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## Worlding hydropower: river realities in the Chilean Patagonia\*

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### ABSTRACT

Based on the case of HidroAysén, in this paper we discuss the different modes of existence of a hydroelectric project. Inspired by an ontological sensibility and the idea of worlding, we sustain that hydroelectric energy is embedded in, and is the source of, multiple worlds where different ontologies of water and energy meet, not always peacefully. Drawing on in-depth interviews and documentary sources, we identify three worlds or realities – yet not entirely autonomous – in which the HidroAysén project exists: the National Hydropower World, the Market Hydropower World, and the Sustainable Hydropower World. We argue that these three realities, through different ecologies, knowledge, and narratives, execute different parameters of reality and objectivity. Our final argument is that an ontological approach to analyze hydropower development and the conflicts that it has spurred can stimulate new ways of thinking about taken-for-granted assumptions, categories, and practices regarding the way hydropower is or might be produced.

### Fazendo-mundos hidroelétricos: realidades dos rios na Patagônia Chilena

#### RESUMO

Com base no caso de HidroAysén, neste artigo vamos discutir os diferentes modos de existência de um projeto hidroelétrico. Inspirado por uma sensibilidade ontológica e pela ideia de “fazer-mundo,” argumentamos que a energia hidroelétrica é incorporado em, e é a fonte de, múltiplos mundos onde diferentes ontologias de água e energia se encontram, nem sempre de forma pacífica. Usando entrevistas em profundidade e análise de fontes secundárias, foram identificados três – não totalmente autônomos – mundos ou realidades em que o projeto HidroAysén existe: o Mundo Hidroelétrico Nacional, o Mundo Hidroelétrico de Mercado e o Mundo Hidroelétrico Sustentável. Nós argumentamos que essas três realidades, através de diferentes ecologias, conhecimentos e narrativas, executam diferentes parâmetros de

### KEYWORDS

Hydropower; ontologies; energy conflicts; HidroAysén; Patagonia

### PALAVRAS-CHAVE

Hidroeletricidade; ontologias; conflitos energéticos; HidroAysén; Patagônia

### PALABRAS CLAVE

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realidade e objetividade. Nosso argumento final é que uma abordagem ontológico para analisar o desenvolvimento de energia hidroelétrica e os conflitos que ela tem provocado, pode estimular novas maneiras de pensar sobre suposições, categorias e práticas que são tidos como certos em relação ao modo como a energia hidroelétrica é produzida ou pode ser produzida.

## Haciendo-mundos hidroeléctricos: realidades de los ríos en la Patagonia Chilena

### RESUMEN

Basado en el caso de HidroAysén, en este artículo discutimos los diferentes modos de existencia de un proyecto hidroeléctrico. Inspirados por una sensibilidad ontológica y la idea de “hacer-mundo,” sostenemos que la energía hidroeléctrica está embebida en, y es la fuente de, múltiples mundos donde diferentes ontologías del agua y la energía se encuentran, no siempre de forma pacífica. Haciendo uso de entrevistas a profundidad y analizando fuentes secundarias, hemos identificado tres mundos o realidades – no totalmente autónomos – en los que existe el proyecto HidroAysén: el Mundo Hidroeléctrico Nacional, el Mundo Hidroeléctrico de Mercado y el Mundo Hidroeléctrico Sustentable. Argumentamos que estas tres realidades, a través de diferentes ecologías, conocimientos y narrativas, ejecutan diferentes parámetros de realidad y objetividad. Nuestro argumento final es que un enfoque ontológico para analizar el desarrollo de la energía hidroeléctrica y los conflictos que ha provocado, puede estimular nuevas formas de pensar sobre supuestos, categorías y prácticas que se dan por sentadas con respecto a la forma en que se produce o debería producirse la energía hidroeléctrica.

## 1. Introduction: hydropower realities

In August 2010, only days after having been named CEO for HidroAysén (HA) – a large hydroelectric complex to be built in the Chilean Patagonia – Daniel Fernández gave an interview for a local newspaper. “You have an enormous range of possibilities,” he responded when asked about how the project was accounting for its environmental externalities. For Fernández the ecological nature of the project was sustained on a balance between multiple conditions and demands, or what he termed the model of “sustainable development.” He explained:

Chile has defined *sustainable development* [as the model to follow], in which you *promote development and growth* but establishing restriction and defining an *environmental authority* (*The Clinic*, 2010. Emphasis added)

For Fernández, then, HA was a project predicated upon three different techno-political registers – namely the “green” agenda of *sustainability*, the logic of *market-based economic optimization*, and the *national project* led by the state as the authority in charge of national development and regulation.

This paper is precisely about this multiplicity: about the various horizons of meaning and action in which the HA project responded to and was part of, or for short, the *realities* to which the project was accountable to. Specifically, we argue that the reality of HA as

both an infrastructural and a political project was sustained on different historical lineages and apparatuses for evaluating performance and establishing truth. In brief, in each of these horizons the project had a different existence, and while these multiple existences managed to cohabit, they did so in divergence.

Inheriting from and discussing within the so-called ontological turn in Science and Technology Studies (STS), we propose the notion of “hydropower world” as an analytics to understand the multiple realities of HA. Using interviews and archival material we reconstruct the entangled histories of the project, paying particular attention to the diverse disputes that punctured the life of HA – from the first plans for a large hydro-complex in the early 1970s to the massive demonstrations against HA in 2011 and then its final revocation. We argue that these hydropower worlds, in the case of HA, materialized in three differentiated yet not entirely independent modes of organizing existence: the National Hydropower World, the Market Hydropower World, and the Sustainable Hydropower World.

The HA case has sparked an engaging debate within the social sciences, with most of the research focusing on the discursive disputes among actors. In this paper, however, we turn away from paradigmatic actors as the main object of concern, to propose an ontological approach in which the constitution of different hydropower realities frontstages the analytical endeavor. Our contribution is to show how these three hydropower worlds give rise to new relations and arrangements among heterogeneous agents, which are entangled in policy interfaces (Arce 2003) wherein multiple suppositions about the nature of water, the role of the state, and the imperatives of energy production unfold. So rather than focusing on the interpretive flexibility in which actors engage, we are interested in how different realities, constituted through socio-material genealogies, come into being.

The paper is structured as follows. First, we present the historical trajectory of the plan to build a hydropower complex in the Baker and Pascua rivers in the Chilean Patagonia, including a brief revision of the main academic discussions in STS, geography, and sociology provoked by the HA case. We then turn to the STS and anthropological literature on ontology to propose our notion of hydropower worlds – and to explain how an ontological approach may enrich debates around HA in particular and infrastructural politics in general. Then we move on to describe the three hydropower worlds – the *National*, the *Market*, and the *Sustainable* hydropower worlds – that have emerged from and give shape to HA in juxtaposed ways. In our conclusions we reflect on the possibilities as well as the challenges posed by an ontological sensibility to hydropower development.

## 2. HidroAysén: a political ecology

The origins of HA extend back to 1972 when the government of Salvador Allende conducted the first feasibility study to build a hydroelectric power complex in the Baker and Pascua rivers, in the Aysén Region in the Chilean Patagonia (Varas et al. 2013). The energy capacity of Patagonia was highly attractive for the developmental agenda of the country, which was not undermined by the coup in 1973. New prospecting studies were carried out during Pinochet’s dictatorship, now framed within a more ambitious project: to create a large industrial complex for mineral extraction, alongside a new city (Martinic 1980).

Though this project never came to fruition, it revived in the late 1990s when new studies revealed that the building of four dams could produce approximately 2.000 Mw. In 2004, the electric company Endesa together with Colbún S.A., another large energy corporation, constituted the public limited company Centrales Hidroeléctricas de Aysén S.A., or HidroAysén, and proposed to build five dams on the Baker and Pascua rivers to generate 2,750 Mw and the world's longest transmission line (2,250 km) (Figure 1).

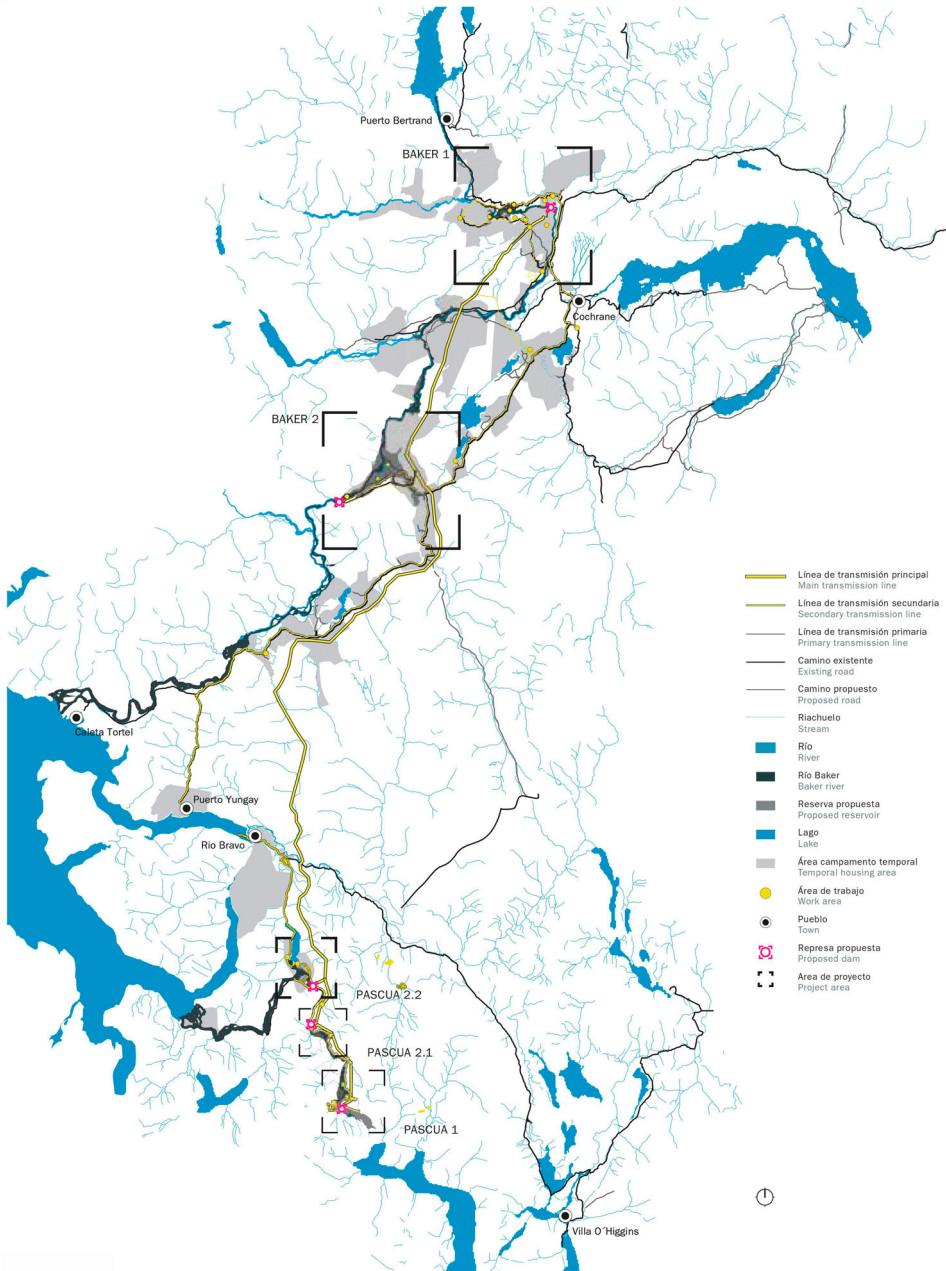


Figure 1. HidroAysén Project. Source: Berrizbeitia and Folch (2015: 2).

The plan was approved by the Environmental Assessment Service (SEA) in 2011, unleashing the largest social mobilization in post-Pinochet times: demonstrations against the project were held not only in several Chilean cities, but also in Paris, Oslo, and Buenos Aires. In Santiago alone, four massive mobilizations were organized in May 2011, bringing together more than 40,000 people (Schaeffer 2017). Three years later the Ministers Committee, the highest administrative authority of the SEA, rejected the project and revoked the previously granted environmental permits. Despite the efforts of HA to persevere, in 2017 the holding reported that the project was no longer economically feasible due to the changes in the electricity market, announcing that they would return the non-consumptive water use rights to the state.

The HA case became an immediate object of analysis for researchers in sociology, geography, and STS. Discussions grouped in three main components of the conflict. First, and following a political ecology perspective, a central point of research and debate was the socio-ecological impacts of HA in local communities and the underlying power relations sustaining them. Here, the tensions between development discourses and the emergence of social mobilization in the context of extractive capitalism in Latin America became a key axis of analysis to understand social vulnerability and political disputes around HA (Latta 2011; Romero and Sasso 2014).

Second, an emerging body of research coming from STS focused on the complex politics of knowledge production around HA. Particularly important was to understand how expertise was construed, articulated and tensioned by scientists, consultants, public officials, environmentalists, and politicians (Barandiarán 2018; Broitman and Kreimer 2018). At stake here were the frictions that HA rendered visible between the national system of scientific production on the one hand, and the marketization of environmental impact assessments (EIAs) on the other, with the consequences of “preserving a neoliberal logic that undermined the credibility of the scientists” (Tironi and Barandiarán 2014, 322–323).

Finally, scholarship coming from sociology and political science brought attention to the content, form, and capacities of social mobilizations against HA. An important object of inquiry was the *Patagonia Sin Represas* (PSR) campaign, led by the *Consejo de Defensa de la Patagonia* (CDP), and their multi-scalar associative capacities to bring together local rural communities and national-level urban actors (Silva 2016). Instrumental in these alliances – and in their political success – was the discursive elaboration of Patagonia as an exceptionally pristine environment in need of care and protection (Borgias and Braun 2017; Schaeffer and Smits 2015).

This body of research offers critical perspectives on the political ecology of HA impacts and conflicts, as well as on the knowledge dynamics at play in the intersection between socio-territorial projects, late industrialism, and science. However, it also leaves crucial questions unanswered. Importantly, stressing the *discursive* nature of conflict and knowledge conceals the practices, histories, and mechanisms by which basic assumptions about energy have sedimented in Chile – or the processes by which hydropower *worlds* come into being. The subsequent correlation of specific discourses with specific actors (i.e., environmentalists as correlated with environmental discourse) makes it more challenging to identify the position of the conflict within worlds that cut-across particular actors, temporalities or situations.



### 3. Hydropower worlds: thinking energy ontologically

Following an ontological sensibility within STS and anthropology (Law 2004; Mol 2002), in this article, we argue that hydropower development is a process in which different *worlds* are brought into being and intersect – worlds that are predicated upon different and sometimes clashing modes of establishing the parameters of existence.

Broadly speaking, ontology engages with the question of what things *are*, and hence is different from the most common epistemological question of the social sciences – namely, how we can *know* things. For many, the distinction is pragmatically irrelevant (Hemmings 2012), conservative (Woolgar and Lezaun 2015) and even colonial (Todd 2016), but in the context of HA and hydropower at large, it offers productive insights.

Though ontology can be mistaken with social constructionism, a fragile yet crucial difference distinguishes both approaches. Constructionism assumes that reality lies beyond “culture” or epistemological particularism, that is, that collectives *access* reality through social categories and imaginaries. Ontological approaches, in contrast, engage realities not as “perceptions” on what already exists, but as realities in and of themselves that include the definition of the evidence of their own existence and the demarcation of what lies outside them.

So rather than engage in establishing the realm of the real as a delimited and fixed otherness (Law 2004), ontological approaches crack open reality as something that social collectives variously constitute by defining the entities that exist in the world (Blaser 2010; Descola 2006). Reality, put differently, is not a given but an accomplishment performed through practices, discourses, politics, and materials (Mol 2002; Pickering 2017). Ontological explorations are not interested in defining what falls inside the real as a universal condition, but on understanding how realities exist in multiplicity. Inheriting from William James’ pluriverses (1909) and Isabelle Stengers’ cosmopolitics (2005), ontological approaches problematize the One-World assumption of an exclusive and positive reality that functions as a background of existence and a universal reference (Escobar 2015). Instead, they render visible that the world is composed of many worlds (de la Cadena and Blaser 2018).

This ontological commitment has already been applied to hydropower. STS scholars have suggested that hydroelectricity infrastructures are different realities depending on the practices upon which they are brought into being. Dams, for example, are at the same time technologies for colonial rule and incubators for the Anopheles mosquito (Mitchell 2002); they are matters of concern for rice growers in the Mekong River, and also for Cambodian electricity modellers and international environmental activists (Jensen 2017), each collective rehearsing divergent versions of the river, the dam, and effects of their entwinements.

While these ontological approaches to hydropower highlight the multiple realities in which hydropower exists, in this paper we are also interested in bringing to the fore those contextual elements against which, however ambiguously, hydropower sediments as a reality. Hydropower, we suggest, is an ontological choreography (Thompson 2005) constituted by processes of continuity and assemblage, as well as difference and divergence (de la Cadena *forthcoming*).

Following these cues, in this paper we borrow from Tsing (2010) and her concept of *worlding*. In her words, worlding is “the always experimental, partial, and often quite

wrong, attribution of worldlike characteristics to scenes of social encounter” (2010, 54). Worlding is a soft form of holism that emerges in practice to situate objects and situations in a larger web of connections within which they come into being and relation (Otto and Bubandt 2010). Worlding, therefore, helps us to conceptualize hydropower as embedded in a myriad of worlds wherein different realities of water, energy, and the state encounter one another, not always peacefully.

#### **4. Methods: following a (failed) dam**

Our research is based on a qualitative study of 17 in-depth interviews with government officials, HA managers, NGOs representatives, and representatives of civil society organizations. These interviews were conducted in Santiago and Aysén, between May-August of 2012. Timely interviews were carried out amid the conflict. So while more than seven years have passed since our fieldwork, interviews captured what Callon (1998) calls “hot situations,” or moments in which “everything becomes controversial” and that “indicate the absence of a stabilized knowledge base” (1998, 260). Hence in these “hot situations,” actors are prone to voice their positions and concerns more transparently. Moreover, two years later the project was canceled. Our object of inquiry, in a way, disappeared. Thus while more interviews could have been conducted in subsequent years, they would have apprehended a very different situation and hence modified our analytical apparatus.

To identify and reconstruct the three worlds here developed, interviews were complemented with a range of archival sources – including government archives and reports, newspaper articles, and media material. This material provided additional information about the hydropower trajectory in the country over the last century.

In what follows, we present three hydropower worlds that are defined at the crossroads of diverse world-making projects. By identifying these worlds we do not attempt to diagram a sequential ordering of hydropower “paradigms,” but to show that hydropower is not a singular modern project but, instead, a multiplicity of hydropower realities that become together in tension.

### **5. Hydropower worlds**

#### **5.1. National hydropower world**

Hydroelectricity has played an important role in the country’s energy matrix since the late nineteenth century. Although at the outset private companies controlled this sector, this radically changed in the 1930s. At that time, a group of engineers of the University of Chile, driven by the epic of social progress and national industrialism, strongly recommended the control by the state of strategic monopolistic industries, such as the generation and distribution of electricity. This techno-statist sensibility is at the heart of what we term the National Hydropower World.

The imaginary of development/underdevelopment is the background against which this world is made into being. And importantly, in this version of reality the transition from underdevelopment to development is the responsibility of the state. “[The] control of electric energy supply means control over the economic and social life of the



country” as stated in the mid-1930s by the Instituto de Ingenieros de Chile (IICh), it cannot “be in power of others than the State itself” (Harnecker 2012, 10–11). In 1943, the National Energy Company (Endesa) was created to develop and manage electricity infrastructures. Between 1944 and 1963, Endesa built at least eight hydroelectric plants in the country.

The notion of the State as both an enforcer of development and an arbiter defining what development means has endured as a worlding force in electricity planning in Chile – actually throughout the trajectory of the HA project. For example, opponents to the project invoked the State as they demanded more transparency and decentralization in decision-making. The lack of accountability in the overall process was not contested by resorting to grassroots movements or indigenous rights, as it has been documented in other extractivist conflicts in Latin America (De Castro, Hogenboom, and Baud 2016), but by summoning the State in the articulation of a properly “common commons.” As put by the CDP’s Executive Secretary:

The state must be proactive and must plan as happens in other countries, where state companies are those engaged in the [energy] distribution and development, thinking on the common good, or it is the state who has the rules of the game and invites private companies to develop such projects. (Interview 12, June 14, 2012)

For environmentalists, the conflict over HA did not point to the onto-epistemological limitations of the liberal state, but to the incapacity of political and technical cadres of *enforcing it* – the same incapacity denounced by private investors. Indeed, HA investors blamed the State’s lack of conviction and leadership – instead of turning to the structural inefficiency of the state which is the usual liberal critique. As with environmentalists, the demand was for *more* state, not less. As a former Operation Manager of HA argued:

The state should not act as a mere spectator of what private companies do, but it should create definitions regarding the energy matrix, costs, emissions, and generate effective conditions to ensure that development reaches a greater number of people. (Interview 11, June 21, 2012)

The State, as a very specific reality – and reality arbiter – is dependent on a particular way of defining the being of nature: nature as a *resource* ready to be tapped to lift Chile into prosperity. This ontological definition was congealed in the initial design of Chile’s state-based electricity plan. The conditions offered by the Chilean geography – high mountains, steep slopes, and heavy-flow rivers – create “energy sites” that must be exploited, otherwise “water will be wasted into the sea” (Endesa 1956, 73). The idea of maximizing the uses of water is not just related to notions of rationality and management but to the epics of a relentless advancement of humankind into progress. As put in a technical report of Endesa in 1944:

People measure their progress by the electric potential they use. Man needs to multiply the creative force of his work. That is why he scratches the earth’s crust, penetrates into the depth of the earth, tearing off coal and oil. Man seeks life in dead, petrified, and liquefied worlds [...] When men conquer electricity, the peoples move towards progress. [...] Chile has one of the greatest hydroelectric riches in the world. Its strange geography rewards the sacrifices it demands to be conquered. (Endesa 1944, 3)

Rivers, therefore, are passive elements upon which “man” erects civilization out of “dead worlds.” At work here are ontological definitions of what separates life from death,

progress from backwardness, and society from nature – and not just perspectives on specific objects. This National Hydropower World did not vanish with the neoliberalization of Chile’s electricity regime but proved extremely resilient. Anxieties about water being “wasted into the sea” in detriment of the country’s development remained strong and were echoed in the debate around the HA project across political lines. “It’s necessary to protect water for the needs of people,” explained the leader of a regionalist movement that had been working against HA, “but the rest [unutilized water] we shall use it, or will we continue to let the water from the rivers be wasted, be thrown away into the sea?”

The National Hydropower World is very much present even today, three years after the definitive cancellation of HA. Its failure has ignited intense discussions about the need for a long-term national strategy for energy security and decarbonization. Workshops, committees, and task-forces proliferated, being *Energía 2050* – a multi-stakeholder process for long-term energy planning led by the Ministry of Energy – the most relevant initiative. Interestingly, while *Energía 2050* moved from the grammar of “mankind,” “progress,” and “conquering” of the first electricity plans of the 1930s to the late industrial parlance of “sustainability,” “community” and “renewable energy,” the premise that water is an abundant and cheap resource whose possibilities of extraction must be exploited is still very much present. “In a country where there is good potential for dammed hydroelectricity, the possibilities of its use should be explored as much as possible” (Ministerio de Energía 2015, 73), warns us the *Energía 2050* final report.

## 5.2. Market hydropower world

During Pinochet’s military regime, a neoliberal revolution reshaped hydropower development and the energy sector more broadly. A Chicago-trained group of monetarist economists – known in Chile as the Chicago Boys – were requested to secretly work in an economic program for refunding Chile’s economy. Driven by a radical Hayek-inspired vision of economic and social change, the Chicago Boys wrote a book entitled *El Ladrillo* (The Brick), in which the dismantling of public-owned companies such as Endesa was strongly recommended to liberalize energy supply and to attract private-sector investment (Biglaiser 2002). This market-ruled orientation lies at the root of what we term the *Market Hydropower World*, which stands on particular ideas about the deregulation and reconfiguration of the State and the commodification of nature.

During the early 1980s, drastic reforms were introduced to liberalize the electric sector, being the most relevant the Water Code (1981) and the Electric Law (1982). The former allowed the creation of private property rights over water (water use rights), while the latter led to the unbundling of electricity generation, transmission, and supply, with the objective of encouraging free competition. These reforms, which shaped what is amply recognized as the most aggressive neoliberal water and energy regimes in the world (Budds 2009), are HA’s conditions of possibility, both operationally and ontologically. “Our environmental assessment system,” indicates a representative from the *Asociación Gremial de Generadoras de Chile* (AGG) – the Association of Electricity Generators of Chile – “has to be agile and efficient to privilege private investment projects.” This quote concisely summarizes the world in and around which HA makes sense: the project is only feasible technically, politically, and ethically in a world in which energy

planning is left to market exchanges and water can be abstracted from the land and traded as a commodity.

Interestingly, however, while this version of reality clashed in several ways with the developmentalist ontology already described, it managed to persevere under the figure of the State as *umpire*. As Barandiarán (2018) has argued on the neoliberalization of Chile's environmental regulation, "[T]he umpire state neatly summarizes the neoliberal ideal of the state as responsible for organizing everything," writes Barandiarán, "where the state guarantees individual freedom not through civil liberties or public welfare but instead by policing the rules for markets to operate, as allowed by the subsidiary principle" (2018, 192). As put by the Vice President of HA:

Are there any deficiencies in the system? There are. Do you have to correct them? Yes, let's correct them quickly so that the rules of the game are clear to the investors and they can decide [where it is better to invest] (...) I do notice that there is a lack of clarity of the rules of the game and planning. (Interview 3, May 29, 2012)

In the world issued forth by HA, water is an abstracted resource and the state is the guarantor that the "rules of the game" set to render water intervenable by market parties to generate electricity are enforced and sanctioned. Key in this version of reality is the liberal demarcation between technique and ideology. Indeed, the impartiality of the umpire state is conditioned upon its technical ability. Specifically, *evidence* – or the lack thereof – as a condition for legitimate intervention proved critical in the articulation of the Market Hydropower World. This assumption enacts a stark differentiation between those that, equipped with technical evidence, are able to participate properly in the HA debate, and those that, lacking scientifically validated knowledge, are incapacitated to do so. "The environmental assessment system has learned to rationalize the discussion [on HA], which is annoying for an opposing group with a more ideological position," explains the representative of AGG. These "more ideological" groups, on the contrary, mobilize *emotions*, a kind of knowledge not suited for a robust discussion. As eloquently explained by HA's communication director:

Look, I don't think that communities or just anyone can comment on whether the bathymetry of the Pascua river is accurate or not ... It seems to me that in reality, the public generates opinions based on emotion instead of the technical rigor required by a project ... If public opinion ends up deciding this type of projects, what happens with the scientific community? What is the value of science then? Because it's my understanding that the scientific method is a confirmable method, that is verifiable, etc. That has hypotheses. So, how can I, from emotionality, question the scientific method? I think there's a big risk as a society if we open that door. (Interview 10, May 29, 2012)

In summary, the Market Hydropower World is articulated in and through several onto-epistemological assumptions about what rivers are, what is the role of the state in the composition of a commons, and how legitimated evidence looks like. Importantly, this version of HA reality was severely questioned over the conflict but did not perish. Take again, for example, *Energía 2050*. While the document swiftly indicates that "market solutions" do not "always provide the decisions that lead to preserve the common good" and that "the Chilean society expects from the State a planning and management role," it also expresses that the responsibility of the State is to define "a solid and consistent *market-*

*oriented strategy*" (Ministerio de Energía 2015). During the presidential electoral campaign of 2009, Sebastián Piñera stated:

If I become president, I will favor the construction of dams, because Chile needs more energy, but we will demand energy companies to take care of the environment, nature, and the way of life of the people of Aysén. (Cámara de Diputados 2012, 65)<sup>1</sup>

The Market Hydropower World put differently, was accommodated amidst new discourses in which, as the result of HA conflict, environmental protection, public participation, and equity were re-instantiated as a fundamental axis for energy planning in Chile.

### 5.3. Sustainable hydropower world

As attested by *Energía 2050*, imperatives around community-building, ecological balance, and climate change have permeated energy discourse and action in Chile and elsewhere. *Green-ness* (Thévenot, Moody, and Lafaye 2000) has emerged worldwide as a new mode of justification, and alongside this regime of worth, a complex repertory of assumptions about the reality of nature, knowledge, and politics has congealed. In the case of HA, this regime demonstrated worlding capacities by adding to the debate crucial ontological articulations. This is what we call the Sustainable Hydropower World, an onto-epistemological regime that cuts across actors and positions in the HA conflict, and that both disputed and enforced the National and Market hydropower worlds also at play.

Central to this world was a particular enactment of Patagonia, as *exceptionality*. While all actors agreed that the Patagonia, against pastoral fantasies of purity, was an intervened territory, a sense of distinctiveness and uniqueness was retained. "I'm not naïve, I perfectly know about the fires [that have historically been utilized to clear the land for cattle]," told us an activist from a local environmental NGO, distancing himself from any romanticized vision of the territory, "but in relative terms," he nuanced, "there is undoubtedly a pristinity and an endemic biodiversity richness, which is a treasure."

Specification is a political gesture inseparable from the mobilization of difference and universality (Choy 2011). We add that the specification of the Aysén region as unique territory entailed a worlding gesture. While the National Hydropower World brought water into being as a public resource to be tapped for national development, and the Market Hydropower World as a private commodity circulating through markets, in the Sustainable Hydropower World water is constituted as a *condition for life*: the exceptionality of the Aysén region is rendered possible by the abundance of water as a vital element for human and non-human life. As environmentalists argued, the water of the Baker and Pascua rivers is "feeding the sea and the oceans" creating a large trophic diversity in those estuaries where both rivers meet the Pacific Ocean.<sup>2</sup>

Important here is the shift from the enactment of water as an element that can be exploited to a version of water in which it needs to flow. The imperative of preventing water being "wasted into the sea" is replaced by the confirmation that the hydric cycle from the Andes Mountains to the sea cannot be interrupted without incommensurable impacts. "There is a whole cycle of life that is produced in that zone which is going to

<sup>1</sup>Available at: <https://www.camara.cl/pdf.aspx?prmid=3120&prmtipo=SOBRETABLA> (accessed 10 July 2019).

<sup>2</sup>Available at: <http://www.chilesustentable.net/wp-content/uploads/2016/01/Critica-a-la-Hidroelectricidad-y-Propuestas-Ciudadanas-Enero-2016.pdf> (accessed 10 July 2018).

be altered,” explained to us the founder of PSR, “thus, [it is important] to understand the complexity that implies to interrupt the flow of a river.”

The existence of water as a vital element came alongside a particular definition of politics and the state. Instead of bringing politics into being as a function of the state either as an engine of development or an umpire of market regulations, in the Sustainable Hydropower World politics is distributed among diverse actors and is defined as a form of *stewardship of the commons*: the responsibility of securing a space for long-term collective conviviality. Interestingly, this manifestation of politics was enacted in the HA conflict through two boundary objects, *renewable energy*, and *scientific knowledge*, which while mobilized differently by different collectives, pointed to the instantiation of the same reality.

Renewable energy was appropriated divergently during the conflict, but always as a horizon of what a project *should be*. For example, the constitution of the HA as a sustainable project was crucial for developers. “This is a renewable energy project,” highlighted an executive from HA. “[I]t’s sustainable in its design and it’s [Chile’s] most efficient project regarding energy generated and the flooded surface.” Opponents to the project contested this framing by resisting the development of HA in the name of renewable energy. “If HA is authorized, the deployment of non-conventional renewable sources is over in Chile for the next 15 years, because the project collapses the market,” as put by an environmentalist.

But sustainability is not just an ethical horizon. It is first and foremost a technical intervention. Hence the Sustainable Hydropower World rested upon – and brought forward – *scientific knowledge*, and not just as a tactical problem-solving tool, but as a background against which reality was tested and confirmed. This was made clear in the debate around baseline data.

The confection, quality, and availability of baseline data were issues that for the Sustainable Hydropower World determined the limits and possibilities of the debate. The conflict gradually evolved into a dispute over who was able to provide objective information to develop baseline studies, and thereby, who should be responsible for producing publicly credible knowledge (Barandiarán 2015). For example, while both parties argued that it was the state who should be responsible for gathering baseline data and monitor whether or not the project could cause any impact, both promoters and opponents criticized the state officials for being unable to understand, let alone process complex social, ecological, and geological data. However, when independent scientific expertise was given, it was fiercely discredited. Developers often invalidated expert criticism mobilized by opponents arguing that they were based on emotion rather than technical rigor. In turn, academic and scientific consultants hired by HA were severely questioned by environmentalists. Any data presented by HA researchers were deemed insufficient, biased, or simply sloppy. For example, to show their commitment to ecological conservation developers gave baseline data on the population of *huemules* (Patagonian deer), but environmentalists were unimpressed. As a representative of the CDP pointed out, “Most of the observations were made on a helicopter, but how will they be able to see a *huemul* from a helicopter?”

The result was an atmosphere of generalized skepticism or *sustainable agnosticism*: all attempts to enact a sustainable reality found doubt and disbelief. The category of sustainability as a technical aim and ethical background, together with the mobilization of technoscience as a way to confirm the objectivity of sustainability, draw the contours of an entire world in which reality was experienced and practiced in very particular ways.

## 6. Conclusion

By accounting for the histories, stories, and events that have shaped the HA project and conflict, in this paper we have attempted to disentangle the messy threads through which hydropower has been socially and materially crafted. Instead of treating hydropower as a project that is real in a univocal way, we have followed the multiple worlds with, in, and through which HA became real. In doing so, we have presented three different – yet not entirely independent – hydropower worlds. In these, different versions of water, energy, and nature, as well as diverse visions of progress encounter each other in not fully peaceful ways.

In tracing the different worldings, we attempt to articulate new analytics to face ever-growing conflicts around hydroelectricity. The possibility of a more just and diverse hydropower development in Chile and elsewhere requires the capacity to recognize that what is being mobilized, harmed, or challenged when collectives disagree are whole worlds. The recognition of the ontological nature of these disputes, we claim, is the first step not to solve conflicts, but to imagine more sustainable futures in a changing planet.

In this sense, it seems crucial to recognize that the three worlds we have described here are not alone, nor are they harmless. As we write these conclusions, Mapuche communities are mobilizing against the development of mini-hydros in southern Chile – insofar as in whichever world these projects are “real,” they violently clash with Indigenous life projects. There are, then, other worlds – non-western worlds – for which the three hydropower realities we have described are in divergence. This paper is hence not intended to define a closed archive of hydropower realities, but to broaden the spectrum of worlds within which water, land, justice, and knowledge become lively components of multiple existences.

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