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Contractual Reciprocity and the Re-Making of Community Hydrosocial Territories: The Case of La Chimba in the Ecuadorian *páramos*

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Abstract: In the Andes, indigenous communities are being increasingly besieged because their *páramos* act as water providers for cities and irrigation systems downstream. This has led indigenous communities to protect their hydrosocial territories from external actors and re-create them to contest these threats. In this context, we analyse how the Kayambi community of La Chimba in the northern Sierra of Ecuador has managed to defend and secure its hydrosocial territory through the creation and re-creation of its indigenous identity and networks and related cultural politics that find expression in different forms of contractual reciprocity. As a result, the community hydrosocial territory (re-)creation itself is a weapon of resistance, a decolonising process where rural communities continuously can produce their own forms of development. This is particularly important in a context where governments in the region are relying on extractivism and in the exploitation of indigenous territories.

Keywords: cultural politics; contractual reciprocity; community territories; hydrosocial territories; collective action; governance; *páramos*; Andes; Ecuador



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1. Introduction

As in many other parts of the world, in the Andean region, the pressure on water resources has increased over recent decades due to climate change, population growth, urbanisation, the development of extractive and hydroelectric industries, and changes in agricultural irrigation models [1–5]. In this context, community territories in headwaters of basins (that often correspond to the *páramo*, a unique, Andean high-altitude ecosystem found above the timberline and below the snow line, whose vegetation is composed mainly of grasses, giant rosette plants and shrubs, [6] have received increasing attention as spaces that must be protected to guarantee the provision of water to urban, industrial, and agricultural users downstream. For example, big cities like Lima and Quito, have a growing demand of clean water from these territories in the high Andes [7–10]. To protect these spaces, external and powerful actors design and apply various strategies aimed at controlling and governing the peasant and indigenous communities that live in and depend on these spaces, creating processes of (de-)territorialisation under different powerful discourses, such as the need of revenues from flower exportation or climate change crisis. Consequently, territorial pluralism is created, but we will focus on community territories [11–13]. However, these communities are not passive recipients of such territorialisation processes. On the contrary, based on their long cultural and place-based history and identity, they resist these processes and actively develop their own processes of community (re)territorialisation to maintain control over their lands, the management of their resources, water, *páramos*, and their own cultural practices and forms of organisation and self-management, renewing the sustenance of their livelihoods [14–17].

In this article, we explore based on notions of social capital how contractual reciprocity and links with external actors and networks contributes to the processes of community

resistance and (re)territorialisation, with emphasis on identity-based Andean reciprocity and solidarity norms, water values, irrigation techniques and community water management, and symbolism. Our arguments are illustrated by a case study of the indigenous community of La Chimba in the Andes region of northern Ecuador. This community relies heavily on irrigated agriculture and livestock and use its *páramos* on the slopes of the Cayambe volcano extensively for farming beef cattle [18,19].

In the first section, we theoretically explore the creation and re-creation of social capital of an indigenous community and how it coalesces and accesses other capitals that strengthen the community's capacity to sustain its hydrosocial territory. In the second section of this paper, to understand how this theoretical framework is reflected in the case study, we highlight how every aspect of community life revolves around water, and we present the role of social capital within the community, as well as that of external social capital established through human, institutional, and collaborative ties with state institutions, the Catholic Church, NGOs, and other indigenous communities and irrigation associations. Both types of capital are finally analysed in the concluding section as it reinforces the hydraulic identity and unity of the community hydrosocial territory.

2. Social Capital, Cultural Politics, and Contractual Reciprocity as a Tool to Understand the Consolidation of the Community Hydrosocial Territory in the Andes

A territory is historically constructed through interactions between society, technology, and nature. Territory is the result of interactions that create contents, spatial borders, and socio-natural relationships and is reproduced through social practices, power structures, and natural resource use and management systems in specific geographical spaces [20–22]. The interactions that shape these territorial systems connect the biophysical, technological, social, and political realms. These relations have been theorised through the notion of hydrosocial territory, which is defined as:

“the contested imaginary and socio-environmental materialization of a spatially bound multi-scalar network in which humans, water flows, ecological relations, hydraulic infrastructure, financial means, legal-administrative arrangements and cultural institutions and practices are interactively defined, aligned, and mobilized through epistemological belief systems, political hierarchies, and naturalizing discourses”. [23] (p. 2)

In indigenous community hydrosocial territories, the multi-scalar network includes and is based on a particular indigenous cosmovision that reflects its local and embodied knowledge [22] as well as a cultural identity profoundly rooted in the socio-natural specific context [24,25].

Therefore, as socio-natural networks interrelated by water flows (imagined, designed, and/or materialised), hydrosocial territories present functions, values, and meanings that define processes of inclusion and exclusion, as well as the distribution of benefits and disadvantages that affect different groups in a specific geographic space [10,25]. Hence, it is essential to understand how (i.e., through what strategies and by virtue of what interests) the ‘natural’ and ‘social’ constituting elements and borders of the community hydrosocial territories are (re)created, especially since these community hydrosocial territories throughout much of the Andes occupy a geographic space where access to water and other related resources is the basis for maintaining the livelihoods of indigenous peasant economies [26–30]. We work from a political ecology or hydro-social perspective rather than a socio-hydrological one (for a discussion, see [31–34]), because we want to show water and social power relations in a transdisciplinary approach; how hegemonic actors' development and conservations (re)territorialisation projects are not neutral nor objective in these indigenous community territories.

We use the broadly acknowledged concept of social capital as an analytical tool to understand how people unite and collaborate, focusing on the specificities of how social capital is (re)created in Andean indigenous communities with strong cultural and place-based identities and networks. Bourdieu [35] first coined the term ‘social capital’. Coleman [36] later used the concept to better understand how and why people benefit

from the social relationships they keep. As such, social capital can be defined as “the ability of actors to secure benefits by virtue of membership in social networks or other social structures” [37] (p. 6). Reimer, Lyons, Ferguson & Polanco [38] rely on this definition and argue that trust and reciprocity are consistent components of the normative structures that define social relationships. These normative structures organise and maintain connections in networks by establishing ‘reasonable’ expectations about what others do through “systems of sanctions and incentives that ensure consistency” [38] (p. 259). Today, social capital is considered a framework for “analysing the functional value of social relations and organizational networks, as well as their influence on economic outcomes and state” [35] (p. 329). This conception has greatly influenced discourse and developmental practices in Latin America since the 1990s [39–43]. Such practices aimed at developing (creating) and strengthening networks of reciprocity within communities and at broader scales as a means to bring about economic development. It was seen as an instrument through which marginalised group (indigenous and peasant) could be empowered to defend their resources, rights, territories, and forms of self-management [15,44]. In the case of Latin America, Baud [45] poses that *confianza* (trust) plays a key role as one of the main building blocks of collective action; those who build it voluntarily are generally close by (Lomnitz, 1997, in [45]) and share the same environment and a sense of belonging to a place [20].

In Andean communities, social capital is more specifically rooted in culturally based structures of reciprocity, complementarity, and ‘*confianza*’ that are closely related to indigenous and place-based identity (see Baud [45]). Most of these norms are culturally established and are based on cultural belief systems, traditions and institutions that reinforce reciprocity and solidarity in communities [45], through mutual cultural, family, religious, identity, political, and economic (inter)dependences and related obligations. These have been bundled by Boelens in the term ‘contractual reciprocity’ [46]). Through this contractual reciprocity Andean rural communities continuously struggle for their (own forms of) development and political representation [46–49].

In Andean communities, this contractual reciprocity is continually built and re-built through material- and non-material-based relations and, as such, it enables the access, defence, and consolidation of material goods, services, credit, resources, and rights, but also the perpetuation and reinforcement of culture, identity, and related belief systems. This strongly applies for local communities, but also in their broader regional and national networks and their politics vis-à-vis external actors such as government, market, and civil society [36,39]. As such, contractual reciprocity forms the basis for maintaining autonomous spaces, generating alternative economies, and establishing strategies to deal with the state and other external actors [46]. Social capital, along with other forms of capital (i.e., natural, produced, human, and cultural), is the basis for acting and reproducing, challenging, and changing the rules that govern resources control, use, and transformation [49].

Despite the apparent unity of community struggles, it is important to recognise that communities and their upscaled federations and networks are internally fraught with differences and conflicts that shape their struggles through, what Colloredo-Mansfield [50] terms ‘agonistic unity’. This term is conceptualised as the process of managing differences, negotiating disputes, and constructing a community unit that mobilises collective action. This making of community is greatly informed by strategies of organisation and control which include the establishment of local councils, lists for tracking participation in communal labour, and marking jurisdictional/territorial lines (‘vernacular statecraft’) (see [50]).

We use the concept of contractual reciprocity to analyse how it plays out in the (re)creation of community hydrosocial territories through a) collaboration within the community and b) collaboration external to the community (see also [44,51]). Collaboration with actors that are external to the community can help change the relationships between indigenous and peasant communities and the state (and the corresponding allocation of resources by the latter), help communities obtain better prices for their products within changing market relationships and build human capital through networks, education, and

training programmes [20,41,52]. In the following sections, we explore how these processes relate to the (re)creation of community and interrelated hydrosocial territories, based on an analysis of the indigenous community of La Chimba.

3. Materials and Methods

This paper is based on empirical material collected during fieldwork performed by the first author in the community of La Chimba between September 2009 and March 2011, with check-up visits in 2012, 2014, 2017, and 2020. Qualitative research was carried out via participatory observation, through interactions with the community in the organisational, political, and social spheres, both in community assemblies and in government councils. The first author lived with a family from the community for a year and was formally accepted as a visitor researcher by the Assembly. She participated in all the community meetings, *mingas*—cattle rodeos in the *páramo*—water rituals, festivities, mobilisations, protests, and paperwork at different government institutions. The year 2010 was a particularly pivotal one. The construction of the Cayambe Pedro Moncayo canal started within the community territory; a new President of the community was elected, which meant the necessity of reassurance of all State commitments on irrigation projects; and the community decided to support their national and regional indigenous movement leaders who were calling for several uprisings in the country. The reason was that the community felt betrayed by the government, which was imposing a top-down, state-centred, privatising Water Law that was focused on dismantling community water organisations.

The first author followed all community responses to the water reform proposal for the next four years. She also witnessed the claims and negotiations around the territory and its waters that took place between the community, the provincial government of Pichincha, the Hidalgo-Hidalgo canal-building company, and the downstream irrigators organisations, until the main canal was finished. Agreements between the parts were documented and examined until this day, as were the conversations on the community *páramo* boundaries limits with the protected area and the PES programme bargaining with the Ministry of the Environment and Water.

Based on a long and trustful relation with the community, the first author continued visiting the community in the following years and was consulted for several water issues, such as for the irrigation system's internal bylaw, which she facilitated through several assembly workshops.

Simultaneously, a bibliographic review was carried out, examining scientific articles and grey literature (i.e., newspaper publications, official documents, and the minutes of community assemblies and meetings). Open and semi-structured interviews were conducted with both key community and external stakeholders, such as elders who had experienced the disintegration of the *hacienda*, the formation of cooperatives, the constitution of the community, current and former presidents of the Indigenous Government Council of La Chimba, neighbouring communities, community water authorities, female leaders, irrigators, authorities of the local parish and municipal governments, technical personnel of NGOs and state institutions, academics, and leaders of the water movement in Ecuador. This material was supplemented by the decades of research experience in the Ecuadorian highlands of the second and third authors.

4. Results

4.1. History of a Resilient Community: La Chimba

La Chimba belongs to the Kayambi people, an indigenous nationality that has been recognised as brave and confronting the Inca invaders as well as the Spaniards conquerors. During colonial times, La Chimba was part of the Hacienda Pesillo of the Order of the Mercedarians, which was the religious congregation with the most land in the region by 1696 [53]. Later, and despite the emancipatory process of independence, the indigenous population continued under semi-feudal conditions in a *huasipungo* system: they worked without pay in exchange for a piece of land (*hacienda*). In the first decades of the 20th century,

continuous abuse by the dominant class led to several indigenous uprisings throughout Ecuador [54]. Several iconic women leaders come from La Chimba and surroundings, most notably mama Tránsito Amaguaña and Dolores Cacuango, who demanded rights to land, education, as well as citizenship recognition. These struggles coincided with the coming to power of liberal governments, which expropriated the estates of the religious orders and placed them under a tenant system, giving the lands to the same local landowners in exchange for a substantial payment [55]. When social pressure for land was unsustainable, and agrarian reform was imminent, the lands of some of the *haciendas* were handed over to the communities, who were forced to create cooperatives. During this period, one of the community members was appointed to act as president and the others took on the position of associates. However, decisions about the use and management of the land were made by the government. Under this oppressive rule, the communities had to pay the state for the lands with the sale of their first produce.

Nowadays, after a long history of oppression, La Chimba is a free, autonomous, and prosperous community, recognised by the state as a commune with its own government. The 400 families own 1200 hectares of land, parcelled out in lots of between seven and ten hectares. The main economic activity is livestock, which is sold to large national and transnational dairy companies. The 3000 hectares of *páramo* serve as grazing areas and belong to the community, although a part of them is located within Cayambe Coca National Park (Figure 1).

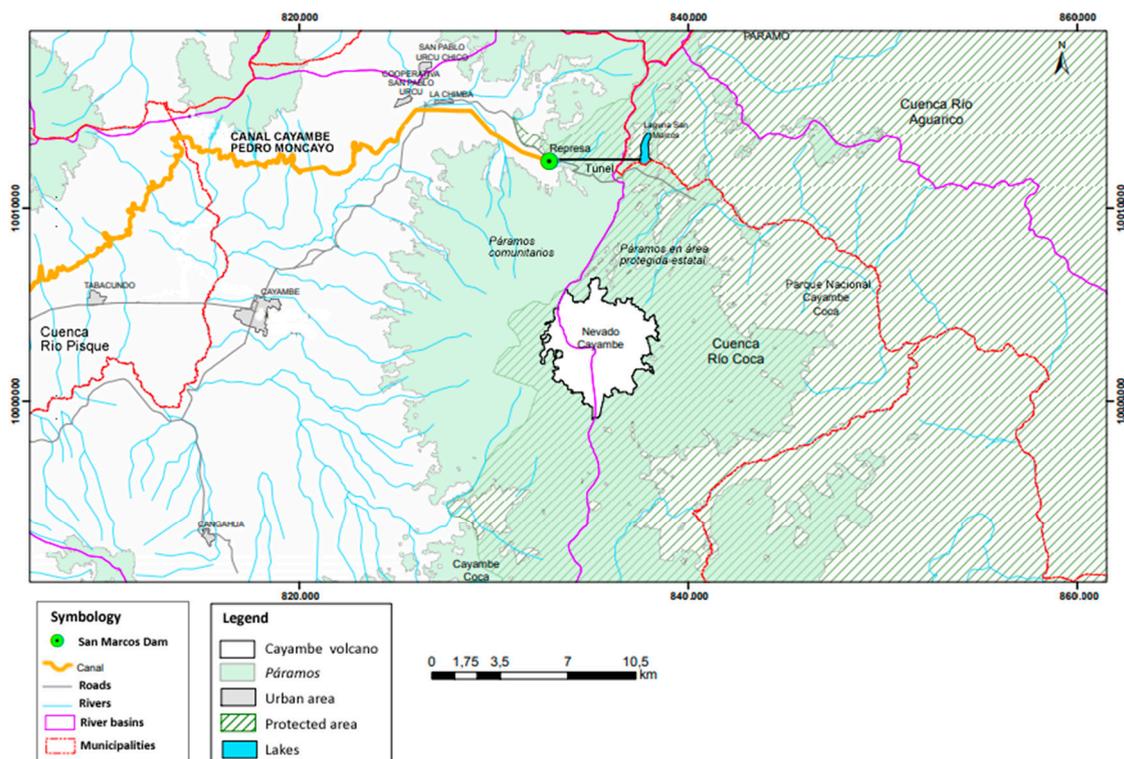


Figure 1. The La Chimba community *páramos* around the snow-capped Cayambe, inside and beyond the protected area, and the hydraulic irrigation works.

For 28 years, the community *páramos* of La Chimba have been encroached upon by external actors. In 1970, the state declared the Cayambe Coca an Ecological Reserve (now a National Park) to conserve “one of the main water supplies in the country” [56] and restricted the use of land and its natural resources. The other threat is a demand for water that comes from the territory of La Chimba and feeds the irrigation canals used by cattle and flower farms, agricultural peasants, and indigenous communities in the Pisque river basin. Different governments have been building the Cayambe Pedro Moncayo irrigation canal

since 1998. It is a mega hydraulic work that is still under construction. It will transfer water from the *páramos* of the eastern slope to the San Marcos lagoon, located within Cayambe Coca National Park. The waters of the lagoon have been converted into an artificial dam of 10 million cubic metres. From this new lagoon the water is channelled through a 4700-m tunnel towards the western slope to feed the La Chimba river [57]. Eventually, it flows to the main cement canal, the building of which commenced in the 1990s [8,58]. The canal roughly follows the route of the old Tabacundo canal [19,54] and eventually reaches the semi-arid areas of Malchinguí. From the beginning, the La Chimba community was one of the main opponents of the project, because it takes the water from its territory and, above all, because the community was excluded from the list of beneficiaries [59].

Two more projected irrigation works have since been joined to the aforesaid canal. First is the Pesillo Imbabura canal, another work expected for decades by the communities towards the north-western side of the Cayambe. The second is the Pesillo-COINOA canal, which supplies other communities near the La Chimba river that before were excluded from the Cayambe Pedro Moncayo canal. Faced with these threats from the State and other hegemonic actors' development and conservation discourses, La Chimba has not remained passive. On the contrary, the community has created and re-created internal and external social capital as a strategy to consolidate its community hydrosocial territory, which will be analysed in the next section.

4.2. Re-Creation of Social Capital and Community Territory

Contractual Reciprocity within the Indigenous Community La Chimba

During colonial times, Hacienda Pesillo belonged to the Order of Mercedarians, but was passed into the hands of Public Assistance during the Liberal Revolution. It was divided and was leased to the rural bourgeoisie, which upheld a system of oppression for about 50 years (1913 to 1963). It later divided into agricultural cooperatives [60]. One of these was that of La Chimba. Even though it was managed by an indigenous community president at the time, one of its leaders remembers the time as "indigenous people exploiting other indigenous people". The cooperative operated from 1975 to 1980, when La Chimba was finally dissolved and officially recognised as a community. The land, as a communitarian space, became part of the community's assets (according to Article 15 of the Law of Organization and Regime of Communes—The communes may own collective property lands, the same that will be inalienable, unattachable and indivisible; they will also have the right to conserve the lands they have been in possession of since ancient times) and it gained the right to self-determination and its own forms of organisation in relation or community, land and water management (according to Article 10 of the Law of Organization and Regime of Communes—Preserve and develop their own forms of coexistence and social organization, and exercise of traditional authority, in their legally recognized territories and community lands of ancestral possession). Since then, the community and its territory have been self-governed through autonomous forms of organisations and reciprocity. These forms of organisation have built on and become part of the place-based indigenous identity and related cultural practices that have been sustained and recreated across various generations forming the basis of communitarian contractual reciprocity. The latter operates, as further explored below, through specific organisational forms, collective action, and cultural practices, that recreate a collective indigenous and place-based community culture and identity.

- *The community government*

The community government is the most important organisational form of the community. In it the most important decisions about the community are taken by all of its members in the general assembly. The general assembly democratically chooses the Government Council. This Government Council prepares and presides the general assemblies, and is responsible for daily governance of the community and for representing the community vis-à-vis external actors. Elected representatives fulfil their functions for a period of two years [61]. To be elected, a person must be an active member of the community. They

must attend the Assemblies, be up to date in the payment of fees and “have participated in all the *mingas* and other activities organised by the authorities and in political life and organisation of the community” [61]. Although it is not written, those who are recognised for their honesty and commitment to the community are highly sought-after candidates. The different positions are assumed pro bono, since the invested time and work is a service for the community and its common good. Young people are encouraged to take part in the political life of the community. Women can be and have been elected as presidents. The case of Doña Elena Alba is striking. She was the first woman elected as president and according to several community members, she achieved the most irrigation projects, which is the reason why she was re-elected. “What we as men could not do, she did,” says one of the former leaders. When a person has performed well in their position, the best recognition of their work is re-election.

This does not mean that the community is free of conflict. There is criticism from some members of the community who believe that the leaders benefit from educational opportunities, access to financial resources, have obtained goods, such as cars and houses, and feel that their families and relatives also tend to have greater benefits than other members of the community.

The strength of this system of government rests on its assembly, where all members of the community participate with voice and vote (Figure 2). Water is the first item on the agenda at all meetings. Throughout the 70+ assemblies that were held during the field-work period, it became clear that this was a space for discussion and debate about water, sometimes on new projects and works that had to be done, others on conflicts between members of the community or between the community and neighbouring communities, which revolved around non-compliance with the *mingas* and the search for improvements in irrigation systems through state-funded projects. Some community assemblies took up to five or six hours to come to an agreement and final resolution that was taken by all members. The assembly is powerful, and it is the community members themselves who grant it this power.



Figure 2. Community assembly at La Chimba.

To participate in the assembly, a community member must have paid all their fees and have not committed any infraction, such as theft of water or damage to property, nor have caused a fight between community members.

The assembly deals with general issues that concern the entire community, while the Government Council is more operational and meets every week. The Government Council solves daily problems in each sector, such as theft and destruction, and the maintenance of the irrigation system.

- *Communitarian productive and credit cooperatives*

Besides the community and water governance, the community government has also stood at the forefront of collective production initiatives. For instance, each family's milk production is sold to a national company, but a small portion is processed in a collective cheese and yoghurt factory that generates communal income. There is also a *Caja Comunitaria*, a kind of communal bank that grants interest-free loans to community members. The loans are relatively small, between 100 and 500 dollars, but debts are usually paid in full because it is common knowledge that money that is returned on time will be used to lend to another member of the community. In the words of one of the community's leaders:

"Why should we ask the bank of the mishus [white/mestizo people in kichwa], if we can lend to each other?"

The Government Council and its president on its behalf legally represent the community against other external bodies, be they the government, NGOs, other communities, or the private sector. The community government of La Chimba is recognised by different government entities, such as ministries and secretariats, although there have been cases where its authority has been challenged. For example, when the new Water Law came into force, the only organisations that could obtain a water authorisation and manage it were the Irrigation and Potable Water Boards. La Chimba refused to create a new organisation and presented itself as an indigenous government with legal status. This resistance to the Water Secretariat SENAGUA had results: in 2017, a national decree was issued in which indigenous forms of government were recognised as community water authorities (on 22 August 2017, the Water Secretariat issued Ministerial Agreement No. 00-31-2017, which ratifies the different collective and traditional forms of organisation of communes, communities, peoples, and indigenous nationalities, Afro-Ecuadorian and Montubio peoples as valid for the administration and management of drinking water and irrigation systems).

- *Mingas: norms that sustain the bonds of reciprocity and solidarity within the community*

Mingas are a form of community work where members contribute their labour to achieve common benefits [11]. Members of communities grow up with *mingas* as often these are attended by the whole family. This creates a strong bonding between the individual, the community, and their place/territory. This bonding is created and perpetuated through the development of shared experiences, shared understanding, and knowledge of the collective of people that form the community. Relations are established among individuals, among individuals and the collective, and between individuals and collectives with the place and communitarian territory that is used, protected, and transformed through these *mingas*.

A *minga* is established as an obligation for families in the community, but various benefits are also received. Whoever goes to the *minga* has the right to the water shift, have their cattle graze in the *páramo*, attend the festivals, and participate in the assembly with voice and vote. *Mingas* have been in operation since time immemorial. This unpaid collective work is common in the Andean communities of Ecuador, Peru, Bolivia, Colombia, and Chile, and is also known as various modes of work; they are based on rules of solidarity and reciprocity [13,15,30,47–49,62–64]. In the 1950s, when La Chimba was free and lands were granted, many *mingas* were organised to bring water from the rivers closest to the Cayambe meltwater to the community through the El Calvario canal.

The person who holds the presidency is the only person who can summon a general *minga*, but they can only do so after discussing its relevance in the assembly, where it is

validated in plenary session. In the case of the sector *mingas*, the one who summons is the president of the sector.

After the struggles for accessing land and other basic services and rights, a lot of communitarian effort and thus also *mingas* have been dedicated to the development and maintenance of the community domestic water supply and irrigation systems. Though not all families have access to irrigation water for their plots, all community members must participate in the *mingas* for irrigation. In general, the husbands act as heads of the family and assembly representatives, but if he cannot attend, his wife or his eldest child will do so in his place. There are few cases, but there are female heads of families who have the same degree of representation and rights in the assembly. The work of boys and girls is not usually accepted, not only because they must attend school, but because it is believed that they do not yet function as adults. Widows and the elderly are exempted from the *mingas*. For community members who live outside the community (mainly in the city of Quito, although there are others who have migrated outside the country), but who still conserve their farmland or have livestock in the communal *páramo* area, monetary recognition is required for each non-attended irrigation *minga*. If it involves a new community member, for example, someone who returns from the city after three to five years and re-joins the community, they must pay a high amount (between USD 3000 and USD 5000) for all the work and management that the community has carried out in their years of absence. They earn the right to water for their plot this way.

Usually, there are problems when a commoner has a son who is married but is 'attached', that is, the son does not yet have his own house and land, but he has livestock that benefits from the irrigation system. In such cases, it is usually requested that father and son both make their contribution of community work.

The *mingas* are held during the week since most of the members live in the community and dedicate themselves to livestock chores and do not go out. On the day of the *minga*, and once each community family has milked their cows and delivered the milk to the collection centre, they all gather in the main courtyard of the communal house, where their presence is recorded.

There are general *mingas*, for the whole community, as well as specific ones, where the benefit is for a sector of the community that everyone supports, but this sector must then reciprocate and compensate for another sector in a next *minga*. In most of the cases general and specific *mingas* were called for water works. However, some were for the construction of the Health Centre, for the curb of the sidewalk of the entire Civic Centre (which is the place where most of the houses, the school and the church are located), or for the restoration of the church roof, painting the school, preparing the food for the festivities, etc. In some cases, a *minga* functions as a counterpart for projects that are executed by the different institutions of the state.

The hydraulic works (during the year of fieldwork from 2009 to 2010, there were 73 ordinary meetings of the Assembly, 5 extraordinary meetings, 92 Governing Councils, and 81 general and specific *mingas*) that have consolidated the hydrosocial territory of the community were built through *mingas*. During our field work, for example, key collective activities with which the families were engaged such as: the construction of reservoirs; the hauling of tubes for a new water catchment near the glaciers of the Cayambe; the cleaning of the main canal; the placement of geomembranes in the reservoirs; the cleaning of the weir of the main canal and the placement of wire around a water source to avoid trampling by cattle.

The contribution to the *mingas* is diverse and has different uses within the defence of the territory. For example, the community set up a checkpoint on the road that runs through its lands and leads to the national park to protect the territory from strangers, be they people from other communities, the dam construction company, or the government. In this case, the shifts are equivalent to a half day of *minga*.

Minga is an important social and identity forming event. Food and drinks are shared when the work is finished in the *Pambamesa* (communal dinner), and it is very much

appreciated among members who see it as a demonstration of community strength and symbolically as a sign of respect to ancestors and the land.

- *The minga and the external relations of the community*

Mingas are also taken outside the community territory. There is an obligation to participate in the mobilisations, or protests, called either by the community itself, or by the organisations to which it belongs. The days of the mobilisations are considered *minga* days.

Thus, there is the Corporation of Indigenous Organisations of Olmedo and Ayora (COINOA), which is also part of the Kayambi People, an organisation that includes the communities of people who live in various provinces, which in turn is part of the ECUARUNARI, the Sierra regional affiliate of the national Confederation of Indigenous Nationalities of Ecuador (CONAIE) organisation (Figure 3). La Chimba has participated in the social uprisings called by CONAIE in 2008, 2013, and 2019, to achieve common goals, including the abolishment reform of the Water Law and to oppose the increase in fuel prices. The indigenous movement shows this way its power and stands against State development models, where extractivism and environmental injustice have been common. This is particularly important in the coming years of a right-wing government. La Chimba is linked to national organisations, or more accurately, it temporarily joins them when they have common needs and interests [11,15]. This is what is known as the ‘multiscale use’ of their networks and alliances (see [2,14,45,52,53,62–68]).

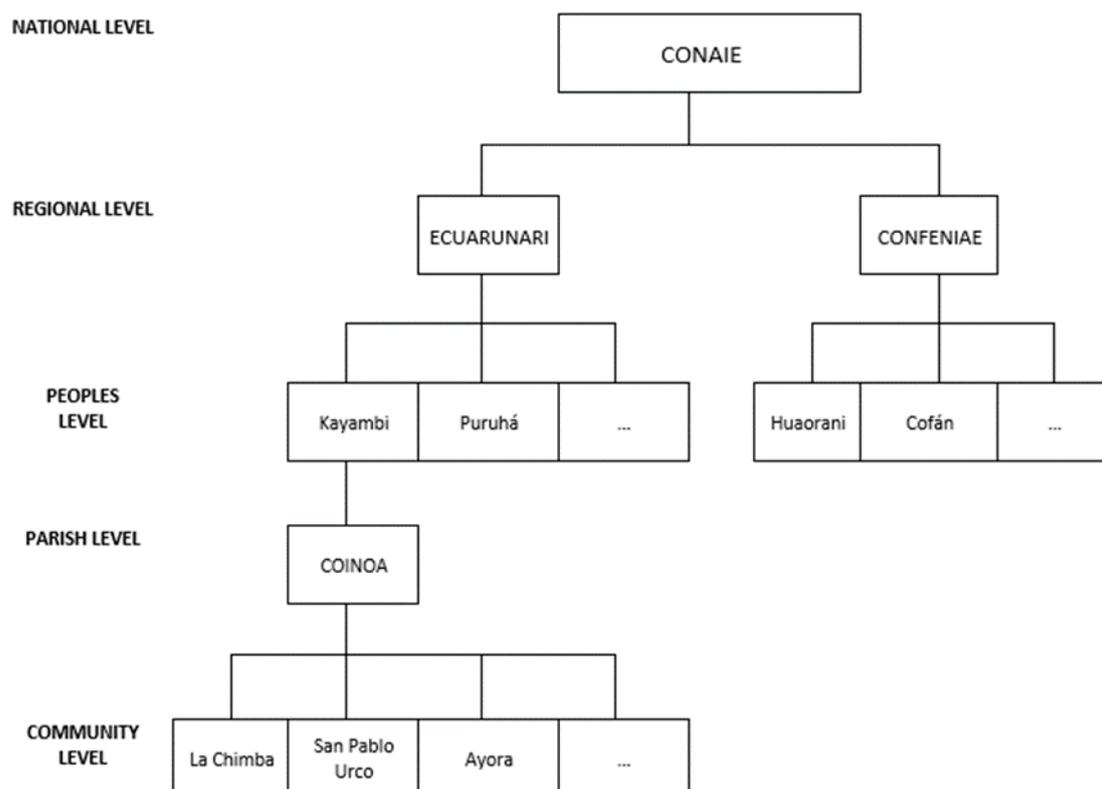


Figure 3. Levels of indigenous organisations in Ecuador.

- *Indigenous community territory management*

La Chimba community forms of land and water management are a combination of customary norms and rules inherited from the community’s traditions with Western laws adapted to new social, economic, environmental, and political conditions. The rules are decided upon in the General Assembly and their compliance is monitored by the entire community. When someone does something wrong (like burning grasslands, drying a swamp, or adding too many cattle), the rest will react and take their grievance to the

governmental authorities for a resolution or sanctions. Sanctions can range from denial of a watering shift and a fine, to temporary expulsion from community meetings and from participating in decision making.

Páramos are considered sacred places where deities reside and belong. In many cases, mountains tops, water springs, cascades, lagoons, and swamps were and often still are supernatural manifestations [69]. In a more practical sense, in addition to worshipping, the community recognises that assuring their *páramos* will assure the provision of water.

Although the La Chimba community uses *páramo* lands, these were not given to them in their deeds when the *haciendas* disintegrated in the agrarian reform, yet their de facto use continued, since they have been using them for cattle and sheep since the time of the colonial *hacienda*.

Some of the *páramo*-related practices have changed over time. For example, burning was relatively common until the 1980s; local belief stated that doing so attracted rain and regenerated pastures for livestock. Despite being punished by official law, it was not until the 1990s and 2000s that the *páramo* stopped burning. This was due to the influence of NGOs and universities, such as the Salesian Polytechnic University and its operational branch, La Casa Campesina. This has led to the production of new hybrid standards and some new perceptions of what to do and what not to do in the *páramo*. Now, the community norm states that it is forbidden to hunt, capture wild animals or cut down the forest, burn the grasslands, or have crops in the *páramo*. Anyone who does not respect these rules is called to attention in the assembly, fined, or denied participation in the decisions of the community.

Regarding the use of *páramo* for grazing and as a way of protecting it from erosion, the assembly decided to remove all the horses and pigs from the *páramo*, and to limit the number of cattle heads of each community member to 15. Those who do not live in the community and those who do not attend the *mingas*, but benefit from this, are penalised (Figure 4). Compliance with this number is controlled through roundups: people go to the *páramo* and the animals of each family are counted and marked with paint. Older and unauthorised animals are captured and slaughtered for community festivals.



Figure 4. Roundup and counting of cattle as a conservation *páramo* community management practice.

The Ministry of Environment and Water has tried to convince the community to delimit the area of *páramo* that lies within the protected area, and in exchange grant a PES payment through its Socio Páramo programme. This has been completely rejected because, as the president of the community expresses, they have the capacity to protect the *paramo* under indigenous knowledge and technology, and they have asked for the protected area management concession without any response from the government.

A little less strictly enforced rule is the one to stop expanding the agricultural frontier towards the *páramo*. The new Land Law [70] explicitly states: “[t]he advance of the agricultural frontier will not be allowed in the non-intervened *páramos* that are over 3300 m above sea level, north of the parallel three latitude south, and over 2700 m south of said parallel; and in general, in protected natural areas and particularly in territories with high biodiversity or that generate environmental services”. However, it makes exceptions for indigenous communities or peasant families, and calls for economic incentive programmes for those who live in fragile ecosystems. The rules of use of the *páramo*, therefore, are now a hybrid of the rules of the community and of the state.

There is also a community zoning of the La Chimba territory. The high *páramos* zone is collectively owned and has a low intensity use, this mainly consisting of grazing for beef cattle. In the intermediate zone, each family has lands with natural and cultivated pastures for dairy farming; this is where the irrigation systems are. Although each family can decide how to occupy their land, the profitability of ranching has made everyone plant pastures. Finally, the family plots are located in the lower area or valley and have a greater area dedicated to cultivated pastures and—to a lesser extent—to short-cycle crops (potatoes, corn, and barley), and each family decides whether to plant for self-consumption or to dedicate it to livestock (Figure 5).



Figure 5. Community zoning by different altitudinal strata and soil suitability.

Another important internal law is that it is forbidden to sell the land to people outside of the community. In recent years, some community families have started to cultivate export-oriented roses [54].

- *Water ceremonies and rituals as a symbolic recreation of the community ancestral territory*

Rituals are one of the most subtle, but most powerful manifestations of internal social capital. In the *Wachakaray*, there is a syncretism between the ancestral cults in honour of the sacred mountains—in this case *Taita Kayambi* (Father Cayambe)—and the Catholic religion that came with the Spanish conquest. It was a lucky opportunity to witness a water ritual. After a prolonged drought, the elders and children of the community go up to the hill at

dawn, and at a sacred point of the *páramo*, where a person died of a stroke of lightning, they shout laments and calls to the *Taita Kayambi* and their *páramos*, so that the rain comes back and so that there is water for the crops. Later in the morning, in a syncretic ritual, they celebrate a Catholic mass where the rest of the community participates (Figure 6). This rituality legitimises their possession of and belonging to the territory; it reaffirms their territorial identity as Kayambi people through their traditions and strengthens their social capital (see also [30,62,71]).



Figure 6. The *Wachakaray* or request for rain to the *páramo*, a syncretic ceremony.

- *The consolidation of communitarian hydrosocial territory*

As explained above, water and irrigation play a central role in the community, its government and the *mingas*. In this sense, their communitarian territory and its re-creation are intrinsically related to water and hydraulic infrastructure. Hydraulic works, such as the Pedro Moncayo Cayambe Canal and two other smaller ones, the Pesillo Imbabura and the Pesillo COINOA, are presently being built on the community territory of La Chimba, which aim to extract more water from the *páramo* and divert it upstream from the irrigation canal intake of La Chimba. They fear that once the canals are operational, the flow to their own canal will be affected by upstream catchments. In the dry months, the river flow decreases so much that none of the concessions can be fulfilled (in a series of data collected from 1974 to 2006, peaks of 3510 L/s (18 July 1976) and flow level drops of up to 1000 L/s (12 July 1992) were recorded [72].); when La Chimba takes its corresponding water, the riverbed remains practically dry (Figure 7), which has led to clashes between the communities of the upper basin and those of the middle basin [63].

La Chimba has appointed itself as the guardian of the water gate and has decided not to surrender this role but cannot prevent the water from going through the canals that divert it upstream, although appeals to the provincial government are constantly made in all public events where they can express themselves.

As one community member expresses: “all the water is in our territory, how can it be carried away without giving anything in return?” The community has demanded that the works “allow the work to progress smoothly.” These demands include the improvement of the road, the change of pipes in the entire drinking water system for the Civic Centre and the cement lining for its canal. Otherwise, they have threatened to take the road and impede the passage of machinery.

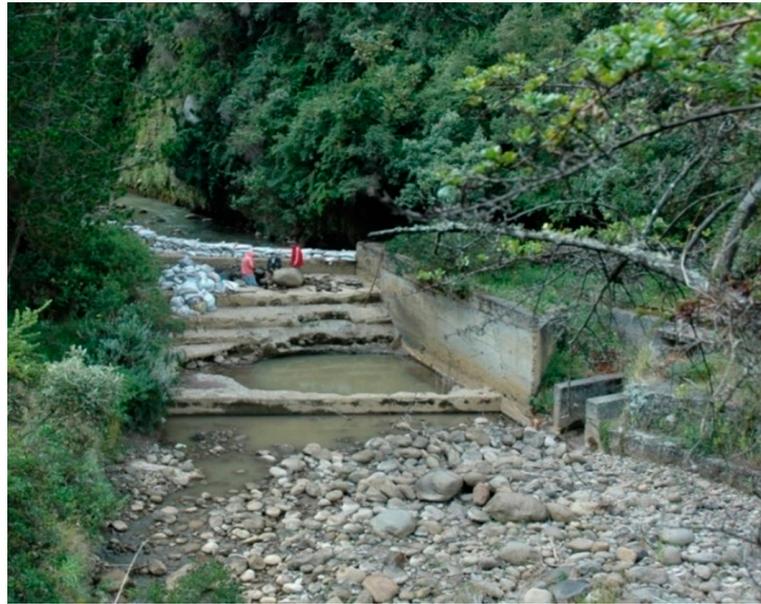


Figure 7. The water intake for the El Calvario canal in the community of La Chimba in the dry season and the riverbed that runs out of water for the other community concessions.

Additionally, La Chimba is vigilant over its water concessions. It fully pays its authorisations to SENAGUA, seeks new water concessions, and builds more infrastructure to access it, such as new canals and reservoirs. It has managed more water concessions that will allow it to face the drop in flow in the dry months with an additional 122 L/s. It is concerned not only with obtaining the concession, but also with investing in the infrastructure. It even does the process in reverse: take the water and at the same time start the official process. *“All costs are covered as a community, but you have to catch those waters immediately. As we want to process all these concessions, we have to show that we are using it.”* In fact, by mobilising their internal and external social capital, they are strategically practicing what has been called “the creation and re-creation of collective hydraulic property” [62,64,73]. This is a concept that expresses that, social norms and rights of water are embedded (literally ‘materialised’) within the constructed works:

User investment in hydraulic infrastructure generates collective water property relations. This socio-natural foundation of farmer-managed systems embeds (materializes) and entwines collective and individual water rights in hydraulic works, triggering collective action [62] (p. 55).

As these authors write in many smallholder and indigenous systems ‘investments’ can also be inherited: people inherit investments made by their ancestors. Such property notions are commonly upheld by the many rituals connected to irrigation practice, which are seen as investments in turn. After creating property rights, the mechanism requires users to consolidate them. This is done, again, through the logic of investment: by fulfilling operation and maintenance obligations to the irrigation system. Fundamentally, communities’ and families’ contributions to constructing and maintaining this infrastructure shape organizational and property relationships among these actors, a socio-natural and socio-technical process basic to constituting ‘hydraulic identities’ and ‘hydraulic cultures’ [62] (p. 60).

Fifteen reservoirs have been built with technical and financial support from the Ministry of Agriculture and Livestock. Once delivered, their management, the destination of the water and the use of the land are the responsibility of the community. The construction of the reservoirs has been a community decision and they have chosen strategic sites for them (Figure 8). There are two types of reservoirs; the first corresponds to the series in blue and red. They are large and their function is to store the new water concessions. The concessions are closer to the glacier and, therefore, the reservoirs as well. The water will be

distributed to the lands that are on the main canal but that are above it so will incorporate new areas to the cultivation of pastures. The second type of reservoirs, in the yellow series, take water from the same El Calvario canal so they are not including new flows, but their function is to store the water at night and expand the possibilities of distribution of shifts among users.

Much of this management has been achieved thanks to the human capital that La Chimba possesses, since several of its members have accessed training and education. Professionals and technicians among indigenous community members are becoming more numerous and is felt as an individual and collective conquest. In this case, one is a lawyer who litigates in favour of the community in land and water conflicts. Another is a hydraulic engineer who designs the irrigation projects. Others have been elected to public positions, such as the president of the Parish Board of Olmedo, and a council member of the Municipality of Cayambe. Thus, human capital strengthens social capital [15,40]. This has facilitated the bureaucratic procedures, such as the construction of roads that were made to access the highest areas of the community for the building of reservoirs or water intakes. It also generates a feeling of pride and strengthens the community when exercising their claims against governmental institutions.

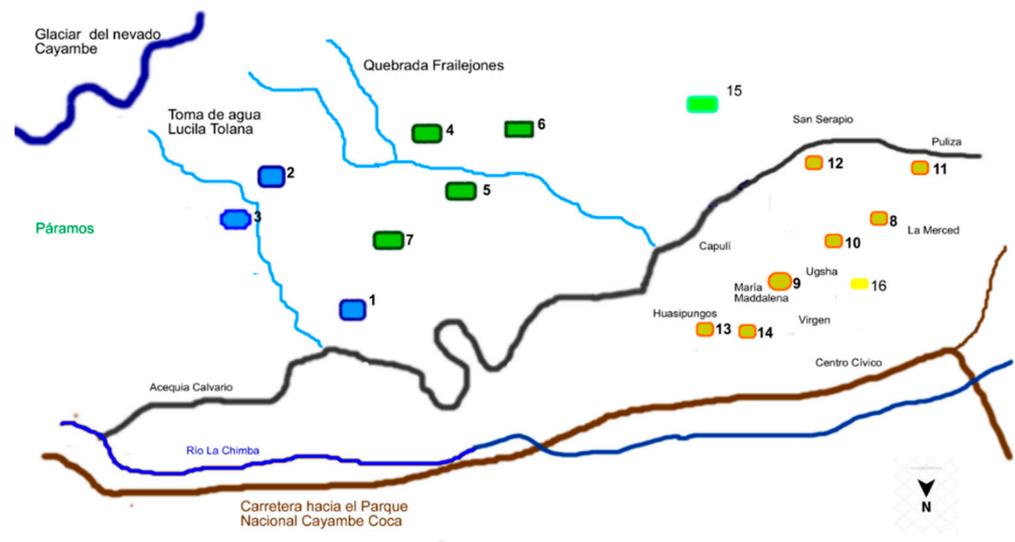


Figure 8. Location of the reservoirs along the hydrosocial territory of La Chimba.

5. Conclusions

“The territory has a purpose, it is not just a physical space. We build it with our memory and our persistence, it is the accumulation of all that we have been and what we are.”

Cecilia Gianella, Peruvian geographer (pers.com, 2019).

This study on the community of La Chimba shows how the community hydrosocial territory has been created, re-created, and strengthened through contractual reciprocity within the community and its relations to external actors. In this context, contractual reciprocity develops through the establishment of cultural, communal, and local place-based identity that establishes strong links between its members, with the collective and with the communitarian territory they inhabit and recreate. In this case they are created and re-created through very particular and unique forms of indigenous community self-government, their customs, reciprocity, and solidarity rules and norms, that allow *mingas*, the re-creation of their hydraulic works and property rights, mobilisations, and community management of their territory, water, and land, and the symbolic and powerful rituality around water [46]. The community’s external links are re-created through the connection and consolidation that it creates with external actors. It is through these that it achieves financial, technical, administrative, and political support from institutions, projects, and

governmental and private laws and that of other communities. In the case study of La Chimba the contractual reciprocity of an indigenous community is the thread that sews and holds their communitarian hydrosocial territory. Thus, the creation and re-creation of the hydrosocial territory itself becomes a weapon of resistance against hegemonic power of the state and the dominance of top-down development and conservation discourses [74–77].

The community hydrosocial territories are created and re-created over time, based on collective identity and culture which are recreated and enacted through self-government, self-management, *mingas*, festivities, rituals, and its struggles and links with and sometimes against the outside world. Through contractual reciprocity, the community mobilises resources to build and maintain the necessary hydraulic infrastructure and related territory to ensure its water supply. Through links and relations with external actors, the community negotiates with the state, refuses to accept payment programmes for environmental services or the limits of the protected area imposed by a decree, maintaining, and consolidating the material and symbolic limits of its hydrosocial territory. In this way, the community consolidates its hydrosocial territory as an underground counter-current of resistance [77].

The links and relationships, created and re-created within and through the community consolidate the social, technical, material, political, and symbolic construction of its hydrosocial territory. Thus, community hydrosocial territories are multidimensional and cannot be valued only in their physical-material dimension, where their resources prevail, but their socio-political and subjective-symbolic dimensions are equally transcendent. This last dimension is the one that gives a sense of ownership and community in a hydrosocial territory [68]. This indigenous group claims it as its own, recognises its links and reconfigures and hybridises its traditional ways of life within it [78,79]. In this sense, a double path of belonging is established: “I am part of the community, the community is part of the territory and the territory belongs to the community, and since I belong to it, therefore it is mine.” This contractual reciprocity that rests on a strong sense of cultural, collective, and place-based belonging has a great impact on community, since it makes them feel strong and united and, therefore, owners and part of their community hydrosocial territory (see also [25]). This is particularly strong in the Andes where indigenous communities have resisted oppression for more than 500 years, and still are a marginalised group among Ecuadorian society.

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