

Article

Understanding Anti-Dam Resistance Politics: A Historical and Territorial Study of Two Megadams in Coastal Ecuador

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Abstract: Megadams are controversial ventures. Despite their contentious benefits, the negative impacts on local communities are enormous. This has prompted substantial disapproval and resistance, particularly from the communities that endure the most of its adverse effects. While many megadams have been constructed in the face of opposition, others have been halted or altered as a result of the fierce protests of affected people and their allies. A better understanding of the latter is key to promoting equitable and just water governance throughout the implementation of hydraulic infrastructure. Based on ethnographic and historical research carried out between 2014 and 2017, the article shows the power relations, social actors and historical-contextual factors that have influenced the development of the Daule-Peripa and Baba megadams on the Ecuadorian coast. From a political ecology and subaltern studies perspective, this article describes and analyses the social, territorial, and historical interconnectedness of the local communities of Patricia Pilar and Daule-Peripa dam in coastal Ecuador that successfully stopped the construction of a dam and had a great influence on its final hydraulic design. I argue that, given the adequate socio-political conditions and a systematic process of knowledge and experience exchange among affected communities, anti-dam struggles can emerge with significant capacity to influence in their favour the megadam implementation processes and other hydraulic infrastructures.

Keywords: megadam politics; anti-dam resistance; social movements; political societies; social and territorial grassroots networks; Ecuador



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1. Introduction

On a hot November day in 2015, I was sitting in the living room of the former secretary of the Baba anti-dam social movement. Years ago, this social movement had fought against the construction of the Baba megadam. As we sat talking, the activist pulled out one of his mouldy folders full of clipped newspaper articles and proudly handed me one article. We interrupted our conversation to read the article:

“The Baba Dam is changing its design. The number of hectares expropriated will drop from 4420 to 1012 with the new project. The social and environmental impact on the area will be reduced. Above all, the displacement of people from the affected area will be reduced by 90%”. (Hoy newspaper, 12 December 2005, s/n)

In Ecuador, as in other geographies of the Global South, megadams have been promoted for decades as symbols of development and as the solution to various socio-economic and environmental problems [1–3]. Due to their widely known negative impacts, such projects have often faced strong opposition from affected local communities, their support networks and allies [3–6]. In many cases, despite significant processes of social mobilization against dams, the proponents of these large projects have managed to implement them without considering the demands of the protesting populations. The ‘supremacy’ of top-down implementation of megaprojects has partly been achieved by presenting these technologies as purely technical, apolitical, and natural infrastructures [7,8]. This has led to

them being portrayed as unquestionable and inescapable, especially to local populations who supposedly have no ‘expert’ credentials with which to refute such technical claims.

However, there are cases that have managed to transcend their grievances. Although few, in several cases anti-dam social movements have managed to influence on the implementation of megaprojects. Their actions have often led to the closure of projects or the reduction of adverse socio-environmental impacts of megadams in their territories [3,9–11]. A better understanding of these experiences is crucial to advance the theorization of anti-dam social movements and, eventually, to support similar struggles around water and the environment [12]. From the perspectives of political ecology and subaltern studies, this article examines the development of two megadams in coastal Ecuador: Daule-Peripa and Baba (Figure 1), and the social movements that emerged against them. The focus of this article aims to contribute to the debate on anti-dam social movements by asking the following question: What are the historical and territorial factors and power relations that play a key role in supporting successful anti-dam resistance processes? Throughout the paper I argue that under appropriate socio-political conditions and systematic social and territorial knowledge exchange, anti-dam struggles can have a substantial influence—in their favour—on megadam implementation processes.

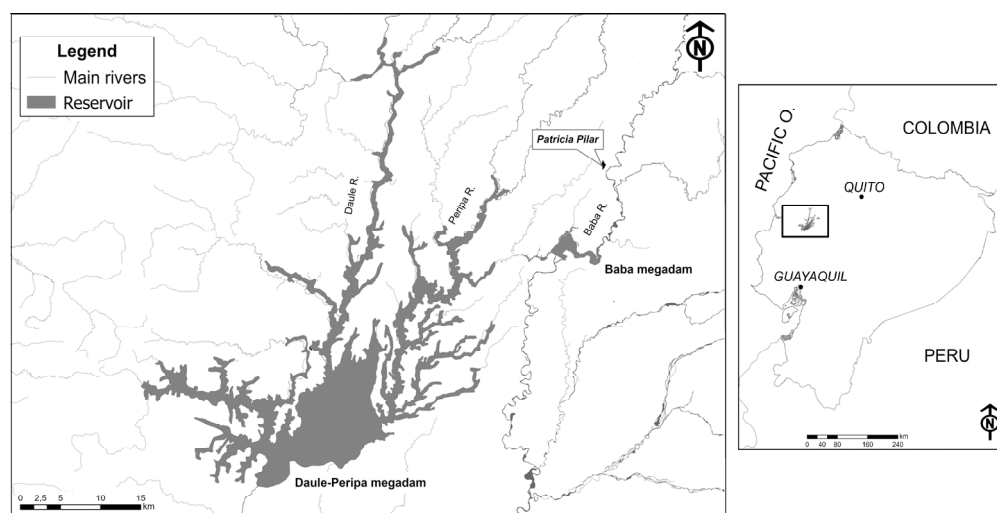


Figure 1. Daule-Peripa and Baba megadams in coastal Ecuador. Own elaboration.

Based on an ethnographic and historical research, the article shows the power relations, social actors, and historical-contextual factors that have influenced the development of these two megaprojects. Through this historical study, I also highlight the importance of studying these types of cases from a territorial perspective. This methodology enabled me to identify some of the key factors that have made the relative success of these anti-dam struggles possible.

The article is structured as follows. A methodological approach is initially detailed, followed by a conceptual note on megadam politics and the politics of resistance from the perspectives of political ecology and subaltern studies. The next section introduces the contextual background of the case studies. After that, a detailed account of each case study is presented. Finally, a comprehensive discussion and conclusions are provided.

2. A Methodological Note

This article is a report on fieldwork undertaken by the author between June 2014 and September 2017. Although the period of construction, which is usually the most disputed time in these sorts of projects, did not occur at either of the dams during my fieldwork period, the study benefited greatly from the timing of the research. Usually, socio-environmental impacts (both negative and positive) of these types of projects are not only identified during the initial stages of the project, but they also take time to develop

and become fully materialised. For example, the proliferation of floating weeds in the reservoir, a decrease in water quality, impacts on fishing, resettlement plans, etc. Therefore, it is assumed that affected communities have more experience and a clearer view of the impacts and socio-environmental changes after a few years of dam construction. Data collected some years after the construction of such hydraulic infrastructure can be richer in depth and provide a greater variety of experiences and views on the subject from research participants.

The study encompassed 10 months of field research, including four months in Daule-Peripa and six months in Baba megaprojects. Both projects are located on the Ecuadorian coast, and qualitative information was gathered through the extended case study method [13]. Ethnography, technography [14] and historical periodization were used. Semi-structured interviews (70 semi-structured interviews were carried out with dams affected individuals, government and NGO officials, experts, and scholars), participant observation and literature review (historical archives, newspaper articles, official reports, etc.) were the main methods used for data collection. Respondents were identified through the literature review process and snowball sampling. All the interviews were done in Spanish and translated into English by the author, and all research participants were anonymized. In particular, the historical perspective enabled me to analyse the events in each case as connected, long-term processes of social, territorial, and technological struggles rather than isolated, timeless events. This perspective helped me to carry out, a “causal analysis, an emphasis on processes over time, and the use of systematic and contextualized comparison” [15], p. 6. I use a historical perspective as I assume that the development of mega water projects, as well as social struggles, are not static phenomena that have taken place only at a specific point in time. Rather, I argue that they are dynamic and interconnected phenomena that transform over time in response to the social, political, economic, and geographical context in which are embedded. Both the written and oral data were analysed following a qualitative method of data analysis. The analysis involved a coding system that was informed by the research topics, conceptual approaches, type of stakeholder, and empirical data. This allowed for the identification of consistent, similar, different, and contradictory data.

3. Megadam Politics and the Politics of Anti-Dam Resistance

3.1. Megadam Politics: Water Infrastructures Transforming Watercourses and Society

“There is almost nothing, however fantastic, that [...] a team of engineers, scientists and administrators cannot do today. Impossible things can be done [...]. Provided these men possess imagination and faith, they can move mountains. [...] They can create a new way of life for this world”. [16], p. 3

David Lilienthal’s *Democracy on the March* (1944) represents a clear example of the technocratic attempt to combine water management and a certain social order through the development of hydraulic megaprojects. In his book, Lilienthal details how the Tennessee Valley Authority (TVA) was an institution that mirrored, from the early 1930s, the American dream of progress based on the control and management of water through large dams [17]. This hydropolitical project, which has travelled to various parts of the world—including Ecuador [18]—is based on the assumption that “rivers all over the world [must] be controlled by people”, which is important because “wherever you are, what happens to [...] water determines what happens to people” [16], p. 2. Much of the proposal included the construction of large-scale dams as part of a wider goal to intervene in society and nature [17]. It is therefore clear that while mega-hydraulic projects are presented as technical and expert panaceas for change, they are in fact technologies that embody considerable political, moral, and ethical ideals. This is also made clear by Karen Bakker, who highlights the construction of mega-dams as a central utopian project aimed at modernisation and industrialisation throughout the 20th century [19].

In such context, megadam politics relates to the power dynamics ingrained within socio-technical (see [20] for an explanation of the socio-technical approach) and epistemic

networks (see [21] for a further elaboration on epistemic networks) related to the creation and implementation of these projects, and the knowledge (construction process) that enables their design, construction, and operation. I argue, therefore, that a fundamental layer in the development of hydraulic megaprojects is how particular forms of knowledge or epistemologies about water, technology, nature and, ultimately, society are reproduced and legitimised [22]. On the other hand, a water megaproject is usually a state-led enterprise that mobilizes enormous amounts of resources, people, and energy. It requires millions of dollars of capital investment, often from multilateral funding agencies, the hiring of huge monopolistic consulting firms, and the deployment of technocratic knowledge. Another key characteristic of these large-scale projects is that advocates of megadams aim to not only manage water, but also to transform societies through them [10]. Evidence abounds, from post-colonial India [23,24] to Franco's Spain [22] to the wave of modernisation in Rwanda [2], Colombia, and Brazil [25,26]. These examples show, among other things, the close relationship that such projects have with broader discourses and processes of social transformation.

If we consider these projects as deeply political, it is then essential to take a close look at who is promoting them in order to understand their politics. Megadams, like other large water works, are the efforts of technocrats and their epistemic communities [27]. A technocrat—a technical and political expert at the same time—is a technical or social bureaucrat, who not only by “virtue of his knowledge [and position] wields power”, but also “by virtue of his knowledge [and position] exercises power” [28], p. xiii. Technocrats are fundamental as they exercise authority through knowledge presented as apolitical, technical and objective [29]. As Centeno and Silva point out: “experts legitimize their rules by appealing to the superiority of scientific knowledge” [30], p. 4. This engenders the widespread belief that “experts can perceive what the general public cannot [. . .]” [24], p. 123. As the ‘holders’ of such knowledge, they occupy a unique technopolitical position in society. The technocrat is the interlocutor par excellence between technical knowledge and politics. These attributes have led to their decisions, which are in fact political, being perceived as objective and apolitical [29]. Therefore, actors from state or private construction and consultancy companies clothe megaprojects in a technical veil and make them seemingly unattainable for ‘ordinary’ people, those without technical or expert credentials. Nonetheless, as I show in this paper, these projects are highly adaptable and can incorporate diverse moral, ethical, and social values from ‘non-technical’ social groups [31–34]. As mentioned before, these projects are subject to public scrutiny. In particular, the affected local communities organise themselves and try to influence their design and implementation by nurturing hydro-territorial networks of solidarity and common struggle. Hence, megadam politics navigate between techno-scientific and ‘bottom-up’ advocacy.

3.2. The Politics of Anti-Dam Resistance: The Governed Acting from the Political Society

On one hand, the state is a key advocate that enables the implementation of hydraulic megaprojects [27]. On the other hand, there is evidence that the impacts and benefits of such endeavours are unevenly and unfairly distributed, affecting historically marginalised populations [4]. Thus, when local communities impacted by mega-dams organise to oppose the intrusion of mega-hydropower into their territories, they are also negotiating a more genuine position of citizenship within the state itself. This premise also relates to the thesis that the modern nation-state—especially in post-colonial countries like Ecuador—treats unequally to ‘the majority of its population’, who do not fit into the dominant narrative of equality and universal citizenship [35]. Awareness of this inequality among marginalised populations has led to the emergence of social and environmental movements, many of which oppose state policies in general and mega-dam projects in particular.

For this reason, the study of anti-dam social movements should be understood through their relationship with the state. For this, Partha Chatterjee’s ‘politics of the governed’ perspective is particularly useful. In his work, citizens and populations are treated as fundamentally distinct categories of analysis. While citizens mobilise in the formal or

theoretical sphere, populations organize and act from the real and the political sphere [35], p. 6, [36]. Those whom the state has failed to incorporate fully as ‘citizens,’ that is, individuals and/or collectives without full enjoyment of legal rights in the nation-state are what I refer here as ‘the governed.’ On a day-to-day basis, this dichotomy means that while citizens act as part of the so-called civil society, through forming associations based on their own interests, which are shielded by law and formal rules; the governed organise and act from the real and the political [35], p. 8. Thus, the governed enter into a relationship with the nation-state and its representatives from a different realm than those acting as part of civil society. From these two arenas (formal and non-formal), both citizens and populations put forward their demands and claims. Instead of exclusively acting from civil society spheres, the governed operate and mobilise within the sphere of the political society.

This results in political society as a “space of negotiation and contestation” that “navigates between the legal and the paralegal, appealing to and/or (re)constructing bonds of moral solidarity in order to assert collective claims against the state and its institutions” [35], p. 150. “It is in this domain that much of the political mobilisation takes place and where the state is obliged to find and reproduce its legitimacy as a provider of welfare to its citizens” [37], p. 22. Whilst political society’s sphere of action is primarily paralegal, the governed do employ the laws and institutions of civil society to advance their actions and claims as well. In fact, their capacity to use formal tools and navigate through legal and paralegal procedures gives them a unique character. Therefore, some of their actions fall within the framework of laws and norms blessed by the state, while at other times their struggles emerge and manifest themselves in *de facto* measures (i.e., road blockades, strikes, among others).

The effectiveness of the political society’s actions is highly contextual, strategic, morally underpinned, historically specific and therefore inevitably interim [38], p. 287. As political society is primarily operating in the field of politics, if the political context in which it operates changes, it is quite possible that it will be affected and not achieve its objectives, or only partially. In post-colonial countries such as Ecuador, it is generally from the political society that the marginalised manage to redirect (albeit often partially) state benefits and programmes in their favour.

This is achieved by applying “the correct pressure on the correct points in the government apparatus” at the appropriate moment and timing [35], p. 139. Finally, from the perspective of political society, another important aspect to be considered for a successful and effective anti-dam resistance campaign is the construction of territorial support networks. Through this, it is possible to mobilise and strengthen what Chatterjee calls ‘moral solidarity’ or collective territorial identity, which is a cornerstone of political society and its actions. This is particularly evident in the social movement against the Baba dam. The ultimate goal is that demands and claims are translated into concrete benefits that populations can experience and appropriate, and that eventually maintain or improve their well-being. Thus, I propose that anti-dam movements are a manifestation of the political society, and their interrelationships are hydro-social territorialisation efforts to gain a better position vis-a-vis the state in the context of the construction of a megadam.

4. Setting the Scene: Ecuador’s Megadam Development Paradigm

Since the mid-twentieth century, Ecuador has pursued the megahydraulism [39–41] as a solution to structural problems in society, such as poverty [42] and inadequate provision of fundamental services (e.g., drinking water and electricity) [43], while projecting an image of modernity and development [44]. Since then, under the leadership of the state, several dozen major water projects have been implemented, mainly in the coastal region. From the 1960s onwards, these projects were inspired by international initiatives such as the Tennessee Valley Authority (TVA) [17]. To install the megahydraulic paradigm, Ecuador also embraced the development discourse and the flagship principles of the Economic Commission for Latin America and the Caribbean (CEPAL).

Under this context the Daule-Peripa and Baba megaprojects were developed. Each project was constructed in a different socio-political and economic context of Ecuadorian republican history. Understanding the characteristics of those contexts is crucial because they shaped the way in which they were implemented. The first phase, spanning from the mid-1950s to the mid-1980s, was labelled the developmentalist period. The second phase, from the mid-1980s to 2006, was known as the neoliberal period.

Developmentalism was marked by the state's consolidation as the driving force for development [45]. During this period, the state sought to institutionalise, regulate, engineer and rationalise its relationship with nature [46]. The rise and fall of the banana and oil booms, alongside regional CEPAL development discourses and national modernising policies, guided the beginning of state planning and many of the large-scale hydraulic projects. In 1954, the National Planning Board (JUNAPLA) [47]—the first nationwide institution dedicated to planning, organising and prioritising the country's economic resources—published the First Economic and Social Development Plan (1963–1973) of Ecuador. The plan aimed to create several institutions and first large-scale hydraulic projects. From the 1960s onwards, water governance institutions with increased economic influence were established. Noteworthy examples include the Ecuadorian Institute of Electrification (INECEL) and the Ecuadorian Institute of Hydraulic Resources (INERHI) at the national level, as well as various regional development institutions. For instance, the Commission of Studies for the Development of the Guayas River Basin (CEDEGE) was created in 1965. The significance of the latter lies in its responsibility for the planning and management of the largest and most crucial hydrographic basin in the country, namely the Guayas River basin. This institution would create a major turning point in the way water governance is conceived in the country, not only because of the discursive and ideological burden it inherited from the TVA, but also because of the great economic and political power it wielded. That allowed to build two of the country's most important megaprojects: the Daule-Peripa and Baba megadam multipurpose schemes. The CEDEGE's plan aimed to “control every drop of water that enters and leaves the basin” (personal communication, 27 June 2014) [48].

In this context, socio-environmental considerations resulting from government interventions were incipient or non-existent [49,50]. Furthermore, civil society mobilisations associated with the development of large-scale hydraulic projects were still embryonic and weak during this period. This could be attributed to the fact that any impacts of this type of projects would only become apparent at the local level in the 1990s. Thus, at the local level, communities were not yet fully aware of the damage caused by these projects [18], nor had networks of transnational actors formed to share experiences and support local struggles [51]. Although dozens of mega-projects were planned during developmentalism, just a few were built during this period. Most of them would be resumed in subsequent decades.

The neoliberal period was characterised, on the one hand, by a gradual adoption of structural adjustments, consisting of policies of deregulation of the economy, privatisation of public institutions, encouragement of foreign direct investment and opening up to the international free market [52]. This is stated in Article 41 of the 1993 Law for the Privatisation and Modernisation of the State: “the State may delegate to semi-public or private companies the provision of public services of drinking water, irrigation, sanitation, electricity, [...] or others of a similar nature” see also [45]. During neoliberalism, in contrast to the state's role during developmentalism, the state gradually delegated its developmental leadership to the market [53]. Perhaps one of the few positive signs was the creation of the Ministry of Environment. During this period, the Environmental Management Law was also enacted. The state, through these institutional and legal tools, was partially capable of regulating and monitoring environmental impacts. For instance, the environmental damage caused by oil exploitation in the Amazon region [49] and the effects of the first hydraulic megaprojects could have been regulated.

This period witnessed the emergence of social movements and environmental non-governmental organisations [50]. The main reasons for this social effervescence were

threefold. The primary factor was the escalating deterioration of the environment (e.g., oil spills, decrease in biodiversity, deforestation, expansion of agricultural frontiers, water grabbing, etc.). Secondly, there was widespread discontent with the neoliberal policies that had been implemented. Thirdly, the absence of state created a governance gap in several sectors like the water sector [52,54]. The particular characteristics of these socio-political contexts shaped the implementation processes of the two cases that are the subject of this article. The Daule-Peripa dam was implemented during the developmentalist period, whilst the Baba dam was constructed during the neoliberal period.

5. The Cases: Material Illustrations of the Megahydraulism in Ecuador

5.1. Daule-Peripa Megadam: A Top-Down Technocratic Process

“The Daule-Peripa dam will serve as the master key to regulating and controlling the fate of water by subjecting a large part of the water that flows annually through the basin towards the sea to the will of man”. [55], p. 20

The Daule-Peripa megaproject is the biggest of its kind and one of the earliest to have been constructed based on the idea of integrated watershed management in Ecuador. It commenced in 1957, amidst the developmentalist period. It arose as an expression of national and international water management policies led by experts. The megadam situated on the Daule and Peripa rivers is located 160 km north of Guayaquil (map 1). The construction began in 1982, and the dam was officially inaugurated in 1988. With a dam height of 90 m, a maximum storage capacity of 6 billion m³, and a reservoir area of approximately 30,000 hectares, it is an Ecuadorian benchmark of technocratic expertise and at the same time embodies one of Ecuador's most serious socio-environmental crises [18,56]. The impact was irrevocable for approximately 40,000 rural households. The project's crucial yet disputed advantages comprise expanding the lower basin's irrigation region; transferring water from the Daule river to other provinces to fill other large reservoirs that have water shortages, ensuring the supply of drinking water to Guayaquil and the populations near the dam; controlling flooding in the lower basin; controlling the salinity of the rivers at the mouth of the river; improving navigability and generating electricity.

The project's area of influence encompasses four provinces located on the coast of Ecuador. This vast region has been historically a destination for people from different parts of the country. It was primarily settled by small farmers who migrated here due to the agrarian and colonization policies of the 1960s and 1970s [57]. For instance, during the 1970s construction of the La Esperanza Dam in a nearby province, a great proportion of the local peasants was displaced and went to live in the shores of Daule river. One of the affected individuals recounted their experience as follows:

“I used to live in Calceta and we came from there fleeing from the dam. I had a small piece of land there. Everything was flooded there, the land and the house. They paid us about 19,000 sucres for the land and my little house. With that I came and fell here [to Daule-Peripa]”. (personal communication, 10 July 2014)

From the promoters' perspective, the construction and implementation of the dam consisted of four phases. The first was the collection of social, economic and agro-productive information on the affected area and its inhabitants; the second was the presentation of the project and its benefits to the communities that would be affected; the third was the process of compensation for land and goods that would be flooded; and the fourth was the construction process itself, which also included the implementation of compensatory services (roads, drinking water, electricity, transport, tourism). As shown below, these phases reveal the top-down process of implementation and the powerlessness of local people to influence technocratic plans.

The first phase began with several rounds of information gathering by the technicians to establish the baselines. This process involved gathering information in a one-sided manner without actively engaging the political opinions of the local people. A peasant residing two kilometres away from the dam site recalls:

“When the engineer visited us, he asked about the number of people living here and what facilities we required, including schools and roads. He conducted a single survey and simply informed us that it was for a project without any further explanation. He even inquired about the number of eggs a hen lays. Before we knew it, we had to leave our land”. (personal communication, 11 June 2014)

This is also reflected in the methodology used to carry out the environmental impact assessment. Once again, the process was not intended to involve the local population in a meaningful manner. The EIA was undertaken to fulfil the requirements of the loan provided by the Inter-American Development Bank (IDB). Most data collection and observations were conducted during a week-long canoe trip along the main rivers. Consequently, local farmers' input was minimised during this assessment process. According to the CEDEGE technocrats, the process was carried out in this way because of the difficulty of accessing the area affected by the future project and the dispersion of the houses and farms that would be affected [58].

During the second phase, technical staff from the CEDEGE and the Ecuadorian Institute for Agrarian Reform and Colonization (IERAC) organised several socialisation meetings in the areas to be affected. Nonetheless, the authorities in charge of the project did not give them the attention they deserved. A former CEDEGE official in charge of the socialisation process stated: “It was inadequately executed since there were insufficient economic resources for this component [socialization]” (personal communication, 4 June 2014). The primary aim of the discussions was “solely to introduce the project's works. We presented models, plans, and the inventory of affected farmers and land”, said the official. Once again, the farmers were not permitted to choose their own fate.

The process itself exposed a disparity in power relations over who had the ‘right’ knowledge to manage water. According to another CEDEGE officer who accompanied the socialisation meetings: “socializations were nearly pointless as the peasants had little understanding of what was coming, they knew there was going to be a project but they did not know exactly what it was. It was challenging for the peasants to understand the technical language of the technicians” (personal communication, 19 May 2017). Since the technical information was not understood by the target group, according to the experts, the talks were largely worthless. They blamed the peasants because of their ‘ignorance’ about technical issues.

The third phase began with measurements to determine water levels in the reservoir. During this phase, land valuation and cadastral procedures were initiated to compensate those affected. It was also crucial to clean up the reservoir and address certain socio-environmental factors. These were outlined, albeit briefly, in the Regional Development Plan for the Guayas River Basin and the Santa Elena Peninsula [48], p. 331 and in the EIA. The CEDEGE and IERAC sent out officials who started measuring and placing milestones to indicate the height to which the water would rise. Furthermore, an office was established at the campsite of the dam whereby the peasants were supposed to hand in their documents in order to receive an economic compensation.

The project promoters' lack of concern for the participation of local communities and social participation processes is evident in a number of ways. One such example is evident in the team put together to carry out the measurement and participation process. The team consisted of just two groups, with each group comprising five individuals. The communication and social participation process were underestimated, resulting in many affected families and their land only being measured through aerial photographs. In practice, the calculation of the affected land area was based on orthophotos taken by the Military Geographic Institute (IGM) with outdated information. It would have been desirable to validate such data in the field with affected peasants; however, the two small groups set up for this purpose were insufficient for the vast 30,000-hectare area. While one team conducted elevation measurements, the other team performed planimeter surveys for each property. According to one of the technicians responsible for this process, the vastness of the area made the work complex. “The measurements occasionally fell out of

place. Sometimes the measurement was not placed where it should have been, eventually the marker was placed at a lower or higher level" (personal communication, 19 May 2017). In addition, the technician admits that the measurement could not be completed entirely: "the water beat us. When the water rose [reaching the top of the reservoir], there were still 20 percent or so of the plots of land left unmeasured". This illustrates that despite the 'technical' legitimacy with which the project was framed, on a day-to-day basis several aspects of the project were the outcome of social and political contingencies.

The technical inaccuracies would affect the peasants even more. The final studies used to construct the dam determined a height of 90 m above sea level for the dam's crest. In accordance with technical regulations, the operational limit for the dam is set at 85 m.a.s.l., resulting in approximately 27,000 hectares of flooding. The maximum exceptional level is at 88 m.a.s.l., causing flooding of around 40,000 hectares [59]. An affected inhabitant remembers it as follows:

"In a matter of days, the floods came. We had to quickly gather our belongings and escape to the hills. No one informed us about evacuation, yet my house and all my possessions were submerged 30 meters deep in water". (El Universo newspaper, 2 May 2004)

Months and years after the dam's implementation, a few isolated protests arose with the aim of improving the mobility conditions of the people living near the dam. For example, in 2008, in response to a protest, the CEDEGE installed a barge to provide free transport for those affected. At that time, a few environmental NGOs like Acción Ecológica and other social organisations began to support the affected communities, but without achieving any progress or compensation for the bitter situation in which thousands of peasant families lived. Even today, hundreds of those affected remain uncompensated, and the impacts are severe. Many fled the area and others were resettled in neighbouring regions. As a result, many people began a new life in Patricia Pilar, where the Baba megadam was built years later. It is worth noting that the local communities later affected by the construction of this dam were among the first to experience the negative impacts of such infrastructure in the country. This had a significant impact on the organisational and fighting capabilities of these communities and individuals. They had less experience and knowledge compared to their neighbours who lived close to the Baba dam, constructed years later in the region.

5.2. Baba Megadam: Connecting Struggles and Territories towards a Successful Anti-Dam Resistance Movement

At least two aspects relate to these two megadams. First, the Daule-Peripa is dependent on the Baba megadam for its water needs. Second, there is a significant social and territorial interconnectedness among the people who live in the affected areas by the two projects. This section, however, will focus on the latter. An article in the press reports about it:

"José gets teary-eyed when he remembers how his house and farm were under water [...] when the Daule-Peripa project took place in 1990. Jose received compensation for renovating his buildings and invested the money in buying 40 hectares in Santa Rosa del Toachi, where he presently resides. When he heard that [...] he too would have to leave when the construction of the Baba dam began, he became furious". (El Universo newspaper, 2 May 2004)

Other peasants like Jose settled within the area of influence of the Baba megaproject following their expulsion due to the construction of the Daule-Peripa dam and other dams along the Ecuadorian coast. Although not a majority of the inhabitants, they constituted a crucial component in the resistance movement that fought against the construction of the Baba megadam. The opposition efforts were successful in affecting the final designs and the scale of adverse socio-environmental impacts of this project.

In the late 1970s, during the developmentalist period, plans for the Baba megadam began. However, due to the political prioritization of Daule-Peripa and the country's growing economic crisis, Baba implementation only resumed during the neoliberal period. In 1997, the CEDEGE revealed a study showing the serious national energy problem, and

in particular the under-utilisation of the Daule-Peripa hydroelectric power station, with respect to the volume of water stored in reservoir [60]. At this point, for the CEDEGE, the implementation of the Baba megaproject was unavoidable, “due to the fact that the Daule-Peripa power station, [...] with the three [generating] groups that it has finally been equipped with, takes in even more water than that which normally flows from its own basin” [60], p. 3.

Thus, following a thorough review of the pre-feasibility studies and their alternatives, the CEDEGE arrived at a design comprising a 55-m-high dam, a hydroelectric power plant generating 54 MW, and a flood area of 4000 hectares (Figure 2). A key element of this design is a spillway controlled by gates, in a rectangular section, similar to that used in the Daule-Peripa system. This would have similar effects: the presence of stagnant water, the proliferation of aquatic weeds and difficulties in navigation.

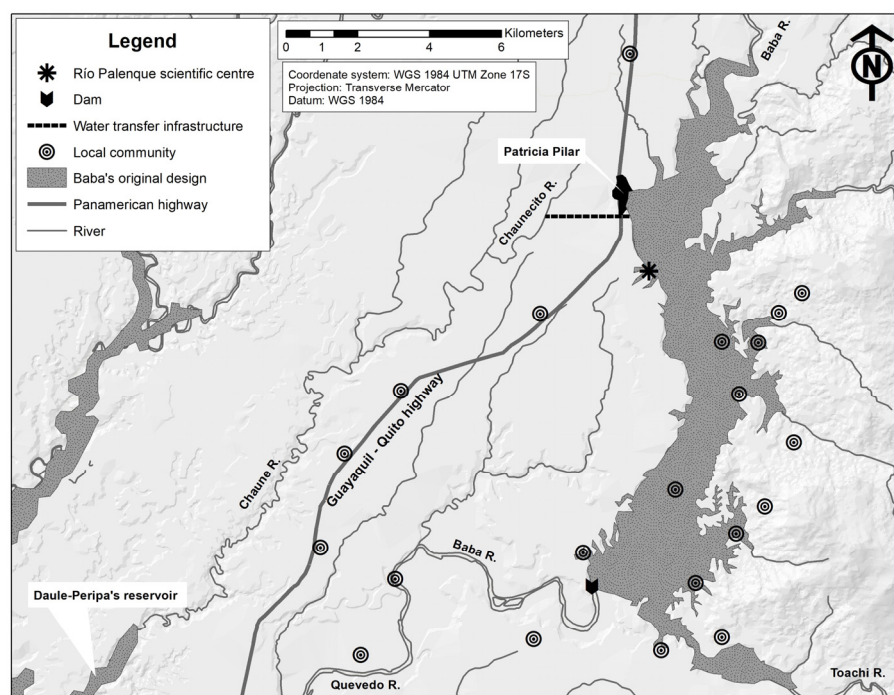


Figure 2. Baba dam's original design and main affected local communities. Source: [10].

In 2002, the CEDEGE started with initial visits and supplementary studies before beginning the construction of the megaproject. The presence of CEDEGE officials in some of the communities of Patricia Pilar gave rise to rumours about the possible construction of a dam. There had been no prior socialisation process. As a result, some local leaders and politicians began to mobilise in search of official information to confirm or deny the rumours. After gathering multiple accounts and grievances from rural inhabitants, the information that the CEDEGE was going to build the dam in the parish of Patricia Pilar was confirmed. If realised, this dam and its reservoir would affect dozens of peasant families. The parish's president summoned a first meeting of peasant leaders to discuss the issue. This would be the start of a lengthy period of social organisation and popular struggle to prevent the construction of the dam and the socio-environmental impact it would generate.

By the end of 2003, the CEDEGE was preparing to launch the construction phase of their project through a bidding process. Meanwhile, Patricia Pilar's leaders had strengthened the organisational base with 31 communities. Establishing a robust discourse and advocating for necessary measures to mitigate the eventual impact of the dam were crucial. Social movement leaders considered the bitter experience of the Daule-Peripa a chance to enhance their own struggle. Leaders of the Baba's anti-dam movement effectively communicated the impacts of Daule-Peripa to those who would be affected in Patricia Pilar. The memory of the past and the rootedness of the present strengthened the arguments that

led to the consolidation of a moral and social and territorial solidarity that supported the anti-dam movement. This is how the El Comercio newspaper presented it at the beginning of 2004:

“Bad experience of Daule-Peripa warns about the Baba dam. “Jaime Giler refuses to lose his crops a second time. This farmer, now settled in the area at the shores of the Baba river, already lost everything in 1982 because of the Daule-Peripa dam, and he is not the only one to have lost his land”. (El Comercio newspaper, 17 May 2004)

The importance of the memory of Daule-Peripa united people so strongly that even international organisations supporting Patricia Pilar’s cause referenced it:

“The communities in this basin also oppose the construction of the Baba dam because they have seen how the Daule-Peripa dam on the Guayas river has affected the communities and the local economy. The affected communities and landowners have not received adequate compensation for their losses”. (letter by International Rivers Network sent to IDB, 24 April 2007)

The anti-dam movement utilised diverse means to connect the struggles and territories of Daule-Peripa and Baba. It organised exchange visits with testimonies and life stories of those affected. A young leader reminisces: “we conducted excursions in Daule-Peripa with the people of Patricia, so that they could get to know the reality there. [...] We arranged for those affected in Daule-Peripa to share their experiences here [in Patricia Pilar] during the assemblies.” (personal communication, 26 November 2015) The effect was tremendous and decisive. Another leader confirmed this sentiment, stating that “the victims affected by the Daule-Peripa dam served as an eye-opener and inspiration” (personal communication, 16 October 2015). The environmental and social impacts caused by the Daule-Peripa dam were the banner of struggle that motivated the protest and cohesion against the construction of the new Baba dam.

Under this collective identity, the meetings of the emerging movement began to grow in attendance. Weekly general assemblies were held every Sunday, with smaller meetings taking place in rural communities throughout the week. In addition to the social and territorial fabric established between those affected by the Daule-Peripa and those affected by the Baba dam in the future, the leaders of the social movement in Patricia Pilar also succeeded in scaling up their struggle to various NGOs, political parties, social organisations, and trade unions. Several leaders attended international meetings against dams thanks to local NGOs and were able to network with other activists and learn from their struggles. In particular, via Acción Ecológica, the support of international organisations such as the International Rivers Network, the Interamerican Association for Environmental Defence (AIDA), EarthJustice, the Global Alliance for Environmental Development (ELAW), the Latin American Water Tribunal and the UN Special Rapporteur on the Right to Food was mobilised. The role of the latter was crucial, particularly in providing guidance for the legal actions taken against the Ecuadorian government domestically, as well as exerting international pressure on financial institutions, like the IDB.

2005 was a decisive year: the anti-dam movement led three blockades of the Pan-American Highway, which connects the highlands to the Ecuadorian coast. Additionally, two actions for constitutional protection were filed and extensive outreach was carried out through national and international media. The closure of the Pan-American Highway at Patricia Pilar was deemed as the most crucial strategy by all former CEDEGE officials. During the action, lasting over three days, approximately 3000 people took part, including those affected by the Daule-Peripa dam and those affected by the Baba dam. Subsequent to this event, the politics of the governed, which until then had taken the form of protests and complaints of various kinds, echoed in the ears and plans of the project proponents. Before the end of the year, the CEDEGE made the decision to modify the designs of the Baba multi-purpose megaproject in order to redress the claims of the communities of Patricia Pilar. The CEDEGE took into account the communities’ main demands regarding the possible impacts and tried to avoid the isolation of the communities, the flooding of

productive land, the spread of aquatic weeds and the impact on public health in the new design. The construction company has confirmed these efforts in a press release:

“The changes introduced were defined on the basis of the opinions and suggestions of the affected people, i.e.: reduction of the reservoir area so as not to affect communities, bridges, schools and roads; change in the type of spillway to avoid the proliferation of aquatic plants and weeds; construction of the “entrelagos” road to ensure communication in the project area”. [61], p. s/n.

In the end, the dam was built, but 15 km south of Patricia Pilar (Figure 3) and the main communities. The hydraulic design of the dam was modified from a regulated gate dam with semi-stagnant water and a transverse spillway, to an unregulated gate dam with a constant spillway and a “duckbill” spillway. These changes resulted in a reservoir area that was one quarter of its initial proposed size and prevented the growth of aquatic weeds that could have otherwise limited navigation in the reservoir. The construction of the main dike and hydropower plant began in 2005 and was officially inaugurated by the national government in 2013.

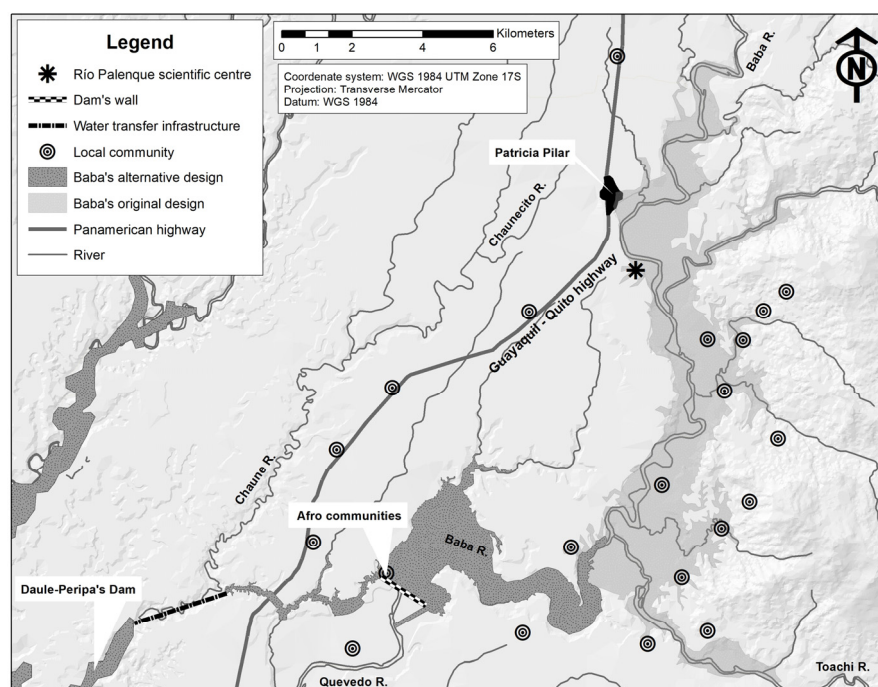


Figure 3. Baba dam’s alternative design and affected Afro-Ecuadorian communities. Source: [10].

The work of the political society to make connections between the experiences of Daule-Peripa and the aspirations of the protesters in Baba has had the expected results for the majority of the protesters. This is even acknowledged by one of the people affected in Daule-Peripa who participated in the process of exchanging experiences during the anti-dam struggle: “In Baba it is better now, I think they [the villagers] have already learned to do things better” (personal communication, 9 July 2014).

6. Discussion and General Conclusions

Despite the dominance of megadams, there are various stories of resistance that have succeeded in stopping or significantly modifying these dominant schemes [9,10]. From a historical and social and territorial perspectives, this article identifies some of the factors that contribute to understanding the relative success of one of the most inspiring anti-dam movements in Ecuador, and perhaps in Latin America. In this paper, I contend that anti-dam movements have the potential to shape the implementation of megadams in their favour, given a systematic exchange of knowledge and experiences within the appropriate

socio-political and geographical conditions. The examination of these two megadams feed a two-way argument. On the one hand, this enables an understanding of how the processes of social and collective anti-dam mobilisation are (and should be) dynamic, solidarity-based and territorially interconnected. These have empowered resistance groups to build critical knowledge and thus better position their socio-environmental demands in discourse and practice in the face of top-down megaproject implementation. On the other hand, it enables the denaturalisation and politicisation of water megaprojects, which are frequently portrayed as purely technical, apolitical, and natural technologies. This latter, in particular, reveals this type of infrastructure as permeable and subject to change.

6.1. Case-Study Comparison and Historical Perspective

The historical and multi-case approach opens the door to understanding anti-dam social mobilisation processes in perspective. In other words, this approach has made it possible to understand social movements as social and territorial networks rather than as isolated and individual resistance efforts. I demonstrate how the anti-dam social movement in Patricia Pilar has drawn on the knowledge and experiences of those affected by the Daule-Peripa dam and used them to build its discourses of struggle and strategies of social organisation. This exchange of knowledge and experience is both horizontal and vertical. Through partnerships with other local communities, NGOs, and regional organizations including AIDA and the International Rivers Network, this study demonstrates the establishment of horizontal collaborations among local communities and their allies, as well as the development of vertical networks with national and regional organisations and institutions. These collaborations enabled the amplification of their claims for political and territorial advocacy. Therefore, examining anti-dam resistance over time and across various cases allows us to understand how successful anti-dam struggles are in fact networks of social and territorial solidarity, rather than isolated efforts.

6.2. Context Dependent Successes

Understanding the socio-political context surrounding the anti-dam struggles is critical in comprehending their success. The manner in which the Daule-Peripa mega-project was carried out during developmentalism was affected by two factors. On the one hand, this project was one of the first to be built, so its harmful socio-environmental impacts were unknown. The local communities who began to feel the negative effects only started to organise themselves to raise their voices after dam's completion in the 1990s. On the other hand, the state had a strong institutional structure, but few norms to regulate or mitigate the adverse socio-environmental impacts of its works. In contrast, under neoliberalism, the case of Baba shows that with a weak state, spaces were created where subaltern actors could participate more actively in decision-making. This also suggests that local communities perceived megadams and their impacts differently during the developmental and neoliberal eras. During the neoliberal era, local communities possessed greater expertise and understanding of their rights and potential for social mobilisation than during the developmentalist era. This is not intended to suggest that it is necessary for a neoliberal state to enable greater political participation of subaltern actors, but rather that the role of the state (its institutions and officials) influences how subalterns influence the development of water megaprojects.

6.3. Challenging Hydraulic Infrastructure and Technologies

This article also demonstrates that the position of neutrality, expert superiority and technical objectivity with which water mega-projects are presented is highly contested. The hydraulic design of such projects is not only defined by experts and their epistemic communities [60], as alternative perspectives exist. Local communities organised in social and territorial networks of struggle can play a significant role in shaping designs and the distribution of socio-environmental benefits and impacts at the local level. It is demonstrated that mega water projects can be highly malleable and changeable under specific

socio-political, territorial, ecological and cultural conditions. Furthermore, such changes can be, and often are, deeply influenced by conflicting ethical and moral values stemming from the wide range of actors involved in dam development.

Finally, the findings presented in this article enable us to make a strong recommendation regarding the advocacy that is needed from academia, organized civil society and political society. Part of the success of the case presented in Patricia Pilar is attributed to the aid of procedures facilitating knowledge and experience exchange between anti-dam social movements in Daule-Peripa and Baba. Further research from this perspective and approach is strongly encouraged. Engaged academic research in this vein will undoubtedly contribute to the promotion of robust social and territorial networks of resistance and advocacy for more equitable water governance ‘from below’.

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