

Chapter 8

Beyond the Border: Understanding Freshwater Resources, Shared Identity, and Transboundary Cooperation in Southern Patagonia



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Abstract Rapidly increasing environmental threats that transcend political borders have highlighted the need for collaborative approaches to conservation that extend beyond protected areas. Transboundary conservation operates across political and spatial scales by involving two or more countries cooperating to conserve a border resource or ecosystem. Though the recognition of transboundary conservation is growing, there is limited understanding of the key factors that can support these initiatives or impede them from achieving their goals. This study focused on the Southern Patagonian Ice Field, shared between Chile and Argentina. To gain a greater understanding of transboundary conservation within this landscape, we conducted a case study using semi-structured interviews to explore stakeholder perspectives on key factors influencing transboundary collaboration. The findings from this project have underscored the role of freshwater resources in disputed, transboundary landscapes. Second, local community collaboration, rooted in shared identity, was the basis of existing transboundary collaboration in Southern Patagonia, demonstrating the need to emphasize the local scale in transboundary initiatives. Also, a need was identified for more meaningful engagement and inclusion of both local and Indigenous communities in this transboundary landscape.

Keywords Patagonia · Transboundary conservation · Freshwater resources · Shared identity · Transboundary collaboration

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8.1 Introduction

Transboundary conservation is an effective way to preserve shared ecosystems that transcend borders to bolster conservation outcomes in the face of drastic environmental change (Thomsen & Caplow, 2017; Vasilijević et al. 2015). The International Union for the Conservation of Nature (IUCN) defines transboundary conservation as the “process of cooperation to achieve conservation goals across one or more international boundaries” (Vasilijević et al. 2015, p. xi). Transboundary conservation initiatives have grown in popularity in the last two decades with increasing global opportunities (Mason et al. 2020). However, the planning and implementation of both formal and informal transboundary conservation have their challenges and weaknesses (Vasilijević et al. 2015), due to the complex nature of shared governance with varying institutions, jurisdictions, and local communities.

Transboundary landscape conservation is often complex and involves broadening the scale of traditional boundaries of conservation, such as protected areas, by integrating human and social aspects into the conservation area (Sayer 2009). In an effort to support transboundary initiatives, the IUCN’s World Commission on Protected Areas (WCPA) developed guidelines for translating transboundary principles into practice (Vasilijević et al. 2015). However, our understanding of the diverse factors and actors that influence transboundary border reconciliation remains largely underdeveloped (Ide 2018). To address these needs, this study investigates the following research question: What factors influence transboundary conservation in Patagonia?

8.1.1 *Transboundary Conservation in Southern Patagonia*

South America has high potential for transboundary cooperation due to its vast biodiversity and endemic species, particularly in the Andes and along the Chilean-Argentinian border (Mason et al. 2020; Thornton et al. 2020). However, environmental resource conflicts are prevalent within both countries due to economic pressures (Larocque 2020) and Chile and Argentina share a history of disputed territorial claims, particularly in the Patagonia region (Perry 1980). This background still influences modern relations between the countries and the potential for transboundary cooperation (van Aert 2016).

The Patagonia region encompasses one of the most remote areas shared between Chile and Argentina, which is home to the Southern Patagonian Ice Field. This study focuses on the Torres del Paine, Bernardo O’Higgins, and Los Glaciares protected areas in southern Patagonia. These three national parks provide an essential connectivity corridor for conservation and include the Southern Patagonian Ice Field, a crucial water resource for both countries with a still unmarked border (Fig. 8.1). While there is no formalized transboundary conservation area, a study has evaluated adaptation strategies in the area’s internationally adjoining protected areas (Solórzano 2016).

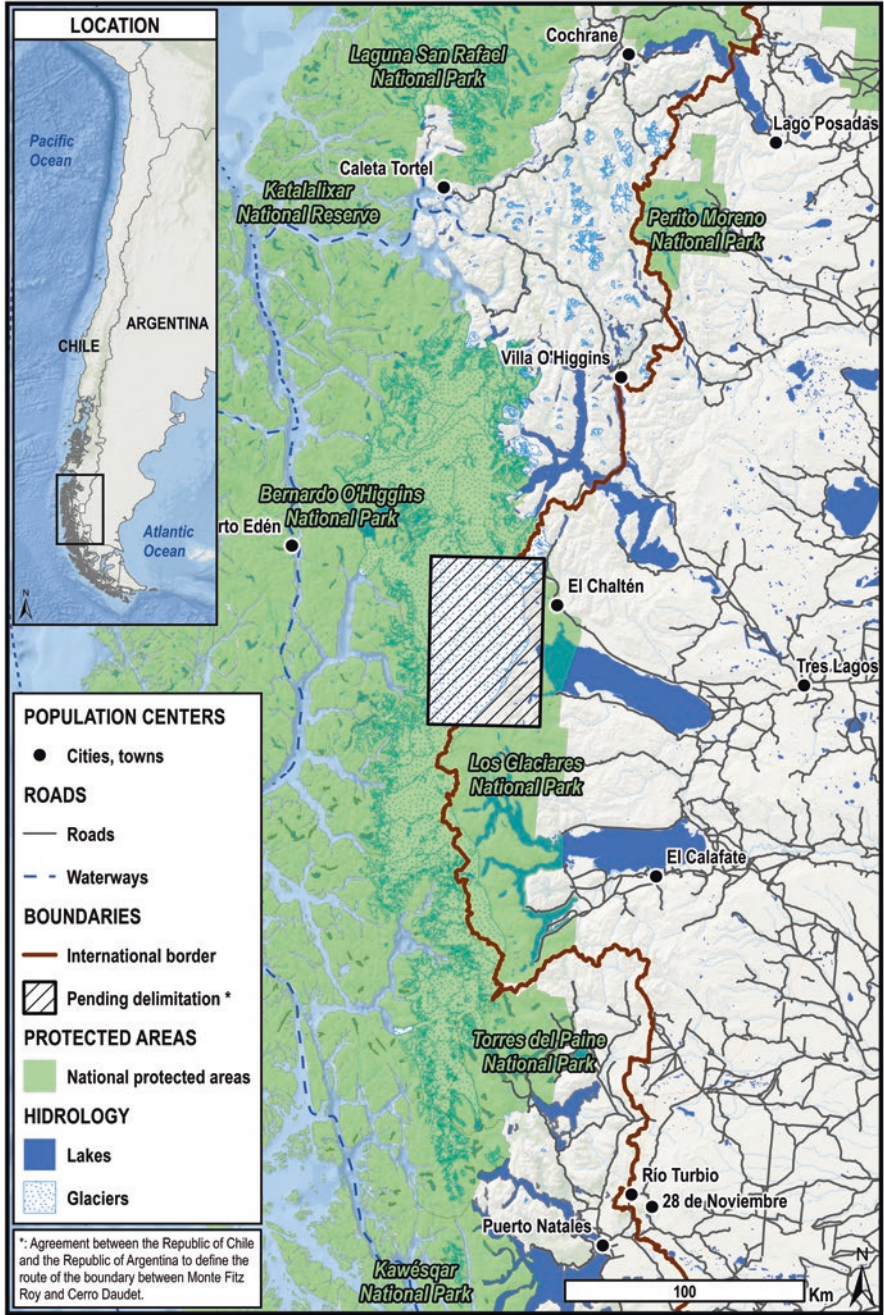


Fig. 8.1 Study area, including the Southern Patagonian Ice Field and Torres del Paine, Bernardo O’Higgins, and Los Glaciares National Parks

A key challenge for transboundary landscapes is shared freshwater resources, such as those of the Southern Patagonian Ice Field. Challenges facing these transboundary waterscapes include competition among resource uses and users, direct and indirect effects of climate change, and the tension of overlaying political boundaries with ecological ones (Zeitoun et al. 2013). Water scarcity has become increasingly more acute both on regional and global scales in the twentieth century (Kummu et al. 2016), positioning opportunities for escalated conflict around water resources. Shared water resources between states makes this challenge even more complex, given that the transboundary water challenges are exacerbated by climate change, population growth, and the overlap of independent states (Guo et al. 2016). A lack of trust between countries can significantly affect transboundary water cooperation and further contribute to social issues (Biswas 2011). Even transboundary waterscapes that have institutions for facilitating management and cooperation experience conflict (Battistello Espíndola and Ribeiro 2020). As climate change continues to affect many parts of the world, South America specifically is increasingly at risk (Hagen et al. 2022), with direct implications for its natural ecosystems and resources. These challenges of transboundary freshwater resources are evident in the Southern Patagonian Ice Field shared by Chile and Argentina, especially because the delineation of the international border within the Southern Patagonian Ice Field has never been formalized.

8.2 Conceptual Framework: Factors Influencing Transboundary Collaboration and Conservation

The multi-scalar nature of transboundary conservation includes interactions from the local to international scale and is influenced by political, environmental, social-cultural, and economic factors that can support or inhibit successful outcomes and initiative sustainability. Table 8.1 summarizes key factors that have been identified in previous literature and serve as the conceptual framework for this case study about the Southern Patagonian Ice Field.

8.3 Methods

We used a qualitative methodology to understand stakeholder perspectives on transboundary conservation in Southern Patagonia. The field work took place between August and November of 2019 and included 40 semi-structured interviews with managers, conservation practitioners, and local community members associated with Torres del Paine and Bernardo O'Higgins National Parks in Chile and Los Glaciares National Park in Argentina. A chain referral method (Noy 2008) was applied to identify participants beyond a core group identified by the researchers

Table 8.1 Supporting and inhibiting factors of transboundary collaboration and conservation

	Supporting factor	Inhibiting factor
Political	Formal agreements and processes (Chettri et al. 2007; Vasilijević et al. 2015) State-level support (Mackelworth 2012)	Historical and ongoing tensions between states (Portman and Teff-Seker 2017; Taggart-Hodge and Schoon 2016) Differences in political systems, laws, and agendas (Taggart-Hodge and Schoon 2016; Vasilijević et al. 2015) Security and border issues (Portman and Teff-Seker 2017; Vasilijević et al. 2015)
Environmental	Shared, charismatic species (Knight et al. 2011; Lambertucci et al. 2014; Mason et al. 2020) Shared goals and vision (Portman and Teff-Seker 2017)	Invasive species (Jaksic et al. 2002) Climate change and resource challenges (Zeitoun et al. 2013) Industry threats (Mackelworth et al. 2013)
Economic	Long-term, sustainable funding (Beever et al. 2014; Mackelworth 2012) Community-oriented governance of tourism (Chiutsi and Saarinen 2017) Stakeholder economic profitability (Portman and Teff-Seker 2017)	Imbalanced financial resources between countries (Portman and Teff-Seker 2017) Competition and national interests in tourism (Ioannides et al. 2006) Corruption and lack of transparency (Chiutsi and Saarinen 2017)

and their contacts. Interviews were conducted until thematic saturation was reached (Hennink et al. 2017). Table 8.2 provides background on the stakeholders interviewed with 24 interviews conducted in Chile and 16 interviews conducted in Argentina. The presence of two protected areas of interest in Chile influenced the higher number of Chilean participants. Interviews were mainly conducted in Spanish, with only four interviews conducted in English.

This project included a few participants who are members of some of the Kawesqar communities within the region. The findings are not a comprehensive account of Indigenous perspectives, or Kawesqar perspectives. However, perspectives from members of these communities were sought in particular because historical and continued oppression of Indigenous peoples is central to many landscapes, including Patagonia (Gasteyer and Flora 2000). Before the conquest of southern Patagonia led by European immigrants, there were at least four traditional Indigenous communities in the area: the Selknam, Kawesqar, Yaganes, and the Aonikenk. While it is uncertain how many descendants of these communities remain, there is still an Indigenous presence within the landscape. Indigenous involvement and management, allowing for agency over culture, land, and livelihoods, are possible and important for transboundary conservation in Patagonia (Sepúlveda and Guyot 2016).

The interview questions were developed from key understandings of transboundary conservation identified in the 2015 IUCN Transboundary conservation guidelines (Vasilijević et al. 2015). Participants were asked to discuss (a) their own experience with (and knowledge of) transboundary conservation in the area; (b) challenges they believed were evident to achieving transboundary collaboration; (c) what they thought was necessary for establishing more transboundary conservation;

Table 8.2 Interviews conducted in Chile and Argentina with stakeholder groups

Stakeholder group	Reasoning for inclusion	Chile interviews	Argentina interviews
Tourism worker or guide	Immense amount of tourism in the region	5	5
Protected area/ National Parks employees	National parks central to landscape and border area	5	6
Government and ministry employees	To discuss any previous transboundary collaborations and government views on binational collaboration	3	0 ^a
Community and citizen leaders	Insight into what transboundary means for local communities now and in the future	3	1
Conservation organization employees	Provide insight on local conservation goals and efforts	5	4
Indigenous community members	Understand Indigenous representation in current context	3	0 ^b

^aThe researcher was unable to contact any government representatives in Buenos Aires, most likely due to the transition in the government that was taking place after a presidential election in October 2019 in Argentina

^bWith limited time, the researcher was not able to make adequate efforts to contact Indigenous communities and their descendants in Argentina

(d) whether they believed there was even potential for transboundary collaboration; (e) how they thought transboundary conservation would affect them and their work; (f) the role the government and communities should play in transboundary conservation; and (g) what they would view as successes in transboundary conservation. Three sets of interview questions were used, with language that varied slightly depending on which type of stakeholder the participant was. There was one set of questions for local community stakeholders, one set for government and ministry representatives, and one for APN and CONAF employees. The questions aimed to allow participants to identify and detail key factors that support or inhibit transboundary conservation in the local landscape, allowing for comparison with those identified in the literature and compiled by the study authors as a conceptual framework of transboundary collaboration and conservation (Table 8.1).

All interviews were recorded, translated, and transcribed. Interview transcripts were coded using NVivo qualitative data software. Open and axial coding was used to categorize themes from interviews (Böhm 2004). The first round of coding emphasized a comprehensive collection of themes categorized into broad nodes. To support intercoder reliability, initial coding was conducted by several members of the research team to discuss thematic nodes and collectively develop a coding scheme for the remaining part of the data analysis. During the second round of coding, existing thematic nodes were organized into second and third-level nodes that had more specificity in content.

8.4 Results

In interviews with local stakeholders, all factors listed in Table 8.1 were identified by participants as relevant to transboundary conservation in the Southern Patagonian landscape, with the exception of language barriers. Many of the supporting factors, including state-level support and participatory local community engagement and management, were noted as absent by participants. In addition to factors identified in Table 8.1, other key factors particular to the landscape emerged from this study. Participants identified knowledge exchange as a supporting factor for transboundary conservation, as well as existing local collaborative efforts. Several inhibiting factors were identified, including the presence of freshwater resources, a lack of regional conservation standards, over-tourism in Patagonia, political turnover, and the undefined border, which is unique to this transboundary landscape. Select results as well as interview quotes and excerpts are highlighted in the section below.

8.4.1 *Environmental Factors Influencing Transboundary Collaboration*

8.4.1.1 Ecological Factors in the Shared Patagonia Landscape

Participants emphasized how the Southern Patagonia Ice Field, a freshwater reserve, are at the heart of the shared Patagonian landscape. Many of the participants shared their beliefs that transboundary collaborations are needed to protect and conserve the region's ecology, and specifically the freshwater reserve. For example, a Chilean Nacional Forestry Corporation (CONAF) employee noted: "Yes, ecosystems are the same, they know no borders. So, we should establish more work [together]". A local Chilean citizen leader noted, "I believe first in the planning... it would make sense to me for protection of the water resource, which belongs to both countries and the world."

One Argentina conservation organization employee noted the connectedness of the shared landscape in contrast to the dissonance of political management,

Ecologically, it [the landscape] is the same...we have situation A,B, and a line through the middle... You have the same flora, the same fauna, the same water, the same everything...the agenda that one [country] sets, marks the fate of an area that is much more encompassing than the little dot you have to govern.

However, the area is associated with a history of complicated water politics between the two countries that include controversial damming and extraction projects. A Chilean citizen leader discussed the region's past examples of water conflicts,

Many years ago, they wanted to install dams, five mega-dams, and there were many years of local fighting. We were involved with almost all of the [Patagonia] regions in the fight so that they did not construct the mega-dams.

Several participants highlighted the need for connectivity in the landscape. One CONAF employee noted, “I actually believe personally that this [is] more [of a] global vision, independent of specific work, the view should be used in terms of preservation and conservation in the eco-regional level.” One Chilean tour guide stated that the connectivity that could be established through cooperation would combat issues of fragmentation in management, “I think it would give more meaning to the ecosystem we have there in the sense that it would no longer be isolated islands, but that we would be a completely whole ecosystem.” Overall, there was a strong awareness of the shared landscape and the importance of conserving it.

8.4.1.2 Combatting Transboundary Threats

Environmental threats can serve as a motivation for transboundary collaboration. Some of these threats include the spread of invasive species, fires, and pressures for extracting resources. Mitigating threats, particularly climate change, were emphasized by participants as a need for cooperation. For example, an Argentina National Parks (APN) employee stated, “no matter what, working as Argentina or Chile alone won’t stop climate change.” One major example is collaboration to combat fires and other emergency responses. One APN employee shared that he worked with people from Chile *only in emergency situations*. Another APN employee commented that, “...there has been collaboration when the fires are really big, the crew has traveled to combat fires from one side to the other, as many Chileans have come here as Argentinians have gone to Chile.”

Conflict in Patagonia is also shaped by the role that extractive industries and foreign actors play in the economic development of the region. The threat of extractive industries was noted by participants on both sides of the border. A Chilean government employee discussed the role of salmon harvesting and how that affects the Patagonian landscape, “the salmon business in Chile, it is the worst of examples. It settled in Patagonia, in the south of Chile... and has a way of raising and cultivating, harvesting salmon [that is] very harmful for the environment.” This extraction industry is extremely controversial with local businesses displaying signs stating that the salmon industry is not welcome in Patagonia (Fig. 8.2).

Another Chilean ministry worker discussed challenges in working with extractive industries,

I have to sit down and talk to him and convince the mining industry that it cannot get and exploit everything it can think of, or that the forest industry cannot come and load three hectares of forest and then leave. You realize, with the economic logic that exists in Chile, it is difficult.

Participants also emphasized how information exchange and dialogue were integral to transboundary conservation. One APN employee shared what would be useful for improving their own work, “Collaboration and the exchange of experiences, of knowledge, personal exchanges.” In addition, a conservation organization employee from Chile described this importance in terms of evaluating transboundary success,



Fig. 8.2 A flier opposing the salmon industry in a local restaurant window in Puerto Natales

“coming together to dialogue at a common table would be a success for me.” Knowledge exchange was desired by several participants, particularly those who worked directly with CONAF and APN to manage the national parks.

The native fauna and flora were also at the center of discussion for any future collaboration, reflecting shared species is an important motivator for collaboration (Table 8.1). An APN employee emphasized shared knowledge of species’ populations as a goal,

To have a real knowledge of the animal populations that live on both sides of the border...maybe the huemul, the more emblematic species, to know the dynamic of the huemul populations and to know the quantity of populations and real needs of the species and to be able to get specific conservation tools for it.

Conservation of the huemul, the endemic Southern Andean deer that is increasingly threatened due to environmental change, was prioritized by CONAF and APN participants. An APN employee summarizes this sentiment,

Our challenges are continuing work on the huemul...the observations they have in Chile, the huemul are six kilometers from the border with Argentina and it is very important for us to work together to get those animals back to Argentina or to start to circulate between Argentina and Chile.

The huemul was not the only shared species that was mentioned in interviews. One Argentinian conservation organization employee gave a description of what transboundary communication can bring for the protection of the puma, another emblematic species of the region by noting economic and policy disparities,

On that side [Chile] they have made a fortune watching the animal [puma] live and on this side, poverty paid for killing it so that it doesn't eat the sheep that is worth nothing and that is negative for nature. We are talking about the difference being a border. If that border were eliminated... because it is precisely two parks, this [Chilean] positive experience could be capitalized so that these people [Argentines] have more money and when they have money they realize 'The puma serves me alive, not dead'.

While many participants focused on shared and charismatic species of the region, some pointed to the threat that invasive species have on the landscape. An Argentinian interview noted that there is limited collaboration around invasive species,

...here [Los Glaciares National Park] we invited people from Torres del Paine...It was all our staff, people from the province of Santa Cruz and Torres del Paine, because we have some problems with the invasion of mink and in Chile [they have it] too.

Invasive species still provided an opportunity for transboundary collaboration in this landscape, rather than being an inhibiting factor (Table 8.1).

8.4.2 Socio-cultural Factors Influencing Transboundary Conservation

8.4.2.1 Shared Identity

Participants reflected on the shared social identity between Chileans and Argentinians in Patagonia. A Chilean community leader described the nature of shared backgrounds between Chileans and Argentinians in Patagonia,

We are more [like] siblings...In the north, in Santiago for example, there is a lot of rivalry between Chilean and Argentinians, here there is a lot of family connections, also because many people live 30 km from Argentina...they have worked many years there and they came to live in Chile or the reverse. There is much more human connection.

One Argentinian guide further explained the importance of overcoming differences, "Border is something with history, but if we want to have a better world, we need to work all together. In that sense, transboundary is not only Chile and Argentina, but also worldwide. It is the only way."

Although a shared identity exists, there were still a few instances of bias against the other side coming through in interviews. Many participants lamented the lack of connection between the two sides. There have been challenges in establishing relationships across borders between protected area staff as explained by an APN employee,

I think it [transboundary conservation] would be useful, but difficult at the moment because we do not have any connection. This was the first time I met some people that worked there and in fact I don't know the national parks on the other side. Nobody has gone, not for work or for personal travel.

A couple of participants who worked in protected areas inquired about the other country's protected areas to the researcher, demonstrating how little connection and collaboration there is between the two governments' national park services. A Chilean conservation organization employee explained why they believed there was this lack of connection,

[Chile] in the south...has a better relationship with the people of Argentina than the rest of the country, but I feel that they [the governments] are not creating instances of working more collaboratively and something more concrete between countries... the intention is there, the will is there, but they have not created the space for it.

8.4.2.2 Engagement and Conflict with Local Communities

Local communities in Patagonia, which includes Indigenous communities, are engaged in ongoing efforts to preserve their land and cultures. On the Chilean side, locals who are members of the Kawesqar communities, located in and around the Bernardo O'Higgins National Park and Torres del Paine National Park, still remain fighting to preserve their cultures and people while pursuing recognition by the Chilean government. Given the history of and current oppression, many in the community do not trust the Chilean government. One member of a local Kawesqar community expressed how the thought of more involvement from national governments is nearly unfathomable given the ongoing fight for recognition of Indigenous territories,

I insist the first thing is to recognize and respect Indigenous territories; the first big step. Chile has never done it.... Because today for example, within Indigenous territory, there is sovereignty of other countries...entrepreneurs from other countries have been granted perpetuity in the delivery of concessions and they are the owners of those spaces. That is very criminal, especially if these countries do not respect the legislation that is here today and do not respect Indigenous territories.

When asked if they would support transboundary collaboration, a member of a Kawesqar community stated, "I support conservation, not transboundary, but by Indigenous people." Social conflict and oppression of Indigenous communities, like the Kawesqar communities, are a critical factor for all actors to consider moving forward if there is to be change that can lead to equitable Indigenous participation in any collaboration. These participants highlighted that the current model of conservation by the Chilean government is not working in regard to their rights and recognition.

The vision for many stakeholders of transboundary collaboration involved ample community participation and representation. A Kawesqar community member emphasized the role of consultation and equal treatment of communities with those at the national level,

I think that the first to be consulted are members of the peoples that are on their own territory. More than a consultation because the ones who decide alone are the governments and the governments must decide together with the peoples to choose the best form of conservation.

This lack of community participation goes beyond Indigenous communities to include the social legacies of past historical conflict within both countries. One local community leader in Chile described how the Chilean dictatorship under General Augusto Pinochet has affected how Chileans participate and perceive their own power,

Chile has not had 50 years since the last dictatorship...Becoming an actively civic and empowered and informed community takes more than a generation. Now there is tremendous change, we are many, but those in power still do not have the concept of civic participation of the communities.

Local community members also expressed frustration at the loss of their identity in Patagonia. One Chilean tour guide noted that the decisions made in the capital city, especially in regard to authorizing private sector concessions in the park, do not always represent local interests or cultural contexts,

An authority that lives in the center, in the capital, will never come to see how that is and when they decide, usually the place does not resonate with them....However, when things are decided by local communities, everyone feels part of it...we in Puerto Natales have been suffering for a long time that the park is a concession to private people coming from other places in Chile.

However, not all participants believed that there was no hope for locals. One local Chilean community leader briefly stated how communities in Patagonia have been reclaiming their power, "But you know that the citizens have the power, the municipality doesn't, and that is the difference."

8.4.3 Political Factors Influencing Transboundary Conservation

8.4.3.1 Border Claims for Southern Patagonian Ice Field Resources

Participants reflected on how the area's unique political geography affects the plausibility of effective transboundary conservation. The Southern Patagonian Ice Field border is at the heart of the Patagonia landscape and is a massive freshwater reserve. This area's full demarcation is still not formalized, as both countries claim a specific section of the border.

A Chilean ministry worker noted how this ongoing controversy impedes binational relations and collaboration,

They [the Chilean government] avoid using or mentioning the word “binational” because with Argentina we have some places throughout the frontier that are still unresolved. One piece of the frontier is unresolved, especially near to the ice caps, the big ice caps. So, it [transboundary work] is a very controversial point.

This formalization and demarcation have been at a standstill since the border claims made by each country in 1998. Another Chilean government employee discussed some skepticism about the motivation for transboundary work,

In what exists in the case of Chile and Argentina with the southern ice fields, I understand it is a controversy over demarcation...it would be very convenient for Chile and Argentina to declare all of this a protected area, because it is a reserve of water, etc., but that is a political problem.

There are complex political histories between Chile and Argentina. One local community leader in Chile discussed this in the context of freshwater resources,

They are strategic places, and the state has to worry, not the citizens. It is the state of Chile that has to worry about the border situation... they are strategic places in the water issue, it has a lot of water, the situation of freshwater is going to be one of the biggest problems that we are going to have in the future.

However, not all participants agreed that the Southern Patagonia Ice Field is a challenge. One tour guide described the connection in the shared history of the Southern Patagonia Ice Field as more of an opportunity for collaboration,

I think that there are more things that unite us than divide us. Including between Bernardo O’Higgins and Los Glaciares Park, just in the middle of the Southern Ice Fields, there is a political sector without a border... That already starts to say that the border does not divide us but binds us.

8.4.3.2 Political Turnover and Distrust

During the time of the study, there were socio-political changes within both countries. A Chilean CONAF employee described their perception on the socio-political situation in Argentina and how that affects both conservation and binational collaboration,

Today the unemployment in Argentina, the inflation in Argentina are social problems that are concerns there...First the Argentines need to resolve their basic needs and employment issues..., they have many other problems that in the long run make them not concerned about conservation actions... That also hinders the work that you can do between countries.

Political turnover is another challenge to transboundary collaboration efforts as explained by a local community leader in Argentina, “we have just started another four-year process in which to talk about the bad stuff the previous one [government] did, then there are no plans of sociocultural models and socioeconomic models that go beyond more than 4 years.” This turnover and change in governments significantly affect binational relations and the potential for transboundary collaboration. One APN employee described this effect in terms of political leadership,

Many years ago, there was more rivalry between Argentina and Chile. Today, for many, that has disappeared and there is more [collaborative] work. There is closeness between the two countries. It depends a lot on each country's political alignment.

There is also significant distrust of national governments, given the political histories of the countries. More recently, this has been an issue in Chile that led to the citizen movement demanding a more fair and just government system. One member of a Kawesqar community explained some of their distrust towards the government,

Until today, we have applied Chilean politics to be able to reclaim [territory]. The Chilean politics are so bad, but there are others that allow you to do things...I could not say if it [transboundary conservation] would be good or bad, but from my perspective, already having a government involved, it is bad, so having two [governments] will be much worse.

Similarly, several participants lamented the direction of the Chilean government. A local community leader from Chile described their perspective on recent changes in the government and its actions, "The state of Chile was weak, now with the government it is worse, because for this government the private side develops, takes over, puts up the money, and the state does not take responsibility."

In terms of binational political relations, there are concerns around how the two countries would negotiate based on concerns about sovereignty. One representative of a Kawesqar community stated, "Now thinking in...these three units, Torres del Paine, Bernardo O'Higgins, and Los Glaciares, as to the extent of the territory, it is a lot of land for two countries to agree to share, so the question is difficult." These sovereignty issues reflected the political histories of Chile and Argentina and concerns about future transboundary cooperation. One municipal government tourism employee from Chile described the potential for political backlash,

I don't think it is easy, it isn't easy...you can see it today in Europe, you can see it with Brexit, they united around a great proposal, but they are already having serious difficulties and that has nothing to do with countries, it has to do with how we organize ourselves as communities.

Many stakeholders emphasized the need for an established political process. A local citizen leader in Chile stated, "So for it [transboundary conservation] to happen, it is political decision, nothing but political will must exist to make an agreement." The lack of political forums to work on transboundary conservation issues was evident in interviews with various stakeholder groups.

8.4.4 Economic Factors for Transboundary Conservation

8.4.4.1 Limited Resources and Management Capacity

Limited resources and funding for protected area management are major factors that can influence any future transboundary collaboration. One conservation organization employee discussed their role supporting CONAF in Chile, given its inadequate resources from the national government,

I think a lot of people think of CONAF the wrong way and think they don't do a lot to protect the park and they [CONAF] really do and there are a lot of initiatives happening and for the very little funding they have...we are filling gaps because there is nobody there right now filling those gaps.

Overall, there was a perception from both sides of the border that CONAF does not have adequate resources to manage Torres del Paine, an extremely popular protected area. Same for the less-visited Bernardo O'Higgins National Park; there are very few CONAF staff working to manage the largest protected area in Chile.

In addition to the need for more sufficient funding, there is a stark need for better allocation of resources. One Chilean conservation organization employee highlighted this need, "I think the optimization of resources is something that the protected areas lack, both in Chile and Argentina." Some participants believed transboundary cooperation could provide a solution to the lack of resources that is faced by protected area staff on both sides of the border. A Chilean conservation organization employee described this vision for future cooperation,

The resources that are there to manage the parks, as much as in Argentina as in Chile, are extremely scarce. [With transboundary collaboration], you can share park rangers, you can share funds to use for research, as long as the duties and rights of each one are fair, and the duties and rights are clear.

8.4.5 Tourism Factors in Transboundary Conservation

A focus on economic prosperity from tourism has made conservation more difficult as parks have shown signs of overcrowding and degradation due to visitors. Perceived over-tourism in the Patagonia region was a common sentiment among participants. One Chilean tourism employee in the town of Tortel on the edge of Bernardo O'Higgins National Park described this aversion to more tourism,

...we do not want massive tourism...With the arrival of the ferry, that comes once a week with 140 passengers, Tortel already collapses in January and February, we do not have sufficient capacity to receive all of the passengers, we still aim to keep the environment as it is for many years to come.

Similarly, another Chilean tourism employee described the concern about increased tourism with transboundary conservation,

I imagine that if they made an agreement of this big park of Patagonia, the big park of glaciers in Patagonia, that is going to be widely announced, all of the world is going to want to come and what happens to conservation? In the end, I think that what is the most important is to conserve and to not transform [the parks] into a Disneyland.

Overall, high levels of tourism are a controversial point at the center of any discussions around binational collaboration for Torres del Paine and Los Glaciares National Parks. Patagonia is a major international destination for visitors from around the world. Many small towns have developed solely around the tourism market. This increase in tourism had led to the rapid development of towns like

Puerto Natales in Chile and El Calafate in Argentina. Both towns grew exponentially with the high growth of international visitors, and largely consist of lodging, tourism, and dining options.

Currently, there is shared Patagonia tourism between the two countries. Several participants noted that it is common for visitors to cross borders during their tourist visit. There has been some engagement for coordinated tourism between tour guides in the region. However, there are significant differences in tourism operations between the two countries. For example, Chile does not have requirements for tour guide training, while Argentina requires guides to be university-educated. In addition to studying in universities, guides in Argentina must also get specific certifications to work within national parks. While several Argentinian stakeholders described this difference as a detriment to collaborative work, some Chileans did not find it problematic.

8.5 Discussion

8.5.1 *National and International Politics of Transboundary Water Resources*

Participants strongly recognized a shared landscape and shared water resources that do not adhere to Patagonia's political borders. The role of water within the landscape was emphasized by participants, reflecting the importance and complexity of transboundary freshwater resources like the Southern Patagonia Ice Field. According to participants, the geopolitical border and sovereignty dispute is shaped around freshwater resources, mirroring historical classification of Chilean and Argentinian border conflicts (Child 1983). In addition to these conflicts, the shared value and concern for water as a resource reflects the risk of increasing water scarcity in South America (Hagen et al. 2022). One participant noted that the term "binational" in relation to this area was avoided by both governments, further underpinning the constraint that the Southern Patagonia Ice Field's freshwater resources can be in shaping any transboundary interaction on a formal level. This reflects the tension between managing transboundary landscapes and recognizing political pressures (Zeitoun et al. 2013).

In addition, a level of skepticism was expressed about the motivation behind either government participating in transboundary collaboration around the Southern Patagonia Ice Field, which reflected concerns about sovereignty and territorial claims in the name of resource conservation. This strong awareness of the political aspect of transboundary water resources was not just expressed by government representatives, but also by local actors. Local participants were sensitive to the long histories of border disputes in the region, different from previous claims of a lack of diplomatic awareness from lower-level actors in transboundary conservation (Büscher and Schoon 2009). As climate change threatens global water security,

geopolitics may become increasingly tense as the Southern Patagonian Ice Field could influence transboundary cooperation and conflict.

International dynamics in water resources provide an extremely challenging context (Zeitoun et al. 2013), with overwhelming considerations of both sovereignty and resource scarcity. Our findings illuminate the challenges of political turnover and changes in administrative priorities that disrupt progress and increase the vulnerability of transboundary efforts. Transboundary water interactions need to be situated in a multidimensional political context (Zeitoun and Mirumachi 2008). Shared freshwater resources in this case study contributed to state actors' aversion to utilize the term "binational." The lack of state actors, processes, and structures in place also limited the support that stakeholders had in localized efforts of collaboration. On the other hand, the participation of state actors in the case of Southern Patagonia can fuel distrust given political histories of both countries that include US imperialism and military dictatorships.

8.5.2 Shared Identity and Local Collaboration

Despite the challenges discussed in previous sections, this study also found strong potential for transboundary conservation between Chile and Argentina around Torres del Paine, Bernardo O'Higgins, and Los Glaciares National Parks. Shared identity underpins many of the existing collaborative efforts at the local scale despite non-formalized partnerships and political uncertainty at the national scale. This shared Patagonian identity is rooted in being geographically and culturally unique and connected with the natural environment. Some participants stated that they feel more like neighbors with the other country's Patagonian inhabitants than their fellow countrymen who live in the major cities. A similar shared identity was found in another transboundary conservation case study along the Zimbabwe-Mozambique border, which highlighted historical linkages between communities as well as ethnic ties (Kachena and Spiegel 2019). Overall, our findings highlight the artificiality of borders, whether imposed by colonialism or modern nation-states, in not only delineating resources and ecosystems but also defining community.

The shared objectives of conserving landscapes and combating climate change that emerged in this study build on the already high potential for transboundary conservation along the Andean range (Mason et al. 2020). Many local stakeholders emphasized the importance of working together regardless of past histories and current challenges, suggesting that community connections are more resilient to changes than national relations given frequent political turnover and competing state interests. While national level support is integral to starting and formalizing transboundary conservation initiatives, integrating and empowering local communities are important to support and sustain local economic and conservation outcomes (Schoon 2013). Some local community stakeholders have regular, informal communication, while other examples are more formalized like the natural reserves network that hosts regular meetings for knowledge sharing and includes representatives

throughout Patagonia. Similarly, local participants mentioned their collaboration on search and rescues on the Southern Patagonia Ice Field, fighting wildfires, and cross-border tourism. These examples mirror the emphasis for locally driven development initiatives in Patagonia (Blair et al. 2019).

Our findings also indicate local stakeholder distrust in the national government, given the participant responses that highlighted years of Indigenous oppression and exclusion of local voices in Patagonia. Some areas in both Chile and Argentina have experienced this tension with the government over its economic priorities with ranching, tourism, and extractive industries (Blair et al. 2019; Reboratti 2012). Locals are more willing to be supportive of conservation areas when involved in planning processes (Andrade and Rhodes 2012); yet there is a lack of community inclusion in the establishment of conservation and tourism in Patagonia (Blair et al. 2019), which was noted by participants in this study. The shared identity at the local scale provides an opportunity to continue to work beyond political borders and use local relations as the key foundation for conserving Patagonia landscapes despite disputes at the national and international scales. This finding is crucial for shaping transboundary conservation dialogues in the future, as political borders may seem divisive, but locally there is a shared ecological and cultural landscape that creates opportunities.

8.5.3 Bridging Local, National, and International Scales

There is evidence of power imbalances between stakeholders in Patagonia's water conflict (Reboratti 2012) and in transboundary water interactions around the world (Zeitoun et al. 2014). Local referendums have been suggested to resolve multi-stakeholder water conflicts within Argentina (Reboratti 2012). The Southern Patagonian Ice Field may present an opportunity for a multi-stakeholder, multi-national referendum for delineating and/or managing these shared resources. However, any action within the region of Patagonia must come with a critical awareness of the systems and processes that catalyze injustice within transboundary waterscapes (Zeitoun et al. 2014).

Conflict is further exacerbated within southern Patagonia around recognition, inclusion, respect, and rights of the region's Indigenous communities, specifically the various Kawesqar communities. While Indigenous perspectives were not sought as a central component of this study, the complicated relationship with Indigenous peoples in Patagonia emerged in interviews, highlighting the important need to continue to address local and Indigenous rights in Patagonia. This is particularly concerning considering that Indigenous communities and other marginalized groups will most severely feel the effects of climate change in South America (Hagen et al. 2022). Complicated relationships with local communities within conservation spaces are not unique to the Kawesqar communities in southern Patagonia but extends to other Indigenous groups and local peoples within Chile and Argentina (Sepúlveda and Guyot 2016) and around the world (Muboko 2017). Rights-based approaches can be incorporated into transboundary conservation, requiring

Indigenous self-determination and sovereignty (Hsiao and Le Billon 2021), which are noticeably inadequate in conservation efforts in the Southern Patagonian landscape despite the efforts that have been made by both government agencies and conservation organizations.

This study demonstrates the need to further operationalize transboundary water conservation and governance as a multi-stakeholder endeavor. Multi-scalar conceptualizations of both the social and environmental threads of transboundary landscapes is critical (Hsiao and Billon 2021). The results of this study highlight the fact that locals still are not adequately included or enabled in regard to both conservation initiatives and transboundary interactions in their landscapes. Transboundary conservation operates in complex geopolitical situations (Barquet 2015) and the people within the landscapes illustrate complex and changing relationships. Local community engagement is crucial to avoid further disenfranchising those who inhabit the threatened regions. Transboundary water governance must recognize and prioritize marginalized peoples' needs in its operation (Upadhyay 2020). State actors in transboundary collaboration and negotiation can inflame conflict within the landscape (Barquet 2015) and drown out the voices of those most affected by the initiative (Petursson et al. 2013). States are obligated to simultaneously ensure both ecological and social peace in transboundary conservation areas (Hsiao and Le Billon 2021); yet this study's results imply that both the Chilean and Argentinian states are not meeting this responsibility.

The 2015 IUCN Guidelines on Transboundary Conservation highlight the need to identify and consult stakeholders as well as determine who should convene the transboundary conservation effort (Vasilijević et al. 2015). This implies that the state(s) involved are not needed to be the lead convener. There are active and passionate local stakeholders throughout southern Patagonia who are convening and organizing transboundary conservation in the face of continued oppression and marginalization. Transboundary cooperation can be successful through localized efforts, even in the face of diplomatic and political tension at the international scale (Portman and Teff-Seker 2017). This research demonstrates that any transboundary cooperation must be inclusive and representative of communities who inhabit that space while simultaneously de-emphasizing efforts that solely focus on states and their narratives. In both academic and professional realms, discussion of resource conflicts in terms of only state actors is a disservice to border communities who have endured within the landscapes.

8.6 Conclusions

The aim of this research was to investigate transboundary conservation efforts, interactions, and relationships around the Southern Patagonian Ice Field in Chile and Argentina. We found that the presence of freshwater resources has significantly shaped this landscape and border situation in a way that differentiates it from other transboundary landscapes, presenting the need for a distinguished subfield of transboundary research that focuses on transboundary freshwater resources. Second,

despite the lack of official government spaces, opportunities, and resources for transboundary dialogue, several locals in Patagonia have committed to transboundary collaboration and conservation, demonstrating the importance of community efforts in defining transboundary collaboration and conservation. Also, like many other situations in conservation, there is a significant divide between national and local engagement in the shared landscape.

There were study limitations that can inspire future research. First, the researcher's positionality as a foreign, Western researcher, may have influenced participant responses and limited the understanding of the region's historical and present context. Second, additional time would have allowed for more extensive stakeholder representation compared to the shorter interview period. During or after the time period of data collection, several political changes happened, and social movements occurred which may have influenced the application of findings. Also, limitations in translations and understanding arose from the non-native understanding of Chilean and Argentinian Spanish of the researcher. In terms of future research, there is the need for an analysis of the history of binational relations between Chile and Argentina in order to better understand what governance structures are currently in place for supporting or inhibiting transboundary conservation in other regions of Chile and Argentina. There is also the opportunity to conduct comparative studies with similar border contexts to evaluate how these themes translate to other geographies.

This study highlighted ongoing local-scale transboundary collaboration around Torres del Paine, Bernardo O'Higgins, and Los Glaciares National Parks in southern Patagonia despite a lack of formalized cooperation at the national scale. Historically and presently, there are significant challenges and conflicts for meaningful engagement with local communities, particularly with Indigenous groups, that must be resolved to ensure equitability and efficacy of any transboundary conservation efforts. This has been paralleled by many other transboundary studies across geographies and highlights how transboundary conservation must be transformed to prioritize and support local communities along borders.

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