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Crafting co-governance: challenges of the long overdue Pesillo-Imbabura regional drinking water project in Ecuador

Construcción de co-gobernanza: desafíos del largamente esperado proyecto regional de agua potable Pesillo-Imbabura en Ecuador

Sandra Megens **
Jeroen Vos ***
Rossana Manosalvas ****

Abstract

Co-governance of state and community organizations in drinking water provision is regarded as an effective and efficient way to achieve sustainable and inclusive water services. This

* Department of Social Science, Wageningen University, P.O. Box 8130, 6700EW Wageningen, The Netherlands.
Contact: sandra.megens@wur.nl
Código ORCID: 0000-0001-9661-5218.

** Department of Environmental Science, Wageningen University, P.O. Box 47, 6700AA Wageningen, The Netherlands.
Contact: jeroen.vos@wur.nl
Código ORCID: 0000-0002-4716-8682.

*** Department of Environmental Science, Wageningen University, P.O. Box 47, 6700AA Wageningen, The Netherlands
Contact: rossanamanosalvas@gmail.com
Código ORCID: 0000-0002-7229-9908

Ethical considerations are incorporated, including ensuring the reliability and validity of the study, as well as the analysis of the data and its limitations. Administrative, technical, and physical safeguards are maintained in accordance with accepted academic practice, such as when conducting online interviews or recording these conversations. In addition, we only store and use the information necessary to identify the participating organization. Due to the highly secure environment in which the study area is located, as well as those of others, we respect their privacy policies and only provide information if requested.

study analyses the struggle over the management arrangement of the Pesillo-Imbabura regional drinking water project in the northern Sierra of Ecuador. It describes the troubled development of a large drinking water project, considering co-governance arrangements and effects on the autonomy, recognition, representation, and distributive outcomes for the (involved) communities. On paper, the institutional design was a good example of co-governance. In practice, the communities felt left out and envisioned much more control over the project. The communities that managed their own communal drinking water systems were marginalized in the Pesillo-Imbabura project by state policies for the execution of the project and the management of the new central water provision system. The government and donors overlooked the principle of hydraulic property creation which is important for the Indigenous communities because ensures Indigenous people control over their own identity. It establishes the direct link between the long struggle of the communities to get the project financed, the contribution to the construction of the infrastructure, and the creation of water use rights and obligations, but also the right to manage the system.

Keywords: Co-governance, community organization, drinking water, conflict.

Resumen

La co-gobernanza de las organizaciones estatales y comunitarias en el suministro de agua potable se considera una forma eficaz y eficiente de lograr servicios de agua sostenibles e inclusivos. Este estudio analiza la pugna por el arreglo de gestión del proyecto regional de agua potable Pesillo-Imbabura en la Sierra Norte del Ecuador. Describe el desarrollo problemático de un gran proyecto de agua potable, considerando los arreglos de co-gobernanza y los efectos sobre la autonomía, el reconocimiento, la representación y los resultados distributivos para las comunidades involucradas. En el documento, el diseño institucional fue un buen ejemplo de co-gobernanza. En la práctica, las comunidades se sintieron excluidas y previeron mucho más control sobre el proyecto. Las comunidades que manejaban sus propios sistemas comunales de agua potable fueron marginadas en el proyecto Pesillo-Imbabura por las políticas estatales para la ejecución del proyecto y la gestión del nuevo sistema central de provisión de agua. El gobierno y los donantes pasaron por alto el principio de creación de propiedad hidráulica que es importante para las comunidades indígenas porque asegura el control de estos pueblos sobre su propia identidad. Además, se establece el vínculo directo entre la larga lucha de las

comunidades para conseguir el financiamiento del proyecto de construcción, la contribución sobre la infraestructura y la creación de derechos y obligaciones del uso del agua, pero también el derecho para administrar el sistema.

Palabras clave: Co-gobernanza, organización comunitaria, agua potable, conflicto.

Classification/clasificación JEL: D23, D63, Q32, R11

1. Introduction

In the northern region of the Ecuadorian Andean mountains, households suffer from deficient drinking water provision. Water demand is increasing, but new water sources are increasingly hard to find. The frequency and intensity of hydrological droughts are amplified by land degradation and climate change, especially by the influence of the El Niño Phenomenon (Serrano, Aguilar and Martínez, 2017). The country has an additional challenge of lacking meteorological drought studies (Campozano, Ballari, Montenegro and Avilés, 2020). It is recorded that the drought years have increased in frequency and length. The last drought was between 2001 and 2006 (Domínguez-Castro, García-Herrera, and Vicente-Serrano 2018). About sixty percent of the population in the study area in the northern Sierra of Ecuador live in rural communities where user organizations (called JAAP for their Spanish acronym[1]) have been managing their drinking water systems for more than 50 years. In the cities and towns, municipal companies supply drinking water. In both rural and urban areas, the water provision service is erratic, and the water quality is often not up to standard (INEN, 2014; Moreno, Pozo, and Vancraeynest, 2020). The main reasons for the deficit management of both communal and municipal drinking water systems in Ecuador are mentioned: the lack of managerial competence, insufficiency of capital investments and operational budget (due to low user fees), deficient coordination between involved organizations, political interference, and "elite capture" as a form of corruption whereby public resources are taken for the benefit of a few individuals or groups of individuals of superior status (Cipriani, Molinero Ortiz, Jara-Negrete, Barrado, Arcos, Mafla, Custode, Vilaña, Carpintero, and Ochoa-Herrera, 2020; SDGF, 2015).

1 The Water Administration Board. In Ecuador, a total of some, seven thousand JAAPs manage community drinking water systems in rural areas.

This paper analyses the Pesillo-Imbabura regional drinking water project in the northern Sierra municipalities[2] of Ibarra, Antonio Ante, Otavalo (all three in the province of Imbabura), Cayambe and Pedro Moncayo (in the province of Pichincha), which has the objective of providing improved drinking water services to 171,000 inhabitants (projected to grow to 240,000 in the year 2032). The idea of this regional drinking water project was first proposed in 1995, and the first stone was laid in 2004 by the President of the country, Lucio Gutierrez. However, to date (June 2022), the project has not been finished. The main obstacle to the delays in the project implementation has been the co-governance structure for sharing management responsibilities between the five municipalities and the 162 rural communities.

The project should be viewed against the backdrop of the political struggles going on in Ecuador since the turn of the century. Presidents Rafael Correa (2007-2017) and Lenin Moreno (2017-2021) centralized government organizations following the so-called "Andean twenty-first-century socialism" model (Kennemore and Weeks, 2011) but also alluded to indigenous ideology (Sumak Kawsay in Kichwa or Buen Vivir in Spanish) and Indigenous community participation (Merino, 2016). In 2008, the new Constitution was promulgated, and in the same year, the National Water Authority (SENAGUA) was created (Hidalgo-Bastidas and Boelens, 2019). This led to frictions between the government and Indigenous, peasant and water users organizations, especially as in practice the governments pursued a neoliberal agenda with a significant role for the private oil and mining sector (Valladares and Boelens, 2019). But also, the social movements' achievements that were consecrated in the new Constitution, such as the recognition of the Human Right to Water, the Rights of Nature, and Community Management, were later by government organizations, besides the Indigenous claims for resources, water insecurity and de-colonizing water (Hidalgo, Boelens, and Vos, 2017). The new Water Law of 2014 established that water can only be governed by the state or by communal organizations (Art. 32). Notwithstanding, the significant role of communities and water users' organizations in the new Constitution, *i.e.*, the provincial governments started to take over the community irrigation systems, and some municipal governments started to take over communal drinking water systems.

The objective of the paper is to analyze the struggle over the management arrangement of the Pesillo-Imbabura project. On paper, the institutional design is a good example of co-

2 Municipalities in Ecuador are named "canton", and their government, "Gobierno Autónomo Descentralizado Municipal" GAD municipal.

governance, sharing responsibilities between the state and community actors (Ackerman, 2004; Adams, Zulu, and Ouellette-Kray, 2020). However, in practice, the communities felt left out, their struggles were not recognized, and they envisioned much more control over the project. The lessons learned from this case are useful for the design of co-governance of water projects worldwide.

2. The idea of Co-governance and its Challenges

Co-governance is internationally recognized as an appropriate solution to failing public and community provision of water services (Adams *et al*., 2020; 2015). Ackerman (2004, p. 447) has recapped the main idea very clearly: "Co-governance involves inviting social actors to participate in the core activities of public institutions, this allows tapping into the energy of society". The idea is that collaboration of government organizations with community collectives and citizen groups will generate more inclusive and more durable, efficient, and effective governance results (Bovaird, 2007; Dill, 2010). Through co-governance, it is possible to strengthen both the state apparatus and civil society involvement. Ostrom's work (1990) also established a communitarian approach to local governance through a more functional and cooperative manner, with successful examples of "governing the commons". It was founded on the ideas presented in her enduring irrigation research institutions (Ostrom, 2008) which included adapting rules governing the use of common resources to local conditions and needs, ensuring that community members' rights to make rules are respected by outside authorities, and providing accessible, affordable methods of resolving disputes.

According to McMillan, Spronk, and Caswell (2014) and Romano (2017), co-governance of drinking water systems can contribute to the empowerment of communities, as "(...) the [water provision] committees are part of a wider political agenda, engage citizens in a broader process of social change, promote a rethinking of the concept of citizenship, and have thus far avoided elite capture" (McMillan *et al*., 2014, p. 201). This contrasts with the New Public Management (NPM) literature (Hood, 2005; Dunleavy, Margetts, Bastow, and Tinkler, 2006), referred to as the new "business" style (Schwartz, 2006) that suggests the devolution of state tasks to citizens or commercial companies. Often the main goal of this devolution is to reduce costs for government organizations (Ackerman, 2004).

Different forms of institutional arrangements between the state and community were mapped for the management of drinking water systems by Adams *et al.* (2020). The forms of co-governance they identified differ in the composition of the parties involved: besides community and government organizations at distinct levels, private companies also can be involved in the partnerships. The forms of co-governance between government and community organizations differ in the type of partnership: from partnerships with distinct responsibilities, to cooperatives, delegated management, self-help arrangements, or service contracts.

However, also many problems and challenges have been identified in co-governance arrangements, such as weak leadership, unconnected governance structures, poor funding, political interference, overburdening of poor communities, and collective-action challenges surrounding elite capture, marginalization, and unequal benefit sharing (Adams *et al.*, 2020; Dill, 2010). Other authors mention specific challenges based on their case studies: poor infrastructure and limited community capacity (Adams and Boateng, 2018); lack of trust in government organizations in decisions made by users and communities (Bovaird, 2007); the need for a trust of communities in government organizations (Fledderus, Brandsen and Honingh, 2014); reluctance of government to give up control (Johnson and Osborne, 2003); and discontinuation of government support for community water initiatives (Walnycki, 2017).

One aspect of co-governance often overlooked is the importance of recognition of the values of communities. This refers especially to values related to their struggle for autonomy and control over projects and resources in their territories. An important principle of governance by communities is the creation of water use rights through the contribution of labor during the construction of water infrastructure. When a water infrastructure is being built, the rights to use the water are created simultaneously. This is called "hydraulic property creation" (Boelens and Vos, 2014). When the arrangements for participation in the construction of the infrastructure are not under the communities' conventions for hydraulic property creation, this will affect the acceptance of the intended water use rights and related obligations.

This case study uses the Pesillo-Imbabura regional drinking water project in Ecuador as an illustration of the practice of a co-governance arrangement. It describes its development

considering its co-governance arrangements and what effects it had on the autonomy, recognition, representation, and distributive outcomes of the involved communities.

3. Research Methodology

The development of the Pesillo-Imbabura project was investigated through an analysis of the institutional arrangements and timeline of events (from 2004 to 2020). Data was collected through fieldwork and literature research. During the fieldwork, participatory research methods were used like actor mapping and focus group discussions. An exploratory visit was done in 2018. Direct observation of the project process was conducted at the local SENAGUA´s office for several days with a representative from several JAAPs, followed by a work field travel to the provinces of Imbabura and Carchi in 2019. Representatives of communal organizations, municipalities, international cooperation, and the private sector were contacted by e-mail and video conferencing, to continue the research under the COVID pandemic travel and meeting restrictions. To gather data on the use and needs of water, specific questions were presented in a virtual focus group with some forty-five participants (26-11-2020).

4. The Pesillo-Imbabura Regional Drinking Water Project

The Pesillo-Imbabura regional drinking water project has a long history of social mobilization, communitarian leadership, and negotiation with a different governmental organisations. The communities of the Imbabura province had to fight for their water and land rights since the beginning of the 1970s. Through community protests and petitions to different municipal and provincial governments and Ministries, after twenty years they obtained the approval of the Pesillo-Imbabura regional drinking water project in 2005. However, at present, the construction of the infrastructure did not finish (Perugachi and Cachipuendo, 2020).

After the government approved the Pesillo-Imbabura project, there were conflicts with other communities over similar irrigation projects: the Cayambe-Pedro Moncayo irrigation system, the Pesillo-COINOA irrigation system, and the Pesillo-Imbabura regional drinking water system, as well as other minor community irrigation systems in the watershed. There were numerous demands, and the supply was limited. As a result, the communities of the

Pesillo-Imbabura project not only had to fight and negotiate with government organizations but also with their sister communities.

4.1. Social Mobilization and Inception of the Project (1995-2011)

The project was first conceived in a council meeting held in 1995 in Zuleta. In 1996, in the parish of Iiunan, a protest was organized to pressure the government to finance drinking water projects. In the five municipality capitals (Cayambe, Tabacundo, Ibarra, Otavalo, and Atuntaqui) drinking water is provided by municipal utilities under the direct control of the municipality. In the 162 rural communities, a total of fifty-two communal drinking water systems provides piped water. The rural systems are managed by users' boards called JAAP (gestion comunitaria)[3]. For Pesillo-Imbabura´s project, the fifty-two communal systems are grouped into 16 Regional Communal Water System Operators (JAAPR). In the five capitals, water service is erratic with intermitted provision, low pressure, and sometimes low quality. In most communities, the quality of service is also low with intermitted provision (on average 3 hours a day), low pressure and low quality. In the municipal capital towns, the percentage of connected houses is close to 97%, and in rural areas some 86% (BDE, 2015, Table 1.8). Connection to sewer systems is about 90% in urban areas and from 0 to 40% in rural areas (BDE, 2015). In 1996, the provincial government of Imbabura commissioned technical studies for the Pesillo-Imbabura project with financial support from the Coorporación Andina de Fomento (CAF) and the Interamerican Development Bank (BID).

In 2000, the first designs for the project were made. The main idea was to connect all existing drinking water systems, both urban and rural, to a new source of water. Initially, the Carneseri River at 177 km distance from the region was chosen as a new source of water. However, this option proved not viable for deficiency of river discharge. It was calculated that some 700 l/s were needed for a projected population of 240.500 inhabitants in the year 2032.

Not much happened in the years that followed, but president Lucio Gutiérrez was pressured by the Indigenous communities to start a project that would bring water to the

3 Community management (gestión y desarrollo comunitario); Engage community members in strengthening cultural identity and developing projects of common interest through motivation and inclusion strategies, MinEduc:
https://educacion.gob.ec/wp-content/uploads/downloads/2021/11/EGC_Gestion-y-Desarrollo-Comunitario.pdf

communities. Although no project plan was in place, president Gutiérrez symbolically started the project in 2004 by laying its first stone.

With no project design nor financing in place nothing happened, and in 2005 people from 162 communities marched to Quito to demand water for their communities (Diario Hoy, 2005)[4]. In 2006, during his presidential campaign, Rafael Correa promised water projects in the region. The same year the project officially started. However, due to the absence of funding, no project design was made.

From 2005 the Ministry of Housing (MIDUVI) oversaw the Pesillo-Imbabura project. They managed the project together with the five municipalities and the boards of the fifty-two communal drinking water systems (JAAP). In May 2008, the national water authority SENAGUA was created by the government of Rafael Correa, to replace Ecuador's former National Water Resources Council. This new government body was responsible for managing water resources and was charged with designing the proposal for the new Water Law (Project of the New Organic Law of Water Resources, LORHUyA), in force since 2014. However, the new Constitution of 2008, and the 2010 law on Territorial Organisation, Autonomy and Decentralisation (COOTAD) excluded the provinces from the management of drinking water projects and left it in the hands of municipalities and community organizations (SENAGUA, 2019).

A new regulation (MDT, 2016-034) for this law officially recognized the administrative boards of communal drinking water and sanitation systems (JAAP) as non-profit organizations in 2016. According to this regulation, the JAAPs enjoy administrative, financial and management autonomy to comply with the effective provision of their water service. In Correa´s government, SENAGUA started to recognize JAAP by giving them benefits such as the channeling of public resources, subsidies for electric energy, training, and representation in the basin councils. Also in 2016, the government recognized the water user rights of the JAAP (by Ministerial Agreement 1353). In 2017 the Ministerial Agreement 0031 recognized different forms of government, including those from the Indigenous communities as well as other community organizations. According to this agreement, these organizations should be

4 Diario El Hoy (29 Noviembre 2005). "Indígenas se toman vías y seis alcaldes se oponen". http://www.llacta.org/notic/2005/not1129a.htm

recognized as water authorities in their territories and therefore, allowed to manage drinking water and irrigation systems.

In 2008, the first environmental impact assessment (EIA)[5] was made for the Pesillo-Imbabura project. Physical, meteorological, and ecological variables were evaluated, together with existing secondary information supplied by a consultancy firm. The most relevant environmental impact of the new infrastructure was found to be the destruction of natural vegetation and the most positive effect the temporal job generation (AGRIS, 2008).

4.2. Social mobilization and continued studies (2012-2014)

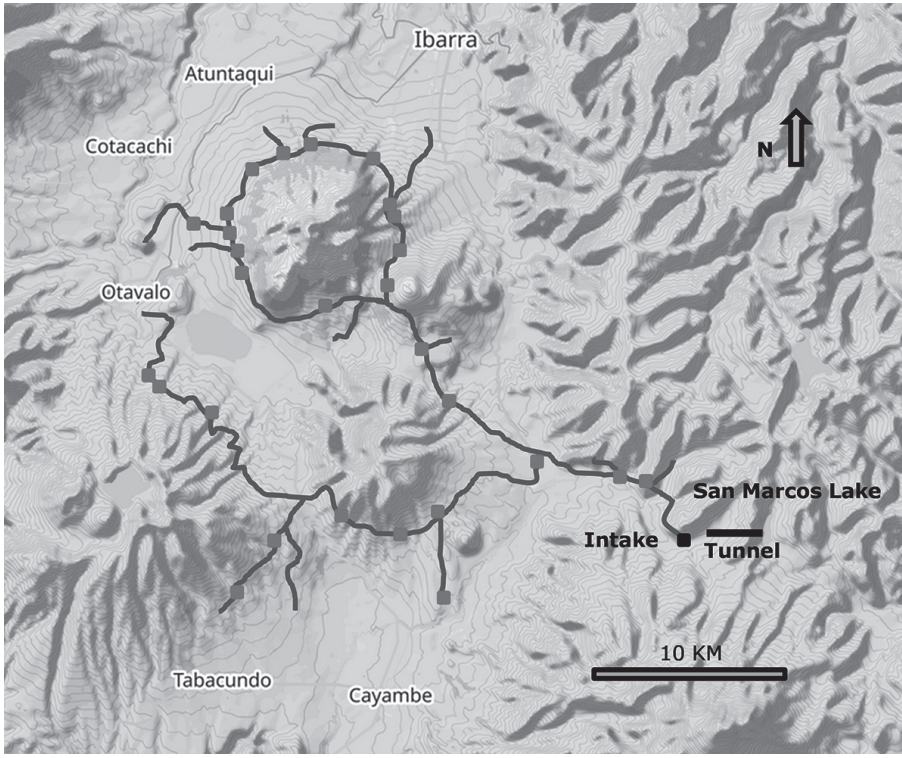
In 2012, the 52 JAAPs of the region unite themselves in a regional federation called "Consejo de Coordinación de las juntas del agua" (Coordination Board of the Communal Drinking Water Organisations). These 52 JAAPs are grouped into a total of 16 Regional JAAPs (JAAPRs). Juan Serrano, the president of the Coordination Board, organized a march to Quito in 2014 with more than 12,000 people to demand the restart of the project to benefit 160 communities with 45,000 families in the province of Imbabura and part of Pichincha (Cayambe, Tabacundo, Otavalo, Ibarra, and Antonio Ante). "We are half a million inhabitants who do not have drinking water", he claimed. The protesters identified the marginalization of vulnerable rural communities; top-down planning; competition for water among domestic, agricultural, and hydroelectric uses (by 2016, hydroelectric power was the second largest energy source in Ecuador); and deficient project planning, design, and implementation, as causes of the delays in the Pesillo-Imbabura project's execution. As a result, MIDUVI started the design of the infrastructure needed but by 2012 the project's control ended. In 2013, the management of drinking water projects was transferred to SENAGUA.

The new idea of the Pesillo-Imbabura project was that water will be taken from the San Marcos reservoir, which requires an expensive tunnel of some 4,7 km to transfer the water to the La Chimba river in the Pisque watershed. This tunnel would also bring water for a large irrigation system (0,7 m^3/s for drinking water, 2,3 m^3/sec for irrigation) (Manosalvas *et al.,* 2021). The water for the five towns and fifty-two rural drinking water systems would be

5 GAD Ibarra (2015). "Contratación para el estudio de impacto ambiental y plan de manejo del sistema regional agua potable Pesillo Imbabura": http://documentos.ibarra.gob.ec/uploads/documentos/CONTRATO/CONTRATO__NRO._215-PSM-2015(01-02-2016_09_27_34).pdf (retrieved 20-6-2021)

treated in a central treatment plant and delivered to the reservoirs of the existing drinking water systems by a piped distribution system (Figure 1) with some 154 km of pipes (BDE, 2015, p. 41). The existing municipal and communal drinking water systems would be upgraded where needed. Within the administrative structure of the construction project (Empresa Pública Mancomunada, EPMAPPI) a director was appointed (BDE, 2016; GAD Antonio Ante, 2016). In 2014, the technical design was finished.

Figure 1: Approximate design of the piped distribution network, storage and regulation tanks for the distribution of the water to the five towns and fifty-two rural drinking water systems



Source: own elaboration on basis of Open Street Map and BDE (2015, p. 39).

4.3. Creation of the Mancomunidad (2015-2017)

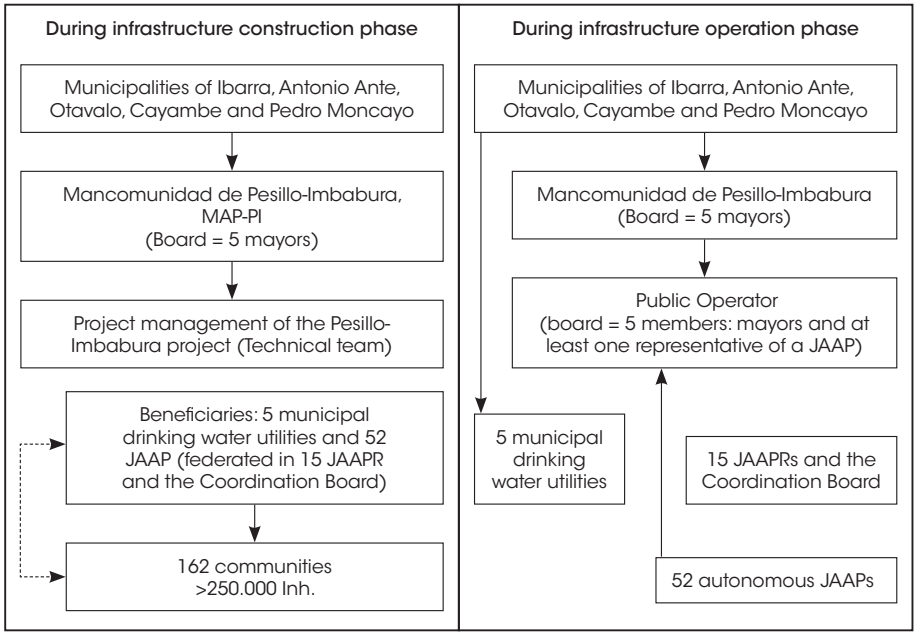
In June 2015, in the canton of "Antonio Ante" and with the presence of more than four thousand community members, the project was started officially, in presence of state authorities, experts, local and provincial governments, and the mayor of Antonio Ante. The "Banco del Ecuador" (BDE)[6] will finance the project. The estimation of the total costs was US$ 47,7 million. Of this total, a US$ 16,7 million will be a loan taken by the five municipalities granted by the BDE, and US$ 31 million will be a subsidy from the French Development Agency (AFD) channeled through the BDE: all these populations are in rural areas in 162 communities and urban areas of the five cities.

In 2016, the mayors of five municipalities created the *Mancomunidad del Proyecto de Agua Potable Pesillo-Imbabura*. A *Mancomunidad* could be translated as "Commonwealth or public corporation. It is a legal figure that allows public partnership at the municipality level. The board of the *Mancomunidad* is formed by the five mayors. The *Mancomunidad* is the umbrella organization for two different institutional arrangements: first for the execution of the construction of the infrastructure, and second (after the construction has finished) for the operation and maintenance of the main infrastructure (Figure 2).

The *Mancomunidad* is responsible for the construction. The JAAPs nor the communities' organizations have any say in this phase. After the construction of the main infrastructure has finished, the Mancomunidad will create a public operator to manage and maintain the main distribution system (*Empresa Pública Mancomunada para la administración, operación y mantenimiento del Sistema de Agua Potable Pesillo-Imbabura*). This public operator will have a board of five members. At least one board member must be a representative of a JAAP (Registro Oficial 2016, Art. 1.27). It is interesting to note that all official project documents stress the importance of community participation in project management, however, participation according to community leaders has been scarce.

6 The *Sate Bank* (SB) or *Banco de Desarrollo de Ecuador* (BDE, 2015; 2016; 2019). "Informe de Evaluación. Memorando DBE-GSR1Q-2015-0045-M Sistema regional de agua potable Pesillo-Imbabura, para los cantones Cayambe y Pedro Moncayo de la provincia de Pichincha; y Otavalo, Antonio Ante e Ibarra de la provincia de Imbabura". Solicitud SIC No. 33589. Quito, 28 Feb 2015.; BDE (2016). "Contrato de financiamiento y servicios bancarios".
http://www.pedromoncayo.gob.ec/documentos/LeyTransparencia_2016/julio/l3_proyecto%20pesillo.pdf

Figure 2: Institutional arrangement of co-governance of the Pesillo project during construction and operation phase



Source: own elaboration based on BDE, 2016 and Registro Público, 2015.

This co-governance arrangement implies the five municipal utilities do not have a voice in the management of the main system. The JAAPs have one representative on the board, but the 15 JAAPRs and the Coordination Board *of* the JAAPs do not have a direct say in the management of the main system. This means that the Coordination Board cannot act as a representative of the communities, cannot inform the communities about decisions of the public utility, and cannot enforce the accountability of the public company towards the users.

4.4. Start of the construction, delays, and protests (2017-2021)

In 2017, after the studies to redesign the Pesillo-Imbabura project, SENAGUA contracted the company called CIA ACP Technical Consultant (SENAGUA-SAPYS.2-2015-0305-M)[7].

7 MAA - Ministerio del Ambiente y Agua. Proyecto; IE PROYECTO: K043 SENAGUA - Agua Potable y Saneamiento Rural. https://www.ambiente.gob.ec/wp-content/uploads/downloads/2020/07/15.Agua-Potable-y-Saneamiento-Rural-SENAGUA.pdf

The construction started, and by the end of the year, 27% of the infrastructure was completed. However, in the subsequent years, the construction got a hold due to several reasons. The Indigenous communities protested because they did not agree with not having representation in the management of the infrastructure construction project. They felt the project was the result of their struggle and they should have a voice in the project.

In a meeting with representatives of the municipalities, JAAPs en AFD, the minister of the environment, at that time Humberto Cholango, stated that this project was a dream that was being fulfilled: "We hope and aspire that this desire of the National Government, the GADs and above all the beneficiaries who suffered from water shortages in summer times will come true" (Expectativa, 2018).

On 11 November 2019, some six thousand inhabitants gathered in Ibarra in a meeting with the mayor, and president of the *Mancomunidad*, Andrea Scacco, to pressure the finishing of the project. The mayor explained that the works had to be suspended because of deficiencies in the technical design.

Since 2016, the European Union Investment Facility for Latin America (LAIF) planned to invest more than US$ 7,5 million in technical assistance for the municipalities and their municipal companies that correspond to the Pesillo-Imbabura project. This program is managed by the French Development agency AFD and executed by the BDE (BDE, 2019)[8].

In 2020, the Association formed by the Chilean and Ecuadorian companies INECON-ICA was selected to oversee the structuring and designing of the *Management Model for the Administration and Operation of the Pesillo-Imbabura-Public Company Regional Potable Water System*. The French Development Agency (AFD) approved the process.

During the focus group, discussion on 26-11-2020 community leaders (*e.g.*, Cotacachi, Ibarra, Otavalo) explained that drinking water was not their main concern. They expressed the need for better treatment of wastewater to prevent contamination of surface water, others expressed the need for irrigation water. Overall, there is dissatisfaction with the Pesillo-Imbabura project for its slow progress, lack of participation of the beneficiaries, and disputes among the community leaders.

8 Technical assistance cooperation program to strengthen the management of services and the development of investments in drinking water, sanitation, and solid waste agreement No. CEC 1011 01 S

Other conflicts have arisen between the government and the communities. In 2019, according to the mayor of Ibarra (also president of the *Mancomunidad*), Andrea Scacco, farmers from the province did not allow the machines on their land to install the pipes for the project, as the farmers wanted to be paid in compensation. The project did not foresee payment as the communities will benefit from the project and the pipes will be buried and the loss of land is small and for a brief period only (La Hora, 2019; 2010)[9].

The costs of the collective water supply include the significant operation and maintenance of the pumping system cost, which will increase the water tariffs for rural communities. Since the beginning of the project, the cost is a concern. The communities would also have to pay part of the administrative costs, without having real participation in decision-making about the management of the Mancomunidad. The price of water for the rural areas will increase gradually (from the current 0.10 to 0.25 US$/m3 in 2031) while the price for urban water users would go down (from the current 0.47 to 0.25 US$/m3 in 2031) (SENAGUA, 2015, p.52). According to the former SENAGUA official L. Suárez (pers. com. 7/8/2021) and several indigenous representatives (pers. com. J.D. Serrano (4/2019), the last communication F. de la Torre (17/9/2021), the formal undersecretary of the Mira River Basin District R. Yamberla (24/7/2021)) and the Imbabura Provincial Director of Water resource management (between 2019-2021) M. Donoso about the community water management services, rural water tariffs are often too low for good service provision; however, rural communities often prefer low fees over better-quality services. The difference between rural and urban tariffs is also related to the fact that urban water prices are regulated by The Water Regulation and Control Agency (ARCA) with fixed rules on how they determine the water prices, while JAAP can set their prices. This happens because the administrative costs are paid in the form of *mingas* and other types of communal collaboration arrangements. In the Pesillo-Imbabura project, the prices for both rural and urban households had to be unified, leading to great dissatisfaction.

New delays in the execution of the Pesillo-Imbabura project were caused by the merger of Senagua with the Ministry of Environment in March 2020. This merger was accompanied by

9 Diario La Hora, (2019). La próxima semana retoman trabajos del Proyecto Pesillo-Imbabura". https://lahora.com.ec/noticia/1102292597/la-proxima-semana-retoman-trabajos-del-proyecto-pesillo-imbabura;
Diario La Hora, (2010). "Grandes proyectos, larga espera". https://lahora.com.ec/noticia/981647/grandes-proyectos-larga-espera (retrieved: 30-06-2021)

a reduction of budget for both former organizations[10]. As of the finishing of the field research for this article (March 2021) the infrastructure project was not completed because of new negotiations from the donors. Media reports continue to refer to this drinking water project as an indigenous social struggle, mobilization and protest dating back over 25 years, where 64% of the work is complete. However, as the physical work progresses, the administrative model remains a place for constant negotiation and dialogue between the parties.

5. Discussion

From the analysis of the Pesillo-Imbabura regional drinking water project, it became clear that the recognition of the struggle of the communities for the project construction, as well as their re-presentation in the project management through their federated organization of communal drinking water systems, were crucial. These values of historical struggle, pride, autonomy, and control of the Indigenous communities were not considered in the co-governance arrangements implemented by the Ecuadorian state (see also Dupuits, 2021; Dupuits *et al*., 2020). The stance of the communities towards the drinking water project can be understood with the notion of "hydraulic property creation" (Boelens and Vos, 2014). To establish water rights, the communities needed control over the design and implementation of the infrastructure. Using Ostrom's (1993; 2008) collaborative model, community members developed an organizational system to ensure outside authorities respected the rights of community representatives in the Pesillo Project. However, community leaders explained that there was more to be concerned about than just drinking water when it comes to governing the use of common goods. This occurs due to the historical confrontation with institutional entities, the inability to define clear group boundaries of participation, unsustainable modifications to the relevant legal provisions of the state and municipal sectors, as well as the lack of institutional frameworks, to enhance water and sanitation services, including community management schemes. Communities' conventions establish the benefits and obligations of water use according to the relative contribution of each member group, and each household. In this case, the communities could not control this process, and this was an important reason to oppose the way how to manage the project. Between the declarations of

10 Mongabay (2020). Ecuador: Polémica tras fusión del Ministerio del Ambiente con Secretaría del Agua. https://es.mongabay.com/2020/03/ecuador-fusion-ministerio-del-ambiente-senagua-polemica/

the project support and the protests, from the Indigenous communities and their interest in executing the project in a framework of the genuine association. They felt this initiative was the result of their struggle, and they should have a voice in the project. We argue that despite the right to protest in the recognition of the peasant as a subject of law and the complexity of water demands on these rural territories, there is a political will that minimizes the legitimate defense of participation and opportunities in this region.

It was evident several times within the Pesillo-Imbabura project that there was dissatisfaction with its slow progress, lack of coordination among the donors and administrators, and disputes among the beneficiaries. Governance of a common resource at various levels, from the lowest to the most complex, continues to be a challenge. Two aspects of this misrecognition merit more discussion.

First is the relation between the struggles of Indigenous communities and their organizations concerning the Andean Twenty-first Century Socialism. The overall political setting of the Pesillo-Imbabura project is the concentration of power by the central government of Ecuador during the last two decades (Eguren, 2017; Kennemore and Weeks, 2011; Valladares and Boelens, 2019). Although the Constitution of 2008 incorporated many sustainability and social equality ideas suggested by the elected delegates of the Ecuadorian Constituent Assembly, the government centralized decision-making and concentrated on the building of large infrastructure. Community leaders who at the beginning supported the government started to protest and claim more space for decision-making, as collective actions (Ostrom, 2009). The Pesillo-Imbabura project reflects the historic struggle of the Indigenous communities and their organization over water issues. Although the communities appreciated the help of the central government and French development cooperation, they demanded control over what they considered their water resources, their project, and their infrastructure. Since the political and land reform of the 1970s, this social divide contributes to the feeling of the communities that they are excluded from the management of the project as the mayors that govern the *Mancomunidad* are regarded to form part of the urban elite.

From the analysis of the Pesillo-Imbabura case, it becomes clear that the institutional design of the project did not allow the participation of the beneficiaries in the decision-making during the construction phase of the project, and the foreseen management of

the infrastructure showed only very meager participation in the management board of the operator. For real co-governance, a much larger role of the 52 JAAPs, the 16 JAAPRs and their Coordination Board should be institutionalized.

The second point of discussion is the relation with bio-physical conditions, including infrastructure and hydrological drought. In most discussions about co-governance, these conditions do not play a role. In the case of the Pesillo-Imbabura project, the combination of increased water demand and of the occurrence of hydrological drought required searching for faraway water sources. In this case the construction of an expensive tunnel to bring the water from another watershed (Jiménez and Terneus-Páez, 2019; MIDUVI, 2013).

According to the government, this required a top-down management structure with little consideration of the local management structures in place. The discourses of drought, growing water demand, and the need for water transfer, through an expensive tunnel and external funding, received widespread support also by the communities. Alternative solutions like improving the water holding capacity of nearby catchment areas, rainwater retention, decreasing water losses from the piped distribution systems, or curbing demand, were not discussed. However, the communities did not accept to play only a minor role in the management of the infrastructure construction project nor the operation of the drinking water infrastructure. Where government officials estimated the management capacity of the rural communities to be too low to manage a major infrastructure project, the communities were convinced they could and should manage the new water distribution system. Studies have shown the capacity of community and water users organizations to manage small and large water infrastructure (Foro, 2013; Isham and Kähkönen, 2002; McMillan *et al.,* 2014; Mutambara *et al*., 2016; Ostrom, 1990; Romano, 2017; Sillitoe, 2017; Vos and Vincent, 2011).

6. Concluding Remarks

In the Pesillo-Imbabura region drinking water project, the idea of involving social actors to participate in the core activities of the project process as defined by Ackerman (2004) as co-governance, was not achieved. The current collaboration of government organizations with community collectives did not allow for the beneficiaries to gain decision-making power in

the project management and did not recognize the role of the communities in the struggle for the project's successful execution.

As the main objective, the study examined the dispute over the management arrangement for drinking water in the Pesillo-Imbabura region. As a result, we can see that the co-governance arrangement failed to consider the communities' wishes to participate in the infrastructure construction process but recognize the co-governance arrangements as having a positive effect on autonomy, recognition, representation, and distributive outcomes for the involved communities. The JAAPs will continue to manage their drinking water systems, at least on paper. The institutional design for the operational phase of the infrastructure is a good example of co-governance, and until now, a representative of the JAAPs will be a member of the main distribution system operator's board.

In practice, the communities felt left out and envisioned much more control over the construction project and the future management of the main system. For the future operational model of the system, it does not consider the public-community alliance, the federated structure of the 52 JAAPs in 16 JAAPRs and the Coordination Board. Not recognizing the historic struggle of the Indigenous communities and their role in the management of the project led to many years of protests and delays in the implementation of the project. Despite the rhetoric of participation in the national political arena, and existing legal and institutional developments that Ecuador has seen in the last years, there is limited participation of users in water project implementation. The new institutional arrangements are insufficient to sustain collaborative action.

The government and donors overlooked the principle of hydraulic property creation which is crucial for the Indigenous communities. It establishes the direct link between the struggle of the communities to get the project financed, the contribution to the construction of the infrastructure and the creation of water uses rights and obligations, but also the right to manage the system and be a principal actor in decision-making spheres.

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