed, it would be the 15th largest hydroelectric power station in the world with a capacity of 6,000 MW (Mang & Deetes, 2011). 90% of this electricity would be exported to China's Yunnan Province (Mang & Deetes, 2011). Its future height is reported to be 150 meters (Hkanhpa & Nan, 2010). The project would inundate 766 km^2 of forested land (Mang & Deetes, 2011). The project's costs are estimated to stand at USD 3.6 billion and the project required the relocation of approximately 12,000 Kachin people, an ethnic minority in Myanmar (Mang & Deetes, 2011). Construction of the project started in 2009, it was suspended in 2011 (Hkanhpa & Nan, 2010). The majority of those we interviewed view the suspension as a symbolic gesture, "the visible starting point of Myanmar's change process", according to a World Bank official (T26062015). The dam site is less than 100 kilometers away from the earthquake prone Sagaing fault line (Mang & Deetes, 2011).	
Degree of public protest	0.67	Kirchherr et al. (2016, p. 4) report that "massive protests all over Myanmar, particularly in Yangon" took place against the project in the spring and summer of 2011. More covert protests took place prior to the regime change. For instance, KDNG (2009, p. 1) notes that "mass prayer ceremonies calling for the protection of the rivers" were held which we view as a means to protest against the dam project. Already in 2010 (when the military government was still in place), 10 bombs exploded around the dam site, killing at least one Chinese worker (Hadfield, 2014). Yet this bombing was largely attributed to the ongoing ethnic conflict in Kachin State. The project was suspended in September 2011 due the significant public opposition (Harvey, 2011). Yet protests continue until today. One of the NGO staff we interviewed told us that "we have a 4-year-celebration for the suspension of the Myitsone Dam last year. 1,000 people walked from the church and shout 'Stop the Dam' and they walked near the river" (FNL23). Of those 4 experts recording their views on the project via the online survey, 3 stated that the project had incited significant and/or violent protests; one argued it had incited a moderate number of protests.
Environmental impact	1	The region the Myitsone Dam is built in has been recognized for its ecological value; it is one of the world's eight hotspots of biodiversity (Mang & Deetes, 2011). All three experts that recorded their views via the online survey regarding the project's environmental impact stated that it would be significant.
Consultation	0.33	An EIA was carried out for the project. However, there was no involvement of local communities took place (KDNG, 2007). Harvey (2011) reports that no public consultation took place regarding the Myitsone Dam project. Three experts providing a view on this sub-dimension via the online survey stated that project information was provided to the communities. However, feedback was not collected. A former employee of CPI, the lead developer, confirmed this (T22072015).

Compensation	0.33	Supposedly, the resettlement process was carried out "using intimidation by military authorities" (KDNG, 2009, p. 5). Nyein (2013) reports entirely insufficient compensation regarding the Myitsone Dam project. Allegedly, not even crops could be grown because the land was stone. Three experts provided their views on this sub-dimension via the online survey. All also stated that the compensation given was insufficient.
Cultural destruction	1	The dam will submerge historical churches, temples, and cultural heritage sites that are central to Kachin identity and history (Asian Sentinel, 2011). Furthermore, the river the dam is built on, the Irrawaddy, is widely seen as a cultural heritage and lifeline of Myanmar (Harvey, 2011).

Case	**Upper Karnali Dam**	
Country	Nepal	
Construction time	N/A	
Brief description	The project development agreement for the dam was only signed in 2014; commercial operation is supposed to start in 2021 (HydroWorld.com, 2014). The capacity is supposed to stand at 900 MW (HydroWorld.com, 2014); most of the electricity produced from the project will be exported to India, 12% of the dam's electricity will be received by Nepal free of charge (Government of Nepal, 2015b). Its supposed height is 64 meters (Government of Nepal, 2015b). Project costs are estimated to stand at USD 1.4 billion (Bhushal, 2014b). The project will be constructed by GRM Energy, an Indian firm (Bhushal, 2014b). No evidence was found that the Chinese government was involved in the project. The Government of Nepal (2015) points out that 2,000 jobs will be created during the construction period. 56 households (a total of 224 people, assuming an average household size of 4) will need to be resettled for the project (Government of Nepal, 2015a). No evidence was found that these are indigenous people. Nepal is prone to earthquakes which also may damage the Upper Karnali Dam (Schneider, 2015).	
Degree of public protest	0.33	Bhushal (2014) explicitly reports that the public is largely supportive of the project. Nevertheless, the project still has critics which have sent an open letter to the prime ministers of Nepal and India demanding that the project is scrapped (Bhushal, 2014a). Three experts reported their views on the project via the online survey. 2 reported limited to no public protest, one moderate protests.
Environmental impact	0	No reports indicating significant environmental impacts of the project were identified. Two experts that recorded their views on the project via the online survey indicated some environmental impacts. Due to the lack of evidence regarding significant environmental impacts, this sub-dimension was coded "0" eventually.
Consultation	0.67	The Government of Nepal (2015b) claims that it aims to ensure a smooth, transparent consultation process working closely with the affected communities. The project is also supposed to follow Asian Development Bank and the International Finance Corporation (IFC) standards (Government of Nepal, 2015b). The Resettlement Action Program (RAP) was seemingly endorsed by the affected districts indicating a sufficient consultation process (Government of Nepal, 2015a). Two experts stated their views in our online survey. These were both in lead roles in the project's environmental and social impact assessment (ESIA) and were thus deemed credible. One argued that no public participation had taken place, one indicated that basic information was provided to the villagers. However, both acknowledged that their knowledge only related to the very early stages of the project and that the consultation approach may have changed, though. Due to the statements by the Nepalese government regarding the consultation process and no opposing identified by NGOs, this sub-dimension was eventually coded 0.67.
Compensation	0.67	Ample compensation is supposed to be provided for those displaced because of the Upper Karnali Dam, according to CDM (2013). "A compensatory approach will be taken at replacement costs" (CDM, 2013). Jobs created by the project are supposed to be given first to those

		adversely impacted by it (CDM, 2013). The Resettlement Action Plan (RAP) supposedly follows social safeguard policies by the Asian Development Bank and the International Finance Corporation (IFC); yet only 1 percent of total project costs must be spent on resettlement, rehabilitation of affected people as well as the mitigation of environmental impacts, though (Government of Nepal, 2015a). No information on compensation was recorded by any of the experts via the online survey. Since there is no indication so far that compensation may be insufficient, this sub-dimension was eventually coded 0.67, due to the report by CDM (2013) on compensation.
Cultural destruction	0	No press reports were found regarding any destruction of cultural heritage due to the Upper Karnali Dam. An engineer who had completed a pre-feasibility study for the project confirmed via our online survey that cultural heritage was not impacted by the project.

Case	**Three Gorges Dam**	
Country	China	
Construction time	1993 – 2008	
Brief description	The Three Gorges Dam is the largest hydroelectric power station in the world with a generating capacity of 22,500 MW and a height of 181 meters (USGS, 2015). It provides approximately 3% of China's 2010 energy needs (National Geographic, 2010). The history of the Three Gorges Dam is extensive. A dam was first proposed at the Three Gorges site in 1919 (Kittinger et al., 2009). Initial works began in 1993, construction was completed in 2008 (PT, 2015). 1.35 million people were displaced because of the project (Wilmsen et al., 2011, p. 22). No evidence was found that these are indigenous people. Project cost are estimated at USD 37 billion (International Rivers, 2012). The dam is placed on two major fault lines (NTD, 2014).	
Degree of public protest	0.33	Protests certainly occurred within China against the Three Gorges Dam. However, these were limited overall. Wilmsen et al. (2011, p. 22) report that "those affected by the project have taken their concerns to the street, staging protests and travelling vast distances to air their anxieties in Beijing". Of the nine experts reporting their views on the project, 7 reported moderate protests, 1 many protests and 1 violent protests.
Environmental impact	1	Environmental impacts of the Three Gorges Dam are reported to be significant. The project is located in one of the world's biodiversity hotspots. Its construction may contribute to the distinction of the Yangtze River dolphin as well as the potential loss of more than 44 species of endemic fish (Kittinger et al., 2009). 11 experts recorded their views regarding the Three Gorges Dam via the online survey. All reported that the project has significant environmental impacts.
Consultation	0.33	Of the 9 experts recording their views via our online survey, 5 argued that basic information was provided to impacted communities, 2 also pointed out that feedback was collected. Only 2 argued that feedback was also incorporated. Thus, this sub-dimension was coded 0.33.
Compensation	0.33	Compensation was given to those impacted by the Three Gorges Dam. The resettlement and displacement costs were about 40% of the total project costs (Wilmsen et al., 2011, p. 359). However, this still seems to have been largely insufficient. Wong (2007) argues that much of the financial resources devoted to those resettled would have been lost to corruption. "Residents said they had received only $645 of the $4,900 entitled to them for land expropriation", she reports. Wilmsen et al. (2011, p. 372) also finds that those resettled overall lost assets due to the resettlement. This is reflected by the findings of the online survey. Of those 10 experts recording their views on compensation regarding the project, 7 experts stated that compensation was largely insufficient, 3 argued it was largely sufficient. Thus, this sub-dimension was coded 0.33.
Cultural destruction	1	Dozens of cultural and architectural sites have been inundated due to the dam (National Geographic, 2010). The most notable relics lost may be those of the ancient Ba people who lived in the region more than 4,000 years ago already (National Geographic, 2010). Efforts were undertaken to save the cultural heritage threatened by the project. However, this was reportedly not a priority of the project developers (Kuhn, 2008). We

	collected 9 assessments regarding the project's cultural heritage via our online survey. All but one reported that the significant cultural and religious heritage sites inundated, while few to none were preserved. Only 1 respondent argued that some sites were inundated, while some were preserved.

Case	**Nam Theun 2**	
Country	Laos	
Construction time	2006 – 2010	
Brief description	When launched in 2011, Nam Theun 2 – with a height of 39 meters – was the largest energy project developed in Laos (Mirumachi & Torriti, 2012). Environmental and social safeguard studies for the project were completed in 1997 after a planning period of 10 years (Erlanger et al., 2008). Similarly to the Myitsone Dam, the project is supposed to generate revenue for the government; its electricity is exported to Thailand (Lee, 2015); the project has a reported capacity of 1083 MW (Erlanger et al., 2008) of which 995 MW of this will be exported to Thailand (Power Technology, 2015). 6738 people from 17 villages were replaced due to the project (Sayatham & Suhardiman, 2015, p.. 71). These were mostly indigenous people (Shoemaker et al., 2014). The USD 1.45 billion project is particularly notable because it was meant to be the World Bank's flagship project (Shoemaker et al., 2014); prior to this project, the World Bank had entirely abandoned the hydropower sector for about a decade (H. Schneider, 2013). Indeed, the World Bank argued that "insights and lessons that can be applied in future projects of similar size, scope, and complexity" (Porter & Shivakumar, 2010). The project is operated by the Nam Theun 2 Power Company (NTPC) which, in turn, is owned by a consortium of Electricite de France International (EdFI) of France (35%), Electricity Generating Public Company (EGCO) of Thailand (25%), Italian Thai Development (ITD) of Thailand (15%) and the Government of Laos (25%) (Power Technology, 2015). No evidence was found regarding Chinese involvement. No evidence was found that the dam is close to any major fault lines.	
Degree of public protest	0.33	Protests against Nam Theun 2 within the country were limited. Samabuddhi (2005) reports that about 100 dam-affected villagers and international green groups rallied in front of the World Bank's office to protest against the project. Of the 21 experts voicing their views on the project via the online survey, 13 argued that no or only few protest had taken place, 8 reported moderate levels of protest. Not a single expert reported significant or violent protests. Thus, this outcome was coded 0.33.
Environmental impact	0.67	IRN (2002, p. 1) reports that the Nam Theun 2 project has adverse impacts on biodiversity, including endangered birds, mammal and fish species. This is only partially echoed by the online survey conducted. Of those 21 experts recording a view on the environmental impacts of this project, 12 argued these would be significant, 7 stated some environmental impacts. 2 stated no or limited environmental impacts. Because of the report by IRN (2002) highlighting the project's adverse environmental impacts as well as the many expert judgments arguing the project's environmental impacts would be significant, this sub-dimension was eventually coded 0.67.
Consultation	1	Numerous stakeholders were consulted for this project for several years, information on it was disseminated widely and the inputs of various affected groups allegedly shaped the resettlement program (Mirumachi & Torriti, 2012). This evaluation is largely reflected in the expert judgements collected via the online survey. 9 argued that feedback was incorporated to the maximum extent feasible, 5 argued it was partially incorporated.

		Only 5 respondents criticized the Nam Theun 2 public consultations. Due to the scholarly judgement and the majority of expert judgements indicating a benchmark public consultation process, this sub-dimension was coded 1.
Compensation	1	Souksavath & Nakayama (2012, p. 71 ff.) who reviewed the reconstruction of livelihoods of those resettled due to the Nam Theun 2 project find that the project developer provided "superior compensation for the resettlers when compared with other similar projects in Laos". Only land resources provided for agricultural purposes were not always sufficient (Souksavath & Nakayama, 2012). Most of those surveyed that were resettled "indicated similar satisfaction with the place they live before and their current village" (Souksavath & Nakayama, 2012). Of those 21 experts voicing their views on this project via the online survey, 17 also deemed the compensation provided for this project to be sufficient, while only 4 deemed it to be insufficient. Due to the positive scholarly assessment and due to the majority of experts also deeming compensation to have been sufficient and because compensation seems to have been particularly sufficient compared to other projects investigated in this paper, this sub-dimension was eventually coded with 1.
Cultural destruction	0	The residents from the resettled villages indicated that they each had Buddhist temples in their original villages. After the resettlement, these two villages still have village temples, whereas, apparently, these were newly built (Souksavath & Nakayama, 2012). Religious activities had not changed (Souksavath & Nakayama, 2012). This is largely reflected by the 15 assessments regarding the project's cultural heritage that we collected via our online survey. 12 indicated that no or only limited cultural heritage was inundated by the project, only 3 argued that that the cultural heritage impact was significant. Thus, this sub-dimension was coded 0.

Case	**Sardar Sarovar Dam**	
Country	India	
Construction time	1987 – 2006	
Brief description	The Sardar Sarovar Dam is the main dam within the master plan of the Narmada Valley Development Project. Upon completion, the dam would irrigate 1.8 million hectares of farming land, supply drinking for 8215 villages and 135 urban areas and would feature a capacity of 1450 MW which would benefit both Indian rural and urban areas (Dwivedi, 1999). The idea of damming the Narmada River dates back to the 1950s already (Garikipati, 2005). Project appraisal already began in the early 1980s (Dwivedi, 1999). Construction of the dam (with a height of 139 meters) started only in 1987 (Garikipati, 2005). 127,000 people were relocated because of the project (Lerer & Scudder, 1999), many of which are indigenous people (Ellison, 2005). No evidence was found regarding any Chinese involvement. The project is the focal point of resistance for the Narmada Bachao Andolan (NBA), a social movement advocating against the dams built on the Narmada River (Maiti, 2001). Seismic risks regarding the Sardar Sarovar Dam were pointed out by Singh (n.d.).	
Degree of public protest	1	The massive domestic protest against the dam has been reported by numerous scholars. Examples are Doyle (2005), Routledge (2003) and Dwivedi (1999). The World Bank pulled out of this project due to these protests and Biswas (2012, p. 7) even called this project “the World Bank’s Vietnam”. Of those 4 experts recording their views on the project, 3 reported significant protests, 1 violent protests. Particularly due to the World Bank pulling out of this project, this dam was coded 1.
Environmental impact	1	389 wild species of plants are impacted by the project; three of these are listed as rare and possibly endangered (Sabnis, 2001). All four experts that recorded their views on the environmental impacts of the project via the online survey argued these impacts would be significant. Thus, this sub-dimension was coded 1.
Consultation	0	Information of the nature and scope of displacement induced by the Sardar Sarovar Dam was scanty, (Dwivedi, 1999). “The people were largely left in the dark about their losses and rights” (Dwivedi, 1999). This scholarly judgement is largely reflected by the online survey. Two experts stated that no public consultation at all took place in this project, two stated that basic information was provided, but that no feedback was incorporated. Due to the critical scholarly judgement in combination with half of the experts stating that no public consultation took place, this sub-dimension was coded 0 eventually.
Compensation	0.33	Dwivedi (1999, p. 50) argues that compensation provided was insufficient. For instance, no compensation was given for a loss of a job or other livelihoods in the reservoir area; cash compensation was entirely ruled out. Insufficient compensation was also found by Garikipati (2005, p. 340 ff.). These views were also reflected in the online survey. All three experts recording their views regarding this sub-dimension via the survey argued that the compensation provided was largely insufficient. Thus, this sub-dimension was coded 0.33.
Cultural destruction	1	Neuss (2012, p. 12 ff.) devotes an entire chapter in his book on the Narmada valley to the destruction of cultural heritage to the various

	planned dam projects (including the Sardar Sarovar Dam). He particularly points towards the archaeological importance of the Narmada valley. For instance, the oldest hominid skull ever was found in this region (Neuss, 2012). The expert judgements are ambiguous regarding the project's cultural heritage impact. 2 experts reported significant impacts, 2 only some. Due to the extensive report by Neuss (2012, p. 12 ff.) regarding cultural heritage impacts, this project was eventually coded 1 on this sub-dimension.

Case	**Son La Dam**	
Country	Vietnam	
Construction time	2005 – 2012	
Brief description	The Son La Dam – with a capacity of 2,400 MW and a height of 138 meters – is the largest hydropower project ever built in Vietnam (International Rivers, 2015d; VNCOLD, 2009; WRM, 2015); it is supposed to power Vietnam's economy with no electricity to be exported abroad (vietnamnet.vn, 2015). Construction of the project started in 2005, the project was fully operational in 2012 – two years sooner than originally anticipated by the responsible engineers (Shestopalov & Volynchikov, 2013). The dam required the resettlement of 91,000 people, most of them indigenous – the largest displacement in Vietnam's history (International Rivers, 2015d). The project's costs stand at USD 2.4 billion. The project's construction was funded by the Vietnamese government (with limited support for the resettlement program from the Asian Development Bank); the World Bank funded the feasibility study for the project (EJA, 2015). No evidence regarding Chinese involvement was found. Mekong Utility Watch (2004) reports that it would be feasible that the Son La Dam is hit by an earthquake with the magnitude of 8.0.	
Degree of public protest	0.33	No reports were found regarding protests against the project. However, moderate levels of public protest were reported by an expert via the online survey on this project. This expert had indirectly worked on the project via a major dam developer. Thus, the judgement was deemed credible and the project was coded with 0.33.
Environmental impact	0.67	An independent scholar who has conducted a case study on the project and who recorded his views via our online survey indicated that the Son La Dam's environmental impacts would be significant. Since these significant impacts were not further specified, though, this sub-dimension was eventually coded with 0.67.
Consultation	1	Bui & Schreinemachers (2011, p. 773) find that "the local population were allowed to participate in developing the resettlement master plan, and a fund was set aside to pay for the resettlement of affected people". It was only possible to collect one expert judgement on this sub-dimension via the online survey. The expert did not know regarding the level of public consultation. However, the scholarly judgement was deemed credible. Thus, this sub-dimension was coded 1.
Compensation	0.33	Nearly 32% of the project costs were given for compensation and resettlement (Bui & Schreinemachers, 2011). Nevertheless, Bui & Schreinemachers (2011, p. 783) find that resettled households experienced substantial losses in land and livestock resources and as a result a decline in incomes. Compensation was deemed to be insufficient by one expert who had conducted scholarly field research on this dam. Thus, this sub-dimension was coded 0.33.
Cultural destruction	0	No reports were found regarding cultural heritage impacts of the Son La Dam. An expert that had conducted scholarly field research on the dam and recorded his knowledge via our online survey also did not know regarding any cultural heritage impacts.

Case	**Kamchay Dam**	
Country	Cambodia	
Construction time	2008 – 2011	
Brief description	The Kamchay Dam started operations in 2011. The 194 MW project with a height of 110 meters increased Cambodia's total capacity (of back then 600 MW) by almost one-third (Global Energy Observatory, 2015; Hensengerth, 2015). The dam's electricity will power Kampot, Phnom Penh, and Preah Sihanouk province (Xinhua, 2011). It is Cambodia's first-ever large scale hydropower project and "is seen by many as a symbol of the increasingly strong ties between Cambodia and China" (Grimsditch, 2012). Constructed by the Chinese state-owned enterprise (SOE) Sinohydro and financed with a loan by China Exim Bank (CEB), it was the largest foreign direct investment (FDI) in Cambodia's history at the time of its approval (Grimsditch, 2012). The project required no resettlement since the dam is located in a sparsely populated national park, the Bokor National Park (Ham et al., 2015, p. 162). It flooded 2,000 hectares within the park which was home to various threatened species (International Rivers, 2015a). No reports were identified regarding earthquake risks.	
Degree of public protest	0.33	A semi-structured interview was carried out with a scholar who had conducted field research on this very dam. The expert reported that no street protests were carried out against the project (TA1). This was largely confirmed by an international donor we interviewed (TI4). These assessments contradict a statement by Trandem (2012) claiming that numerous protests had been held against the project by affected people. For instance, more than 70 families apparently blocked a local road. Two expert opinions were collected regarding the degree of public protest via the online survey. One indicated that significant public protests had taken place, one indicated moderate levels. Eventually, this outcome was coded 0.33 – assuming that those experts we conducted semi-structured interviews with would have indicated if significant protests had taken place.
Environmental impact	1	10 endangered species (including Asian elephants, leopard cats and tigers) are impacted by the project (Trandem, 2012). One expert recorded some environmental impacts, one significant environmental impacts via the online survey. Due to the report by Trandem (2012) and the input by experts that indicated at least some impacts, this sub-dimension was eventually coded 1.
Consultation	0.33	The anti-dam-NGO *International Rivers* particularly criticized the project because it was negotiated behind closed doors; furthermore, the dam's Environmental Impact Assessment (EIA) was only completed months before the dam started operating (International Rivers, 2015a). Accordingly, Hensengerth (2015, p. 522) finds that the "EIA process was irrelevant to the construction decision or the construction process". The environmental impact assessment was published at a consultation meeting in early 2011. However, no affected communities were invited to join this meeting, according to Trandem (2012). This statement is largely reflected by the online survey. Two experts recorded their views via the survey. Both indicated that basic information on the project was provided, but that no feedback was incorporated. Thus, this sub-dimension was coded 0.33.

Compensation	0.33	Parekh (2010) states that no official information was provided by Sinohydro regarding compensation. Compensation was not discussed by Hensengerth (2015). Ham et al. (2015, p. 162) state that compensation was given "to some affected households whose agricultural lands was affected by the construction of transmission lines and roads to access the dam construction site". This compensation was not sufficient, according to the online survey. Two experts voiced their opinion on this sub-dimension. Both stated that the compensation given was insufficient. Thus, this sub-dimension was coded with 0.33.
Cultural destruction	0	Hensengerth (2015) does not report any cultural heritage impact in his analysis on the Kamchay Dam. A consultant that reported his views on the project via our online survey argued that some cultural heritage was inundated, while some was preserved. No additional details were provided. Due to the detailed scholarly account of the project by Hensengerth (2015) with no mentions of cultural impacts, this causal condition was eventually coded 0.

Case	**Bakun Dam**	
Country	Malaysia	
Construction time	1996 – 2011	
Brief description	The Bakun Dam started operating in 2011 – "after […] decades of delay" (Mang & Lee, 2015); it was constructed by the Chinese stated-owned enterprise Sinohydro (Mang & Lee, 2015). The project was first proposed in the early 1980s to exploit the potential of the Sarawak River (Lee, Viswanathan, & Ali, 2014, p. 65). With a height of 2015 meters and a capacity of 2400 MW, it is the largest dam in Asia outside of China (Mang & Lee, 2015); its estimated construction costs stand at USD 3.6 billion (Swain & Chee, 2004). Originally, 90% of the dam's electricity was supposed to be sent to peninsular Malaysia via undersea cables (Mang & Lee, 2015; Swain & Chee, 2004). However, this plan was cancelled due to cost and feasibility considerations. The dam now only powers Sarawak which only has a demand of approximately 1,000 MW – 1,400 MW less than the project's capacity (Mang & Lee, 2015). The dam submerged an area of the size of Singapore requiring the resettlement of 10,000 indigenous people (Gabungan, 1999). No reports were identified on earthquake risks regarding the Bakun Dam.	
Degree of public protest	0.67	Koswanage (2011) argue that the project would be "by far the nation's most controversial project with more than 100 cases still pending in Malaysia's courts". Eight experts voiced their views regarding the degree of public protest via the online survey. 4 stated that significant and/or violent protests had taken place; 3 stated moderate levels of protest, 1 limited protests. We also conducted a semi-structured interview with a researcher who had carried out a case study on the project. The scholar argued that there was significantly more protests against the Bakun Dam than against the Kamchay Dam (TA1). Thus, the project was coded with 0.67.
Environmental impact	1	All 8 experts that recorded their views regarding environmental impacts of this project argued that the dam had significant environmental impacts.
Consultation	0	Lee et al. (2014, p. 66) state a lack of consultation regarding impacted indigenous communities as well as the absence of public participation in the environmental impact assessment (EIA). This was also stated by Swain & Chee (2004, p. 103). The Malaysian High Court even declared the project to be invalid because it did not comply with the country's public participation guidelines (Lee et al., 2014, p. 66). 7 experts provided views on this project sub-dimension via the survey. 6 stated that only basic information was provided, 1 also claimed that feedback was collected. One of these experts, an international donor, also started that the project was "particularly shady". Thus, this sub-dimension was eventually coded 0.
Compensation	0.33	Already in the beginning of resettlement process, "many had little confidence that any resettlement would be to the benefit of indigenous peoples", Gabungan (1999, p. 1) reports. These fears were proven to hold true by Lee et al. (2014, p. 64 ff.) finding that those resettled are severely dissatisfied with the resettlement process because more compensation was promised than eventually given (with an average compensation gap of 20 acres per studied household). Compensation was disastrous in the case of the Bakun Dam. Mang & Lee (2015) from the anti-dam-NGO *International Rivers* report that "when the communities were resettled,

		the government told the people they must pay for their own housing, which forced many families into debt". This overall evaluation is shared by scholars. Lee et al. (2014, p. 379 ff.) who surveyed 379 families displaced by the construction of the dam find high levels of dissatisfaction with the compensation provided. All eight experts voicing their opinion on this sub-dimension also stated that compensation was insufficient.
Cultural destruction	1	Indigenous property and culture was destroyed due to the project, Lee et al. (2014, p. 65) report. These include hunting and burial grounds (Lee et al., 2014, p. 71). This is largely reflected in the results of our online survey. 2 experts indicate that significant cultural heritage is inundated due to the project, 2 indicate that some is destroyed. Due to emphasis of cultural heritage impacts in the scholarly account and all experts indicating at least some cultural heritage impacts, this sub-dimension was eventually coded 1.

Case	**Upper Kotmale Dam**	
Country	Sri Lanka	
Construction time	2006 – ongoing	
Brief description	The Upper Kotmale Dam was conceived with the preparation of a master plan for hydroelectric development in Sri Lanka's Mahaweli Basin in 1968 already (Ceylon Electricity Board, 2015b). Project construction commenced in 2006 (Daily News, 2010); project completion currently stands at 98% according to the Ceylon Electricity Board (2015); particularly permanent facilities for the resettles are not yet complete. The Upper Kotmale Dam has a capacity of 150 MW (Withanage, 1999) which is supposed to power Sri Lanka. The project is particularly noteworthy because it is the last large hydropower scheme to be developed in Sri Lanka because the country's potential for large dams is almost fully exploited already (Ceylon Electricity Board, 2015a). The key purpose of the project is electricity generation (Ceylon Electricity Board, 2015a). 470 families (a total of 1880 people, assuming an average household size of 4) were replaced due to the project (TamilNet, 2005). No evidence was found that these were indigenous people. The dam's height is 35.5 meters (Daily News, 2010). The project was partly financed by the Japan International Cooperation Agency (JICA) (Ministry of Power and Renewable Energy (Sri Lanka), 2015). No evidence regarding Chinese involvement was found.	
Degree of public protest	0.33	A grassroots organization against the project exists, the People's Campaign Against Upper Kotmale Project (PCAUKP) (TamilNet, 2005). However, it impacts seems to be limited. Seven experts voiced their views on the degree of public protest regarding this dam via the online survey. 6 stated that no public protests had taken place, 1 argued limited public protests had taken place. Hence, this outcome was coded 0.33.
Environmental impact	0	No evidence was found regarding any significant adverse impacts on biodiversity due to the project. However, seven waterfalls will be destroyed by the project (Withanage, 1999). Two experts recorded their views regarding the project's environmental impacts via the online survey and stated that it had some environmental impacts. Due to this lack of evidence regarding significant environmental impacts, this sub-dimension was eventually coded 0.
Consultation	0.67	UNEP (n.d.) reports that the project was attempted to be carried out according to World Commission of Dams (WCD) guidelines; various public consultation measures took place. Two expert opinions were collected on the project. One stated that only basic information was provided, one deemed to consultation process to be sufficient. Due to the report by UNEP (n.d.) and the eventual expert judgement, this sub-dimension was eventually coded 0.67.
Compensation	0.67	Ramanayake (2007) reports that full compensation was paid to those displaced by the project. 495 housing units were handed over to those displaced. One expert voiced his views on compensation via the online survey and stated that it was insufficient. The expert had only conducted a field visit regarding the project during his undergraduate studies, though. Thus, the judgement by Ramanayake (2007) was deemed more credible and the sub-dimension was coded 0.67.

Cultural destruction	0	No reports were found mentioning cultural heritage impacts of this project. An expert that had carried out a field visit regarding the project and recorded his knowledge via our online survey also argued that the project had no cultural heritage impacts.

Case	**Xayaburi Dam**	
Country	Laos	
Construction time	2012 – ongoing	
Brief description	Construction of the project started in 2012 (Yasuda, 2015); the dam is constructed by the Thai construction company CH. Karnchang (Oxfam, 2015). No evidence regarding Chinese involvement was found. It is the first mainstream dam under construction in the four Lower Mekong countries and one of 11 dams proposed for the Lower Mekong mainstream (Boer et al., 2015, Chapter 1). The dam's height will stand at 32.6 meters; it will be the largest power project in Laos with an envisaged capacity of 1,260 MW (Boer et al., 2015, Chapter 1). Thailand's electricity utility, the Electricity Generating Authority of Thailand (EGAT), has agreed to purchase 95% of the electricity generated by the hydroelectric power station (Deetes & Trandem, 2015). 2,100 people must be resettled because of the project (Deetes & Trandem, 2015). No evidence was found that these are indigenous people. Herbertson (2012) reports earthquake risks regarding the Xayaburi Dam.	
Degree of public protest	0.67	Yasuda (2015) analyzes the advocacy strategies chosen by the Rivers Coalition in Cambodia and the Vietnam Rivers Network to combat the construction of the Xayaburi Dam. International Rivers is also advocating against the project (Deetes & Trandem, 2015). Particularly the analysis by Yasuda (2015) suggests significant public protests against the project – which is also why the outcome was coded with 0.67 eventually. We also coded this project with 0.67 since significant legal action is undertaken against it, outlined in Table 2 as a criterion justifying a coding of 0.67. For instance, 37 Thai villages have filed against it (Deetes, 2015). Meanwhile, the Finnish consulting and engineering company Pöyry faces complaints regarding its involvement in the project by civil society groups in Finland (DW, 2012). Nevertheless, it must be noted that the data collected via the online survey is ambiguous. 6 experts recorded their views regarding the degree of public protest faced by this project. 2 states significant and/or violent protest, 2 moderate protests, and 2 limited protests. The recent scholarly analysis by Yasuda (2015) in combination with the legal action undertaken against it is the reason why this project was coded 0.67 eventually. An anonymous reviewers of this paper contested that the protests against the Xayaburi Dam are significant. Yet the reviewer acknowledged that protests would be greater than those against Nam Theun 2 for two reasons. First, regional activist linkages would have developed since Nam Theun 2 which was undertaken years prior to the construction of the the Xayaburi Dam. These linkages, in turn, would have intensified protests. Second, the Xayaburi Dam – as a mainstream dam – would have much more significant impacts for downstream communities and countries resulting in more regional activism.
Environmental impact	1	The dam will block fish migration routes for 23 to 100 species (including the migration route of the Mekong Giant Catfish) (Deetes & Trandem, 2015). Nine experts recorded their views regarding the environmental impacts of the Xayaburi Dam via the online survey. All argued that the impacts would be significant. Thus, this sub-dimension was coded 1.

Consultation	0.33	A public consultation was carried out according to the Mekong River Commission (2011). This was acknowledged by 6 of the 7 experts that submitted their views on this sub-dimension via the online survey. Three also stated that feedback was collected, three stated that only basic information was provided. One expert criticized that impact evaluations did not include downstream impacts. Since none of the 7 experts stated that the consultation was sufficient, this sub-dimension was eventually coded 0.33.
Compensation	0.33	According to media reports, those villagers resettled because of the project will receive financial assistance for only one year (Radio Free Asia, 2013). 6 expert opinions were recorded via the online survey. 5 of these experts stated that compensation was insufficient, one stated that compensation was sufficient. One of the experts was a consultant involved in the environmental and social impact assessment in the project. Due to the majority of experts stating that compensation was sufficient, this sub-dimension was coded 0.33 eventually.
Cultural destruction	0	No reports mentioning cultural heritage impacts of the Xayaburi Dam were found. Six experts recorded their views on this project via the online survey. 2 did not know regarding any cultural impacts, 2 explicitly stated that the project had no cultural impacts and 2 argued there would be some cultural impacts. Due to this lack of evidence regarding significant cultural impacts, this sub-dimension was coded 0 eventually.

Case	**San Roque Dam**	
Country	The Philippines	
Construction time	1998 – 2003	
Brief description	Commissioned in 2003 with a height of 200 meters the San Roque Dam is the third largest dam in Asia and the 12th largest dam in the world (NPC, 2015). The dam has a total capacity of 411 MW which would primarily be used to power various industrial activities and the burgeoning mining industry in Luzon, the Philippines (WRM, 2001); it also provides year-round irrigation to 21,000 hectares of farmlands (SRPC, 2015). Project costs are estimated to stand at USD 1.2 billion (WRM, 2001). The project was funded by a consortium of Japanese lenders (including JEXIM, the Export-Import Bank of Japan) and Filipino players (WRM, 2001). No evidence regarding Chinese involvement was found. 20,000 people were displaced because of the project, according to conservative estimates (McKee, 2008). McKee (2008, p. 3) reports that social safeguards were in place only superficially. Apparently, "over 160 families at the dam site in Pangasinan were forcibly displaced in early 1998 and for almost a year were living in desperate conditions at a temporary site" (WRM, 2001). Many of those displaced were indigenous people (McKee, 2008). The dam is only seven kilometers away from a fault line, the San Manuel segment (Legaspi, 2009).	
Degree of public protest	0.67	No expert recorded views regarding the degree of public protest in this project. Press research and a review of scholarly articles suggests, though, that significant protests against the project took place. For instance, McKee (2008, p. 24) argues that the project is "ranked among some of the most politically contentious development projects in the world". WRM (2001) reports a rally against the project with more than 4,000 participants. BULATLAT.COM (2002) also reports massive protest against the dam with hundreds of participants.
Environmental impact	0.67	No scholarly account on the project's environmental impact was identified. Overall, reports on the project are limited. However, the environmental impact assessment (EIA) consultant who worked on the project and recorded his views on the project via the online survey reported significant environmental impacts. Yet these impacts were not further specified. Thus, this sub-dimension was coded 0.67.
Consultation	0.33	Between the years 2000 and 2002, twelve consultations took place between a consultancy group and indigenous people (McKee, 2008). A Memorandum Of Agreement between the National Commission on Indigenous Peoples (NCIP), the National Power Corporation (NPC), the San Roque Power Corporation (SRPC), the local government units and indigenous people was signed regarding the resettlement action plan (McKee, 2008). However, promises were apparently not implemented (see next section on *Compensation).* Thus, this sub-dimension was eventually coded 0. No expert judgements could be recorded on this sub-dimension.
Compensation	0	Kurita (2007, p. 4) reports that a compensation program was in place. However, this was apparently insufficient. "Many impacted people who participated in the compensation program could not overcome the damage" (Kurita, 2007). This negative assessment was echoed by WRM (2001): ""Over 160 families at the dam site in Pangasinan were forcibly displaced in early 1998 and for almost a year were living in desperate

		conditions at a temporary site". Apparently, the dam developer promised them land and houses, but eventually only minimal compensation was allocated. Thus, this sub-dimension was coded 0. No information regarding compensation was collected via the online survey.
Cultural destruction	0	McKee (2008) does not report any cultural heritage impacts of the project. No other reports mentioning cultural heritage impacts were found. The environmental impact assessment (EIA) consultant who worked on the project and recorded his views on the project via the online survey also did not mention any cultural heritage impacts.

Case	**Kaeng Suea Ten Dam**	
Country	Thailand	
Construction time	N/A	
Brief description	The Kaeng Suea Ten Dam is still at the planning and design stage. The original plan for the Kaeng Suea Ten Dam was outlined in 1980. (Apichitchat & Jung, 2015). Its construction was supposed to start parallel to the Pak Mun Dam in the late 1980s (Mekong Watch, 2015). Originally, the project was sponsored by the World Bank, according to the field research we carried out. No evidence regarding Chinese involvement was found. The dam is supposed to hold up as much as 1,200 million cubic meters of water in order to prevent flooding within Sukhothai Province and lower northern regions (Sarnsama, 2012) and would feature a capacity of 49 MW (Mwehseng, 2013) – the smallest capacity of all dams investigated. There is no indication that this power would be exported. Its envisaged height is 72 meters, according to our field research. Supposedly, implementing the project would cost 3.5 billion Thai baht (100 million USD) (Mwehseng, 2013). However, massive protests of the four villages, Don Chai, Don Chai Sak Thong, Don Kaew und Mae Ten, with an estimated total population of approximately 5,000 people (none of which are indigenous people), have delayed the project until today, according to our field research. Supposedly, several key decision-makers within Thailand's Royal Irrigation Department are currently pushing again for the construction of the Kaeng Suea Ten Dam. A report was identified arguing that the dam was close to the Phrae fault line (AC, 2016). This information could not be verified during field research, though, and is thus not reflected in the raw data matrix.	
Degree of public protest	0.67	We have carried out an in-depth case study on this project and have documented the sophisticated and massive system of protest in place against this dam. We note that this is the only dam in this sample (besides the Myitsone Dam) that faced a campaign featuring violence as a tactic; villagers smashed cars of World Bank officials attempting to survey the village. Since this violence was only low level violence, though, the outcome condition was coded 0,67, not 1.
Environmental impact	0	The authors of this paper have carried out an in-depth case study on this project. No considerable environmental impacts (beyond the flooding of teak forest) were identified during this research.
Consultation	0	No public consultation took place for this project, the field research carried out by the authors of this paper indicates. Rather, the government marked forests that would be inundated due to the dam construction with the assistance of affected villagers without telling the villagers the intention of these markings.
Compensation	0.33	The field research carried out by the authors of this paper indicates that compensation was offered. This was judged entirely insufficient by the villagers, though. Compensation had to be negotiated by each impacted household individually. This intransparency was also criticized by the villagers.
Cultural destruction	1	Significant cultural heritage impacts would incur if the project was carried out, according to our field research. These include, for instance, the destruction of a major Buddhist temple.

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