

**Implementation of Water Reserves in Bolivia Using its Existing Water Law Framework**

Colin Hull

Harrison Innovations in Water Law and Policy Fellowship  
Getches-Wilkinson Center for Energy, Natural Resources, and the Environment  
University of Colorado Law School

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## **Abstract**

The urgency of the climate crisis and Bolivia's efforts to rapidly develop threatens its watersheds and natural flowing rivers. The Water Reserves Initiative, which allocates water to the environment, is essential to ensure the sustainability of water as a resource and protect its ecological benefits. A 2016 World Wildlife Fund (WWF) consultancy briefly addressed the possibility and problems of implementing a water reserves program at the national level. This analysis builds off the 2016 consultancy by assessing the legal framework and the priorities of the Bolivian government. The research focused on constitutional provisions, laws, regulations, and government plans that relate to the management of water. While the Bolivian government recognizes the need for a comprehensive water management program, numerous institutional deficiencies and contradictions in the legal framework serve as barriers to the implementation of any program at the national level. The findings suggest that there are several legal gaps that need to be filled before the Water Reserves Initiative can be successfully developed. However, there are several entry points for the WWF to begin working with the Bolivian government to implement the Water Reserves Initiative.

## **Introduction**

### **The WWF's Water Reserves Program**

The WWF's Water Reserves Initiative is an effort aimed at protecting hydrological conditions by allocating water for the environment in a region's most important water producing areas. The program hopes to secure protection of freshwater ecosystems and free-flowing rivers, and the environmental benefits they provide. These benefits include the transport of sediments and nutrients, fish spawning and productivity, riparian protection, a buffer against natural variability in water availability, cultural values, recreation and navigation. Furthermore, allocating water to the environment can prevent the over-allocation of water, which inevitably leads to serious water conflicts. It hopes to secure these protections by explicitly allocating water to the environment by statute or official decree where it has not already been allocated for agricultural, industrial, energy, or drinking purposes. The Water Reserve Initiative provides an opportunity to set rules for future infrastructure development and water allocation. It can contribute to better water governance since it sets the stage to analyze project impacts that could lead to the denial of a license if problems related to flow connectivity and biodiversity conservation arise.

To implement the initiative in these countries the WWF has laid out four strategic pillars. First, the WWF focuses on the technical and scientific aspects of water management by conducting environmental flow studies. Second, the WWF works with relevant government organizations to advocate for a law, decree, or policy that allocates water to the environment. Third, WWF continues to work with these agencies when issues in the implementation or management arise. Fourth, the WWF communicates and shares these processes so they can be replicated elsewhere.

The initiative is led by Mexico, where 50% of the surface water of the country is now protected with a water reserve decree. The countries currently engaged in the initiative are Peru, Bolivia, Guatemala, Honduras, Ecuador and Colombia. The Andean countries are a focus of the WWF's efforts because most water management in these countries is focused on the consequences of the combined effect of declining glacier masses and drying up high mountain wetlands that are essential for the water supply

of cities, agriculture, mining activities, and industry. These initiatives are mainly designed to address the water demand and supply balance for productive use. However, what many of the national policies lack is a recognition that water management strategies should be expanded and complemented by a longer-term approach to managing freshwater resources in river basins which are not yet under significant demand pressure.

In Bolivia, efforts are already underway to implement the water reserves initiative at the local departmental level. WWF representatives are working with the Department of Santa Cruz in eastern Bolivia to implement the project at the regional level. The WWF has expressed a desire to expand this program in Bolivia from the local to the national level.

In 2016, the WWF published the findings of a consultancy assessing the possibility of implementing a Water Reserves initiative modeled after the one in Mexico in Columbia, Ecuador, Peru, and Bolivia. The report found that while key authorities in Bolivia were willing to engage on strategies and regulations that could lead to improvements in water management, the institutional and legal framework for implementing a program was weak.<sup>1</sup> The consultancy found that there was a systemic lack of institutional capacity and budgetary resources to implement a water reserves initiative. Further, it found that while Bolivia recognized the problems of poor water management and climate change, most of the management at the national level was still in a conceptual phase and that Bolivia had not taken foundational steps to address the impacts of climate change.<sup>2</sup>

## **Objectives and Research Purpose**

This report addresses questions concerning the potential for implementation of the Water Reserves Initiative nationwide in Bolivia. The specific questions addressed are:

1. What is the current legal framework of water in Bolivia at the national level?
2. What are the priorities of the Bolivian National Government with respect to water?
3. What is the feasibility of implementing the Water Reserves Initiative based on the existing legal framework and the current priorities of the state?

To answer these questions, this research is structured into sections. First, this analysis attempts to place Bolivia in its political, geographic, social and economic context. Second, it lays out the existing legal framework by discussing the constitutional provisions and statutes that relate to the management and conservation of water resources. Third, it attempts to assess the current priorities of the state. Fourth, it briefly discusses areas for further research. Finally, it assesses the feasibility of implementing the WWF's water reserves program and provides potential entry points for the WWF to begin working with the national government.

## **Summary of Results**

The numerous institutional barriers and gaps in the legal framework make Bolivia a challenging place to implement the Water Reserves Initiative. The Bolivian Constitution, a number of environmental laws, and plans submitted by the Ministry of the Environment and Water (MMAyA) provide a number of

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<sup>1</sup> ABEL MEJIA & MARIO LOPEZ, CONSULTANT'S REPORT TO WWF: BACKGROUND RESEARCH TO EXPLORE OPPORTUNITIES TO PROMOTE AN ANDEAN NETWORK OF WATER RESERVES FOR THE ENVIRONMENT CONSULTANT'S REPORT TO WWF, 3 (2016) [hereinafter WWF Consultant's Report].

<sup>2</sup> *Id* at 10.

optimistic starting points to implement a water reserves program. Importantly, the Bolivian government recognizes the significance of sustainable water management and the value of allocating water to the environment. However, large gaps in the statutory framework (most significantly a lack of a comprehensive updated water law) makes the prospect of implementing the Water Reserves Initiative a long way off. Institutional weakness, various environmental and socioeconomic stressors, government priorities emphasizing economic development over environmental protection, and contradictory statutes affecting the management of water also provide barriers to the implementation of a water reserves program. Nevertheless, the growing environmental problems created by climate change, population growth, and Bolivia's race to dam its rivers and exploit its natural resources urges immediate action and the need to quickly implement the Water Reserves Initiative.

## 1. Contextual Background

To understand the legal framework and priorities of the Bolivian government it is important to place Bolivia in its present geographic, economic, political, and demographic context.

### A. Water Resources and Physical Geography of Bolivia

Bolivia is one of the most geographically diverse countries on earth. Much of this geographic diversity stems from the extreme differences in altitude, with its highest point reaching to 6,542 meters in the west and its lowest point sitting at 270 meters above sea level in the east. The humid winds from the Atlantic and the Amazon Basin crash against the wall of the Andes and cause high rainfall in the sub-Andean mountains and low elevation areas. The Altiplano, situated between two mountain ranges in the Andes on the western side of the country, is sheltered from the humid winds, and records very low levels of precipitation.<sup>3</sup> As a result, its ecosystems and the availability of water vary significantly.

In some regions of Bolivia water is abundant and in others it is incredibly scarce. Water availability on a per capita basis is plenty, at about 48,000 cubic meters a year. However, these water resources are unequally distributed both geographically and seasonally.<sup>4</sup> The rainy season is concentrated in a few months of the year and can bring floods that cause serious damage to crops. In the other months, drought can be an equally serious problem. The impact of natural disasters such as floods and droughts are known as the "El Niño and La Niña" phenomenon. In recent years El Niño and La Niña have intensified considerably, further aggravating the situation and causing economic losses of as much as twenty percent of Bolivia's GDP from droughts and floods.<sup>5</sup>

Bolivia has three large basins, the Amazon Basin, the Río de la Plata Basin, and the Altiplano Basin. These basins in turn are made up of 270 rivers, 184 lakes and lagoons, around 260 wetlands, and two salt flats.<sup>6</sup> The Amazon Basin is by far the largest basin both in terms of area, representing 65.4% of the national territory and the majority of water resources, harboring roughly 91% of the Bolivia's total

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<sup>3</sup> Ministerio de Medio Ambiente y Agua (MMAyA), *Balance Hídrico Superficial de Bolivia*, 1, 29 (2012) <https://sihita.org/wp-content/uploads/2022/03/DOC001-1.pdf> [hereinafter *Balance Hídrico*].

<sup>4</sup> WWF Consultant's Report at 9.

<sup>5</sup> Perfil de País - Bolivia (Estado Plurinacional de). ORGANIZACIÓN DE LAS NACIONES UNIDAS PARA LA ALIMENTACIÓN Y LA AGRICULTURA, AQUASTAT, 1, 3 (2015) <https://www.fao.org/3/CA0439ES/ca0439es.pdf> [hereinafter Perfil de País].

<sup>6</sup> *Balance Hídrico* at 35-36.

water.<sup>7</sup> The Río de la Plata Basin, situated in the southeastern part of Bolivia comprises 20.6% of the territory and contains roughly 7% of the country's water.<sup>8</sup> Finally, the Closed Altiplano Basin makes up 14% of the national territory and contains only 2% of the country's water.<sup>9</sup>

A large proportion of the Bolivian population lives in the water-scarce Altiplano region, which includes the La Paz-El Alto Metropolitan area of 2.3 million people.<sup>10</sup> As of 2016, the Altiplano in Bolivia was home to over 6.8 million people, with 62% living in urban areas and 38% living in rural areas.<sup>11</sup> This region depends on rapidly shrinking glaciers that have declined by an estimated 43% since the 1980s.<sup>12</sup> Studies from the Universidad Mayor de San Andrés estimate that the glaciers in this region are losing over two meters in depth and retreat 20 meters every year.<sup>13</sup> This is especially concerning because in drought years as much as 83% of the water flowing to the metropolitan region of La Paz and El Alto comes from glaciers.<sup>14</sup> The altiplano has two large lakes, lake Titicaca, which Bolivia shares with Peru, and lake Poopó, which has almost entirely dried up since 2015.<sup>15</sup> Subsistence agriculture, which is mainly concentrated in the Altiplano valleys, encompasses more than 40 percent of the country's cultivated area and involves about 80 percent of the rural population.<sup>16</sup> In terms of groundwater, in the Altiplano there are a series of aquifers that discharge towards Lake Titicaca, Lake Poopó and the Salar de Uyuni. However, according to the Food and Agriculture Organization (FAO), groundwater drilling has intensified dramatically in recent years and has prevented the recharging of these lakes.<sup>17</sup> In 2016, an extreme drought forced the Bolivian government to implement water rationing for more than 800,000

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<sup>7</sup> WWF Consultant's Report at 9; *Ficha Técnica, Mapa de Grandes Cuencas Hidrográfica*, ORGANIZACIÓN DE LAS NACIONES UNIDAS PARA LA ALIMENTACIÓN Y LA AGRICULTURA (1997) [https://www.udape.gob.bo/portales\\_html/portalsIG/atlasUdape1234567/atlas09\\_2007/html/h00f.htm](https://www.udape.gob.bo/portales_html/portalsIG/atlasUdape1234567/atlas09_2007/html/h00f.htm).

<sup>8</sup> *Ficha Técnica*, supra note 7.

[https://www.udape.gob.bo/portales\\_html/portalsIG/atlasUdape1234567/atlas09\\_2007/html/h00f.htm](https://www.udape.gob.bo/portales_html/portalsIG/atlasUdape1234567/atlas09_2007/html/h00f.htm)

<sup>9</sup> WWF Consultant's Report at 9; *Ficha Técnica*, supra note 7.

<sup>10</sup> *La Paz and El Alto on their way to Integrated Urban Development*, UNITED NATIONS DEVELOPMENT PROGRAM (Oct. 18, 2021) <https://www.undp.org/blog/la-paz-and-el-alto-their-way-integrated-urban-development>.

<sup>11</sup> Gerardo Damonte, Manuel Glave, Sandra Rodríguez Castaneda & Andrea Ramos Bonilla, *The Evolution of Collective Land Tenure Regimes in Pastoralist Societies: Lessons from Andean Countries*, GRUPO DE ANÁLISIS PARA EL DESARROLLO, 1, 17, (Apr. 2016)

[https://www.researchgate.net/publication/303894268\\_The\\_Evolution\\_of\\_Collective\\_Land\\_Tenure\\_Regimes\\_in\\_Pastoralist\\_Societies\\_Lessons\\_From\\_Andean\\_Countries](https://www.researchgate.net/publication/303894268_The_Evolution_of_Collective_Land_Tenure_Regimes_in_Pastoralist_Societies_Lessons_From_Andean_Countries).

<sup>12</sup> Elodie Broussard, *IAEA Supports Study of Bolivian Wetland Water Reserves as Glaciers Melt*, INTERNATIONAL ATOMIC ENERGY AGENCY (Dec. 10, 2021) <https://www.iaea.org/newscenter/news/iaea-supports-study-of-bolivian-wetland-water-reserves-as-glaciers-melt>;

Torsten Seehaus, Philipp Malz, Christian Sommer, Alvaro Soruco, Antoine Rabatel & Matthias Braun, *Mass Balance and Area Changes of Glaciers in the Cordillera Real and Tres Cruces, Bolivia, between 2000 and 2016*, INSTITUTE OF GEOGRAPHY, FRIEDRICH-ALEXANDER UNIV., INSTITUTO DE INVESTIGACIONES GEOLOGICAS Y DEL MEDIO AMBIENTE, UNIV. MAYOR DE SAN ANDRÉS & INSTITUT DES GÉOSCIENCES DE L'ENVIRONNEMENT, UNIV. GRENOBLE, 1, 125 (Dec. 12, 2019)

<https://www.cambridge.org/core/services/aop-cambridge-core/content/view/177A1C19E0A589DF6256B062B5A69E0F/S0022143019000947a.pdf/mass-balance-and-area-changes-of-glaciers-in-the-cordillera-real-and-tres-cruces-bolivia-between-2000-and-2016.pdf>.

<sup>13</sup> Cédric Gouverneur, *Plenty of Water Now, None in the future: Bolivia's Melting Glaciers*, LE MONDE DIPLOMATIQUE (Aug 2020) <https://mondediplo.com/2020/08/06bolivia>.

<sup>14</sup> Thorsten Seehaus, et. al., supra note 10 at 124.

<sup>15</sup> Monica Machicao & Santiago Linachi, *Bolivia's Lake Poopo Dries Up and Scientists Fear Refill Unlikely*, REUTERS (Aug. 3, 2021) <https://www.reuters.com/world/americas/bolivias-lake-poopo-dries-up-scientists-fear-refill-unlikely-2021-08-03/>.

<sup>16</sup> Perfil de País at 4.

<sup>17</sup> *Id.* at 5.

residents in the cities of La Paz and El Alto as well in 170 other municipalities around the country.<sup>18</sup> The government of Bolivia declared a national emergency, as reservoirs were at less than 1% of capacity and the drought threatened over 290,000 acres of agricultural land.<sup>19</sup>

On the eastern side of the country water is significantly less scarce due to the presence of the rainforest. However, officials recognize that climate change is affecting the consistency and the accessibility of water in this region as well.<sup>20</sup> The Department of Santa Cruz, which serves as Bolivia's economic and agricultural center, is experiencing rapid population growth and struggles to maintain the quantity and quality of water that it needs.<sup>21</sup> As the state produces 70% of Bolivia's agricultural product, it is reliant on a consistent source of water for irrigation. Additionally, this region, with its abundant water and its large elevation profile, provides the largest source of future hydroelectric projects.<sup>22</sup>

## **B. Bolivia's Political History and Water**

Bolivia is internationally known for its struggles over water. Social protests and political changes led to the departure of multinational companies that held water and sanitation concessions in the country in the early 2000s.<sup>23</sup> Encouragement by the International Monetary Fund (IMF) to stimulate development in Bolivia led to the privatization of publicly held resources. In this effort to cooperate with the IMF, the Bolivian government passed the Drinking and Sanitation Law of 1999, legalizing the privatization of water.<sup>24</sup> These policies caused tremendous turmoil in what became known as the Cochabamba Water War. The city of Cochabamba contracted with Bechtel, an international infrastructure corporation, to build a dam above the city. To pay for this project, Bechtel raised the price of water as high as 50% and it cost Bolivians 30% of the median income at the time.<sup>25</sup> Several strikes and demonstrations escalated to riots and martial law. Ultimately, the turmoil resulted in six dead and 175 wounded.<sup>26</sup> Following this event, Bechtel relinquished its concession and left Bolivia.

Out of this context, the Movimiento Al Socialismo (MAS) rose to power, headed by indigenous coca-farmer and union activist, Evo Morales. Following a struggle over the privatization of the natural gas industry in 2003, MAS and Morales, achieved the presidency in 2005. The new head of state pledged

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<sup>18</sup> Arnel Hecimovic, *Bolivian Water Rationing*, THE GUARDIAN (Nov. 23, 2016).

<sup>19</sup> Linda Farthing, "*We are in Shock*": *Historic Bolivia Drought Hammers Homes and Crops*, THE GUARDIAN (Nov. 25, 2016).

<sup>20</sup> GOBIERNO AUTÓNOMO DEPARTAMENTAL DE SANTA CRUZ, ACUERDO POR EL AGUA SANTA CRUZ, 1, 12 (Nov. 2018) [https://www.bivica.org/files/5436\\_acuerdo-agua.pdf](https://www.bivica.org/files/5436_acuerdo-agua.pdf).

<sup>21</sup> *Id.* at 13.

<sup>22</sup> Miguel Fernández Fuentes, Carlos Fernández Vázquez, & Gustavo Rodríguez Cáceres, *Situación Energética en Bolivia y Desafíos*, WORLD WILDLIFE FUND, 1, 14 (Feb. 2020) [https://wwflac.awsassets.panda.org/downloads/1\\_situacion\\_energetica\\_bolivia\\_25\\_02\\_optimized.pdf](https://wwflac.awsassets.panda.org/downloads/1_situacion_energetica_bolivia_25_02_optimized.pdf).

<sup>23</sup> Sarah Botton, Sébastien Hardy & Franck Poupeau, *Water from the heights, water from the grassroots: The Governance of common dynamics and public services in La Paz-El Alto, Background Paper on Governance*, WORLD DEVELOPMENT REPORT 1, 6 (2017)

<https://openknowledge.worldbank.org/bitstream/handle/10986/26097/112881-WP-PUBLIC-WDR17BPWatergovernanceandtheCommonsinBolivia.pdf?sequence=1&isAllowed=y>.

<sup>24</sup> Daniel M. Maxwell, *Water Governance in Bolivia: Policy Options for Pro-Poor Infrastructure Reform*, CLAREMONT MCKENNA COLLEGE 1, 3-4 (2013) <https://core.ac.uk/download/pdf/70977474.pdf>.

<sup>25</sup> Nithyani Anandakugan, *Hopes For A Rainy Day: A History of Bolivia's Water Crisis*, HARVARD INTERNATIONAL REVIEW (Jul. 2, 2020) <https://hir.harvard.edu/hopes-for-a-rainy-day-a-history-of/>.

<sup>26</sup> William Finnegan, *Leasing the Rain: The world is running out of fresh water, and the fight to control it has begun*, NEW YORKER MAGAZINE (Apr. 8, 2002) <https://www.newyorker.com/magazine/2002/04/08/leasing-the-rain>.

to help indigenous people, who had been the victims of colonial and postcolonial rule and return the ownership and management of water to public institutions.<sup>27</sup> Morales remained in power as president until 2019. The current president, Luis Arce, is a member of MAS and was formerly the Finance Minister in the Morales Administration. All indications suggest that the policies and priorities of the Arce administration align closely with the policies and priorities of Morales while he was president.

### **C. Bolivia's Social and Economic Development and Water**

While Bolivia remains one of the least developed countries in South America, during the period following Morales' rise to power, Bolivia's economy grew considerably. Factors like child mortality, extreme poverty, chronic malnutrition and inequality have declined significantly since 2005.<sup>28</sup> The rate of schooling, access to electricity, median salaries, access to clean drinking water, and basic sanitation have also increased considerably.<sup>29</sup> The amount of land farmed increased by over a million hectares between 2005 and 2014. Similarly, the amount of land irrigated increased from 227,000 to 303,000 hectares from 2000 to 2012 across the country with the most expansion going in the Department of Santa Cruz.<sup>30</sup> Bolivia has also developed a more robust extractive-based economy. For example, the exportation of minerals and mining increased 800% from 2005 to 2015 and the natural gas industry expanded from nearly nothing to a multi-million-dollar industry and becoming Bolivia's largest export.<sup>31</sup>

The freshwater fishing industry is a significant component of the Bolivian economy. The MMAyA estimated that the annual fish production in Bolivia is approximately 6,568 tons per year. Of this production, the Amazon basin represents 52% of the national fishing production, the Plata basin represents 10% and the Altiplano basin represents 38%. Overfishing has led to the local extinction of some fish species in Bolivia. This is particularly prevalent in closed systems such as Lake Titicaca.<sup>32</sup>

Bolivia urban areas have experienced incredible urban growth. Much of this growth, such as in the peripheral urban areas of El Alto and La Paz, has been uncontrolled with illegal settlements leaving an urban sprawl over an extensive geographic area.<sup>33</sup> This peripheral urban growth has placed immense pressure on local and national governments in terms of water infrastructure and adversely affected low income and impoverished communities.<sup>34</sup>

## **2. Bolivia's Legal Framework**

To assess the viability of implementing a water reserves program nationwide in Bolivia, this analysis summarizes and provides a critical perspective on the Constitution, the existing laws, political

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<sup>27</sup> Sarah Botton et. al., *supra* note 23 at 7.

<sup>28</sup> PLAN DE DESARROLLO ECONÓMICO Y SOCIAL EN EL MARCO DEL DESARROLLO INTEGRAL PARA VIVIR BIEN 2016-2020, ESTADO PLURINACIONAL DE BOLIVIA, 1, 9-10, 21-22 (2016) <https://observatorioplanificacion.cepal.org/sites/default/files/plan/files/pdes2016-2020.pdf> [hereinafter PLAN DE DESARROLLO ECONÓMICO Y SOCIAL].

<sup>29</sup> *Id.* at 12, 15-16.

<sup>30</sup> *Id.* at 32-33.

<sup>31</sup> *Id.* at 24, 33.

<sup>32</sup> *Id.* at 42-43.

<sup>33</sup> Maxwell, *supra* note 24 at 1-2.

<sup>34</sup> *Id.*

institutions, supreme decrees, and regulations that affect and connect to the management of water resources.

### A. The Bolivian Constitution

Morales and MAS launched a constitutional assembly a year after rising to power that became official after a national referendum in 2009.<sup>35</sup> The Constitution abolished the existing republic and, in its place, created a ‘plurinational’ state which recognized the 36 indigenous nations that constitute part of the country’s socio-political fabric.<sup>36</sup>

Importantly, the Bolivian Constitution takes significant steps to constitutionalize the protection of nature. It enumerates a comprehensive list of rights and takes steps to create a framework for the protection and management of the environment and natural resources. The Constitution declares, “[E]veryone has the right to a healthy, protected, and balanced environment. The exercise of this right must be granted to individuals and collectives of present and future generations, as well as to other living things, so they may develop in a normal and permanent way.”<sup>37</sup> Furthermore, the Constitution establishes an obligation on the state to protect and defend the natural resources, and to contribute to their sustainable use in order to preserve the rights of future generations.<sup>38</sup> It elaborates on this when it states, “It is the duty of the State and the population to conserve, protect and use natural resources and the biodiversity in a sustainable manner, as well as to maintain the equilibrium of the environment.”<sup>39</sup>

The Constitution explicitly acknowledges the importance of water and the need for water management. The Constitution calls water a “fundamental right for life” and a “human right” for which every person “has the right to universal and equitable access.”<sup>40</sup> To ensure the conservation, sustainable management, and its duty to ensure access to water, the Bolivian Constitution sets up the following duties of the State with respect to water:

- “It is the duty of the State to manage, regulate, protect and plan the adequate and sustainable use of water resources, with social participation, guaranteeing access to water for all the habitants. The law shall establish the conditions and limitations of all the uses.”<sup>41</sup>
- Protecting local needs, customs and indigenous rights the Constitution requires the State to “recognize, respect and protect the uses and customs of the community, of its local authorities and the rural native indigenous organizations over the right, management and administration of sustainable water.”<sup>42</sup>
- “The fossil, glacial, wetland, subterranean, mineral, medicinal and other waters are priorities for the State, which must guarantee its conservation, protection, preservation, restoration, sustainable use and complete management; they are inalienable, not attachable and cannot be limited.”<sup>43</sup>

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<sup>35</sup>FRANCO GAMBOA ROCABADO, DILEMAS Y CONFLICTOS SOBRE LA CONSTITUCIÓN EN BOLIVIA: HISTORIA POLÍTICA DE LA ASAMBLEA CONSTITUYENTE 15 (2009).

<sup>36</sup> CONSTITUCIÓN POLÍTICA DEL ESTADO BOLIVIA, (2009) Art. 1.

<sup>37</sup> *Id.* at Art. 33.

<sup>38</sup> *Id.* at Art. 108.

<sup>39</sup> *Id.* at Art. 342.

<sup>40</sup> *Id.* at Art. 373, Art. 20(1).

<sup>41</sup> *Id.* at Art. 374(1).

<sup>42</sup> *Id.* at Art. 374(2).

<sup>43</sup> *Id.* at Art. 374 (3).

- “It is the duty of the State to develop plans for the use, conservation, management and sustainable exploitation of the river basins.”<sup>44</sup>
- “The State shall regulate the management and sustainable administration of the water resources and the basins for irrigation, food security and basic services, respecting the uses and customs of the communities.”<sup>45</sup>
- “It is the duty of the State to carry out the studies for the identification of subterranean waters and their consequent protection, management and sustainable administration.”<sup>46</sup>
- “The State shall avoid actions in the sources and intermediary zones of rivers that may cause damages to the ecosystems or diminish the flow volume, shall preserve the natural state, and shall watch over the development and welfare of the population.”<sup>47</sup>
- “The State shall develop and promote research related to the management, conservation and use of natural resources and to biodiversity.”<sup>48</sup>

Embedded within these obligations is an emphasis on the important, but sometimes contradictory goals of providing access to water for all Bolivians for human consumption and ecological sustainability. These obligations also recognize the need to study, create plans, and implement management strategies to meet these goals. However, according to some critics, the Constitution critically fails to protect nature by not formally recognizing nature as the legal entity bearing rights as the Ecuadorian Constitution does.<sup>49</sup> It does however recognize the supreme importance of ecological integrity as the basis for the continued existence of the State and the Bolivian people.<sup>50</sup> It also creates a foundation to create other laws that further these ecological goals.

## **B. Statutory Framework**

Following the creation of the Constitution, the Bolivian government enacted numerous laws that affect or relate to water in Bolivia. This analysis first discusses the ministries responsible for carrying out the laws and management of water in Bolivia. Second, it discusses the laws related to the Rights of Mother Earth. Third, it looks critically at other laws that relate to the use and allocation of water. Finally, it looks at Bolivia’s various international water-related commitments.

### **I. Ministries and Institutions that relate to Water Management**

Following the ratification of the Constitution, Bolivia altered the institutional framework for the management of water. While the Law of the Environment which dated to 1992 created a Secretary of the Environment position, a Supreme Decree in 2009 created the Ministry of the Environment and Water

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<sup>44</sup> *Id.* at Art. 375(1).

<sup>45</sup> *Id.* at Art. 375(2).

<sup>46</sup> *Id.* at Art. 375 (3).

<sup>47</sup> *Id.* at Art. 376.

<sup>48</sup> *Id.* at Art. 354.

<sup>49</sup> Paola Villavicencio Calzadilla & Louis J. Kotze, *Living in Harmony with Nature? A Critical Appraisal of the Rights of Mother Earth in Bolivia*, 7:3 TRANSNATIONAL ENVIRONMENTAL LAW 397, 401 (2018).

<sup>50</sup> *Id.* at 402.

(MMAyA) as the primary agency responsible for managing water.<sup>51</sup> Among its many responsibilities is to formulate and execute a comprehensive water resources policy that guarantees the priority use of drinking water, encourages food production, conserves ecosystems and aquifers, preserves biodiversity, promotes forest rehabilitation in degraded watersheds, and manages watersheds.<sup>52</sup> Situated within the MMAyA is the Viceministry of Water Resources and Irrigation, the Viceministry of the Environment, Biodiversity, and Climate Change, and the Viceministry of Potable Water and Basic Sanitation. The Viceministry of Water Resources and Irrigation is directed to “contribute to the development and execution of plans, policies and regulations for the comprehensive management of basins and irrigation” and work with territorial departments and other regional entities.<sup>53</sup> The responsibilities of the Viceministry of the Environment, Biodiversity, and Climate Change overlap with the other viceministries, in that all the viceministries are required to formulate and implement policies related to the sustainable use of natural resources and water.<sup>54</sup> The Viceministry of Potable Water and Basic Sanitation deals with the quality and accessibility of drinking water.<sup>55</sup>

The MMAyA and its Viceministries are the primary executive entities dealing directly with water. However, the same Supreme Decree that created the MMAyA also created several other Ministries that deal with water. The Ministry of Mining and Metallurgy, the Ministry of Hydrocarbons, the Ministry of Energy, and the Ministry of Rural Development and Land all deal with water in some capacity. The Ministry of Rural Development and Land is directed to work with the MMAyA to develop plans related to the fishing industry, irrigation, desertification, and forest sustainability.<sup>56</sup> The Viceministry of Alternative Energy, which exists within the Ministry of Energy, deals with the development of new dams for the purpose of hydroelectricity. The Ministries of Hydrocarbons and the Ministry of Mining and Metallurgy manage the water allocated to mining and oil and gas developments.

The Framework Law of Mother Earth and Integral Development for Living Well called for the creation of an Office of Mother Earth that could sue on behalf of Mother Earth for environmental violations and ensure protection of natural resources. However, this institution has yet to be created.

## II. Laws on the Rights of Mother Earth

The Bolivian Government enacted the Law of the Rights of Mother Earth in 2010 (Law 071) and the Framework Law of Mother Earth and Integral Development for Living Well in 2012 (Law 300). Both of these laws build on the environmental foundation created by the Constitution but goes further to recognize Mother Earth as a legal entity with rights.<sup>57</sup> These laws refine and elaborate on the duties and obligations of the government to protect these rights. Law 071 provides a list of rights of Mother Earth and a list of corresponding obligations of the State. Law 300 has many of the same objectives but goes further to operationalize the rights and obligations of the State set forth in Law 071.<sup>58</sup>

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<sup>51</sup> Ley 1333, Ley de Medio Ambiente, Art. 6-7 (1992); Decreto Supremo 29894, Estructura Organizativa del Poder Ejecutivo del Estado Plurinacional, Art. 13 (2009).

<sup>52</sup> Decreto Supremo 29894, Art. 95.

<sup>53</sup> *Id.* at Art. 97.

<sup>54</sup> *Id.* at Art. 98(A).

<sup>55</sup> *Id.* at Art. 96.

<sup>56</sup> *Id.* at Art. 110-12.

<sup>57</sup> Ley 071, Ley de Derechos de la Madre Tierra, (2010) Art. 1; Ley 300, Ley Marco de la Madre Tierra y Desarrollo Integral para Vivir Bien, (2012) Art. 1.

<sup>58</sup> Calzadilla & Kotze, *supra* note 49 at 412.

Law 071 creates a duty of the State to “guarantee the necessary conditions so that the diverse life systems of the Mother Earth can absorb damage, adapt to disturbances, and regenerate without significantly altering its structural characteristics and functionality, recognizing that living systems have limits to their ability to regenerate, and that humanity has limits to its ability to reverse their actions.”<sup>59</sup> The law also states that when the rights of Mother Earth and other rights conflict the issue must be resolved in a way “that does not irreversibly affect the functionality of life systems.”<sup>60</sup> With respect to water, the law states that Mother Earth has a right to “the functionality of the water cycles, of its existence and quantity, and the quality necessary to sustain living systems, and their protection with regards to contamination, for renewal of the life of Mother Earth and all its components.”<sup>61</sup> It also creates an obligation on the state to “Develop public policies and systematic preventive actions, early alert, protection and prevention, to avoid human activities that lead to extinction of populations, the alteration of cycles and processes that guarantee life, or the destruction of living systems, including the cultural systems that are part of Mother Earth.”<sup>62</sup>

Law 300, in addition to laying out similar rights and obligations to Law 071, aims to guide specific legislation, policies, regulations, strategies, plans and programs. It also sought to define the institutional framework to promote and operationalize comprehensive development in harmony and balance with Mother Earth to Live Well.<sup>63</sup> Affirming the principles in the Constitution, it says that decisions relating to water must satisfy the need for human consumption and the need to preserve life’s processes.<sup>64</sup> Unlike the Constitution or Law 071 it also recognizes the need to prioritize “production processes that guarantee food security.”<sup>65</sup> The law also stresses that human economic actions could be limited by the capacity of Mother Earth to regenerate.<sup>66</sup>

Regarding water, Law 300 lays out more specific management and regulation goals. It states that the Government will “[r]egulate, protect and plan the use, access and adequate, rational and sustainable use of water components, with social participation, establishing priorities for the use of drinking water for human consumption.”<sup>67</sup> It also declares that the State must “[r]egulate and develop inter-institutional plans for the conservation and sustainable management of hydrographic basins, under parameters and guidelines issued by the central level of the Plurinational State of Bolivia, in accordance with the provisions of the Political Constitution of the State, aimed at guaranteeing sovereignty with food security and basic services and the conservation of life systems.”<sup>68</sup>

Critics of the law suggest that the law contradicts itself when it emphasizes both protecting Mother Earth and prioritizes socio-economic development.<sup>69</sup> They point to the fact that the law legalizes mining and maximizes Bolivia’s extraction of its natural resources while only encouraging the use of best available technology to minimize its impact.<sup>70</sup> An additional criticism is that the law appears to be more

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<sup>59</sup> Ley 071, Art. 2(3).

<sup>60</sup> *Id.* at Art. 6.

<sup>61</sup> *Id.* at Art. 7(3).

<sup>62</sup> *Id.* at Art. 8(1).

<sup>63</sup> Ley 300, Art. 3(3-4).

<sup>64</sup> *Id.* at Art. 4(1).

<sup>65</sup> *Id.* at Art. 4(10).

<sup>66</sup> *Id.* at Art. 9(1).

<sup>67</sup> *Id.* at Art. 27(4).

<sup>68</sup> *Id.* at Art. 27(9).

<sup>69</sup> Calzadilla & Kotze, *supra* note 49 at 414.

<sup>70</sup> *Id.*

of a broad declaration of principles similar to the Constitution and Law 071 rather than a precise legal instrument capable of guiding effective policies and management.<sup>71</sup>

### III. Other Laws Related to Water and Water Management in Bolivia

There are several laws that have been created since the 2009 Constitution that have contributed to the legal landscape of water law. Law 535 on Mining and Metallurgy creates a number of potential contradictions with the Law on the Rights of Mother Earth and the Framework Law on the Rights of Mother Earth and Integral Development. While the law does require mining to not interfere with the use of water for life and comply with the framework of current regulations, the law also declares that the State “will encourage and promote prospecting, exploration and the comprehensive and diversified use of detrital mineral deposits...”<sup>72</sup> The law preserves existing water concessions and contracts with the mining industry, allowing the industry to control the use of water resources without additional regulations or licenses.<sup>73</sup>

The Law on Sustainable Fisheries and Aquaculture passed in 2017 was an effort to regulate the fishing and aquaculture industry and promote a sustainable fishing industry and the repopulation of hydrobiological resources that are overexploited or threatened in the waters.<sup>74</sup> The law empowers the Ministry of Rural Development and Land to create policies that work towards this goal and encourages the Ministry to work with the MMAyA to encourage the conservation of hydrobiological resources.<sup>75</sup> The law states that farming entities must avoid damaging the aquatic ecosystem and respect the carrying capacity of the body of water in which they are located, in accordance with current regulations.<sup>76</sup>

In 2013, Bolivia created the Law of Bofedales, which aims to preserve the Bofedales or the wetlands and grasslands in the Altiplano.<sup>77</sup> The law promises to “[p]romote the recovery, conservation and specialized management of wetlands... with the purpose of applying mixed water and soil management techniques that favor the increase in production and its productivity to ensure the conservation of the life systems it supports.”<sup>78</sup> It requires the Viceministry of the Environment, Biodiversity and Climate Change to study these wetlands, take an inventory of how much territory these wetlands cover, and educate as well as encourage local departments and municipalities on methods for preserving these areas.<sup>79</sup>

Issued in 2015, Supreme Decree 2366 sanctioned oil and gas exploration and drilling in protected areas (including Ramsar sites) across Bolivia.<sup>80</sup> While the law required environmental impact studies, it has been criticized internationally as a major step backwards in terms of Bolivia’s claim as a defender of the rights of Mother Earth and the rights of indigenous people.<sup>81</sup> While Bolivia justifies this regression of environmental standards on the premise that oil and gas development will reduce poverty and contribute

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<sup>71</sup>*Id.* at 414-15.

<sup>72</sup> Ley 535, Ley de Minería y Metalurgia (2014), Art. 12.

<sup>73</sup> *Id.* at Art. 13(4).

<sup>74</sup> Ley 938, Ley de Pesca y Acuicultura Sostenibles (2017), Art. 8, 39.

<sup>75</sup> *Id.* at Art. 8.

<sup>76</sup> *Id.* at Art. 21.

<sup>77</sup> Ley 404, Ley de Bofedales (2013), Art. 1.

<sup>78</sup> Law 404, Art. 4.

<sup>79</sup> Law 404, Art. 4.

<sup>80</sup> Decreto Supremo 2366 (2015), Art. 2.

<sup>81</sup> *Id.*; Calzadilla & Kotze, *supra* note 49 at 420.

to the country's redistributive socio-economic development, critics see this as a critical blow to Bolivia's environmental image and promises.<sup>82</sup>

Additionally, there are several laws that predate the 2009 Constitution that are still relied upon by the Bolivian Government. What is not clear is to what extent these laws need to be harmonized with the Constitution to remain good law. For example, the Water Law from 1906, which provides the legal basis for owning, permitting, and managing water and the Law of the Environment from 1992, which creates protections for certain designated areas, have not been harmonized with the Constitution.<sup>83</sup> Nevertheless, the Law of the Environment in 1992 and a Supreme Decree Regulating Protected Areas in 1997 are both relied upon as the legal basis for the 2015 Supreme Decree 2366 that sanctioned oil and gas exploration in environmentally protected areas.<sup>84</sup>

### C. Bolivia's International Commitments

Bolivia is a member of numerous multinational environmental agreements that suggest that the government is willing to work internationally towards protecting its environment and water and has cultivated an international reputation as a country that champions environmental rights. Particularly important is Bolivia's involvement in the Ramsar Convention on Wetlands of International Importance Especially as Waterfowl Habitat. Bolivia is home to 11 Ramsar sites. Four of these sites are in the Altiplano, four are based near the city of Santa Cruz in the Southeastern part of the country and three are located in the Northeastern Amazon region.<sup>85</sup> Together these sites make up 14.8 million hectares in surface area that reaches 13% of the territory of the country.<sup>86</sup> In 2017, the MMAyA issued a plan for the management of wetlands and Ramsar sites.<sup>87</sup> This plan identifies major problems facing Ramsar sites in each region. In the Amazon, uncontrolled burns, unplanned deforestation, unsustainable mining, and creating grazing land for cattle have threatened wetlands.<sup>88</sup> In the closed Altiplano basin, overfishing, overgrazing, and metallic waste left over from mines threaten the wetlands.<sup>89</sup> In the Rio de la Plata Basin, overfishing, activities related to oil and gas extraction, overgrazing, and water contamination from mining threaten the wetlands in that region.<sup>90</sup> To combat these issues the plan recommends a program it calls "Flows for Life," for which the ministry seeks to guarantee a minimum level of water.<sup>91</sup> The plan specifically references resolution VI.23 of the Ramsar Convention, which recognizes the hydrological importance of wetlands and the need for minimum volumes to maintain their ecological characteristics.<sup>92</sup> Furthermore, this plan calls for the strengthening of water studies to determine current water levels and determine an acceptable minimum.

Also relevant is Bolivia's membership in the United Nations Convention to Combat Desertification that was signed in 1994, as much of the agricultural land in the Altiplano is threatened by

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<sup>82</sup> *Id.* at 420.

<sup>83</sup> Ley 1333; Ley de Aguas (1906).

<sup>84</sup> Decreto Supremo 2366, Considerando.

<sup>85</sup> *Bolivia: Country Profile*, RAMSAR <https://www.ramsar.org/wetland/bolivia-plurinational-state-of>.

<sup>86</sup> *Estrategia Ramsar* at 3.

<sup>87</sup> *Id.* at 1.

<sup>88</sup> *Id.* at 35.

<sup>89</sup> *Id.* at 21.

<sup>90</sup> *Id.* at 46.

<sup>91</sup> *Id.* at 52.

<sup>92</sup> *Id.*

desertification. The MMAyA issued a plan in 2017 aimed at implementing the goals laid out in the UN Convention.<sup>93</sup> The plan estimates that 50% of the land in agricultural production suffers from severe degradation. The plan estimates that land mismanagement and degradation costs Bolivia 1.2 billion dollars in value of lost resources annually.<sup>94</sup> The plan also notes that deforestation, salinization, and water and wind erosion is responsible for the degradation of 8.2 million hectares of agricultural land.<sup>95</sup> The plan calls for increased management of forests, farmland, and urban areas especially vulnerable to degradation. Specifically, it aims to end illegal forestry and encourage more intensive agriculture.<sup>96</sup>

Bolivia has signed on to the United Nations Sustainable Development Goals (SDGs). Goal 6.4 urges countries to “substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity.”<sup>97</sup> Goal 6.5 makes integrated water resource management at all levels a priority.<sup>98</sup> Finally, 6.6 sets a goal of protecting and restoring water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes.<sup>99</sup>

Bolivia also has several bilateral international treaties that relate to water. For example, Bolivia and Peru have entered into an agreement regarding the management, conservation, and protection of Lake Titicaca. Peru and Bolivia have worked together to end illegal mining in the headwaters of the lake and to implement better sanitation and waste disposal systems.<sup>100</sup> While most of the agreement is aimed at stopping pollution, there is also some effort in the plan to manage and promote the lakes biodiversity and sustainability in the face of overuse and climate change.<sup>101</sup>

### 3. Priorities of the State of Bolivia

This analysis now discusses the current priorities of the Bolivian government. To understand the current priorities, the analysis uses plans and goals issued by the national government. At least rhetorically, many of the statements, plans, and goals indicate the government recognizes the importance of protecting the environment and the need for water management.

Promulgated in 2015, the Agenda Patriótica is a document that articulates Bolivia’s broad values and goals using thirteen pillars. It hopes to reach these broad goals by 2025. Among its goals are the eradication of extreme poverty, nationalization and increased access to basic services, and integral environmental management that respects the rights of Mother Earth.<sup>102</sup> The Agenda Patriótica includes

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<sup>93</sup> MMAyA, *Estrategia Nacional Hacia La Neutralidad en la Degradación de Tierras al 2030*, 1, 1 (2017) [https://www.unccd.int/sites/default/files/ldn\\_targets/2018-11/Bolivia%20LDN%20Country%20Commitments.pdf](https://www.unccd.int/sites/default/files/ldn_targets/2018-11/Bolivia%20LDN%20Country%20Commitments.pdf).

<sup>94</sup> *Id.* at 3.

<sup>95</sup> *Id.* at 4.

<sup>96</sup> *Id.* at 5.

<sup>97</sup> *Sustainable Development Goal - Goal 6: Ensure access to water and sanitation for all*, UNITED NATIONS <https://www.un.org/sustainabledevelopment/water-and-sanitation/>

<sup>98</sup> *Id.*

<sup>99</sup> *Id.*

<sup>100</sup> Lucian Chauvin, *Bolivia, Peru Agree on Lake Titicaca Cleanup Plan*, BLOOMBERGLAW (Jan. 8, 2016) [https://www.bloomberglaw.com/bloomberglawnews/environmentandenergy/X93GN9S00000?bna\\_news\\_filter=environment-and-energy#cite](https://www.bloomberglaw.com/bloomberglawnews/environmentandenergy/X93GN9S00000?bna_news_filter=environment-and-energy#cite).

<sup>101</sup> LINEAMIENTOS Y ACCIONES PARA LA RECUPERACIÓN AMBIENTAL DEL LAGO TITICACA Y DE SU DIVERSIDAD BIOLÓGICA, COMISIÓN DE ALTO NIVEL PARA LA RECUPERACIÓN AMBIENTAL DEL LAGO TITICACA Y SU DIVERSIDAD BIOLÓGICA, 1, 2-3 (2015) [https://www.minam.gob.pe/wp-content/uploads/2016/01/Acuerdo-Binacional-Per%c3%ba\\_Bolivia-2016.pdf](https://www.minam.gob.pe/wp-content/uploads/2016/01/Acuerdo-Binacional-Per%c3%ba_Bolivia-2016.pdf).

<sup>102</sup> Ley 650, Eleva a rango de Ley, la Agenda Patriótica del Bicentenario 2025, Art. 1.

statements that explicitly recognize Mother Earth and its importance for sustaining human life.<sup>103</sup> The Agenda Patriótica seeks to provide clean drinking water and sanitation services to 100% of Bolivians by 2025.<sup>104</sup> It seeks to transform Bolivia into a country that uses efficient irrigation and agricultural methods and decreases the use of unsustainable extensive agriculture.<sup>105</sup> It strives to ensure that “all the activities of exploration, exploitation, transformation and commercialization of renewable and non-renewable natural resources are carried out within the framework of respect and complementarity with the rights of Mother Earth.”<sup>106</sup> It also strives to prevent any suffering related to water scarcity and develop the capacity to prevent risks caused by climate change and natural disasters.<sup>107</sup>

The Plan for Economic and Social Development of the Plurinational State of Bolivia in the Framework of Integral Development to Live Well was issued in 2016 to implement the goals and values of the Agenda Patriótica. The plan summarizes Bolivia’s development up to 2016 and lays out specific policy goals. Within this plan are numerous contradictions. On the one hand, the government emphasizes the desire to promote a robust economy based on natural resource extraction. On the other, the government emphasizes the need to promote sustainable development practices that focus on conservation and more efficient use. In terms of water, Bolivia states that it hopes to eventually ensure that 100% of Bolivians have access to water and sewage services. By 2020 it estimated that it was on track to provide drinking water to 95% of the urban population and 80% of the rural population.<sup>108</sup> The plan also emphasizes the strides made to develop hydroelectric potential in Bolivia. The plan listed six new dams completed between 2009 and 2016. It also listed 8 new hydroelectric projects under construction at the time this plan was issued in 2016.<sup>109</sup> In terms of irrigation, 700,000 hectares of agricultural land have been irrigated. By 2020, Bolivia hoped to irrigate another 338,000 hectares of land.<sup>110</sup> Importantly, the desire to develop more agricultural land contradicts the plan issued by the MMAyA in 2017 to combat the effects of land degradation. That plan seeks to reduce and consolidate the agricultural land that is already in use.<sup>111</sup> Finally the plan also emphasizes the importance of the natural gas and mining industries for the country's economy.<sup>112</sup>

An analysis conducted by the WWF published in 2020 on the energy situation and challenges in Bolivia provided insight into Bolivia’s energy priorities. In 2017, Bolivia created a Viceministry of Alternative Energy within the Ministry of Energy and have refocused on making alternative energies a high priority of the state.<sup>113</sup> While hydropower is only a small amount of the total power generation in Bolivia, the State is very interested in developing this industry further and even hopes to become an energy exporter in future years.

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<sup>103</sup> Agenda Patriótica, Estado Plurinacional de Bolivia, 1, 26, (2015) <https://observatorioplanificacion.cepal.org/sites/default/files/plan/files/agenda%20patriotica%202025%20PDGES.pdf>.

<sup>104</sup> *Id.* at 16.

<sup>105</sup> *Id.* at 22.

<sup>106</sup> *Id.* at 26.

<sup>107</sup> *Id.* at 27.

<sup>108</sup> PLAN DE DESARROLLO ECONÓMICO Y SOCIAL at 74.

<sup>109</sup> *Id.* at 58.

<sup>110</sup> *Id.* at 136.

<sup>111</sup> See ESTRATEGIA NACIONAL HACIA LA NEUTRALIDAD EN LA DEGRADACIÓN DE TIERRAS AL 2030, *supra* note 91 at 1.

<sup>112</sup> *Id.* at 140-41.

<sup>113</sup> Miguel Fernández Fuentes et al., *supra* note 22 at 3.

The MMAyA, the Institute of Hydraulics and Hydrology at the Higher University of San Andrés in La Paz, and the Laboratory of Hydrology at the University of San Simón in Cochabamba collaborated in 2017 with the Stockholm Environment Institute (SEI) to create a uniform dataset that could act as a baseline to inform water planning across Bolivia. They used SEI's Water Evaluation and Planning System (WEAP) and trained 40 Bolivian Water Planners on their system.<sup>114</sup> Additionally, the state of Bolivia collaborated with the German national government in a program called the Cooperación Alemana para el Desarrollo con Bolivia to promote increased access to water in various municipalities and watersheds across Bolivia. The Cooperación Alemana works with the MMAyA to identify projects at a regional level and provide technical assistance to these regions. Some of these projects include, a wastewater management system in the Río Rocha watershed that serves the city of Cochabamba, a potable water and sewage program in the peri-urban areas of the city of Santa Cruz de la Sierra, and a water management system in the Río Guadalquivir watershed.<sup>115</sup>

In 2019, the MMAyA launched a climate resiliency pilot program. The plan aims to develop procedures and instruments that promote environmental categorization, evaluation, and mitigation.<sup>116</sup> Within the pilot program are activities of national scope and water resources projects focused on small regional watersheds. These include the Río Grande, Río Mizque, and the Río Arque Tapacarí. These local projects aim to start by collecting better hydrologic data and then develop projects to conserve water while providing infrastructure for the communities that need it.<sup>117</sup> The MMAyA hopes to start with these departments and then expand to more basins nationally.

#### 4. Areas for Additional Research

Several areas of future research remain for a more complete legal analysis. First, a study of the Bolivian Judiciary and its case law may be helpful in having a fuller picture of the existing legal framework. The judiciary may interpret the constitution and laws as they relate to water in a legally significant way. A study of the judiciary may provide insight as to what happens when there is a conflict between a law and a constitutional provision or another law. This is particularly important, as there are laws that predate the Constitution that are relied upon by the government but have yet to be harmonized with the Constitution. The Judiciary may do some work to clarify what components of these laws are still in effect and comply with the 2009 Constitution, but more legal research is necessary.

Second, an analysis of how effectively the MMAyA operates could be helpful. Questions remain as to how well the MMAyA can coordinate among teams working on river basin planning, biodiversity issues, and environmental licensing. Additionally, it is unclear how the current administration values the work of the MMAyA relative to the work of another institution like the Ministry of Energy.

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<sup>114</sup> *Impact story: Addressing a growing water crisis in Bolivia*, STOCKHOLM ENVIRONMENTAL INSTITUTE (2017) <https://www.sei.org/featured/growing-water-crisis-bolivia/>.

<sup>115</sup> *Servicios Sostenibles de Agua Potable y Saneamiento en Áreas Periurbanas – PERIAGUA II Una Apuesta por la Sostenibilidad de los Servicios de Agua Potable y Saneamiento Básico*, COOPERACIÓN ALEMANA PARA EL DESARROLLO CON BOLIVIA, NETHERLANDS ENTERPRISE AGENCY (Aug. 2019) <https://lapaz.diplo.de/blob/2139580/cbddd133945a4c47145f8663627974de/fact-sheet-wasser---periagua-giz-data.pdf>

<sup>116</sup> MARCO PARA LA GESTIÓN AMBIENTAL, PROGRAMA PILOTO DE RESILIENCIA CLIMÁTICA, MMAyA, 1, 9 (Aug. 2019) <https://www.mmaya.gob.bo/wp-content/uploads/2020/07/MarcoGestionAmbiental.pdf>.

<sup>117</sup> *Id.* at 17-21.

Third, Bolivia has some history of working with outside organizations and governments to help manage water resources. These include the Stockholm Environmental Institute and Cooperación Alemana. It would be helpful to know to what extent the Bolivian government is still working with these organizations and what technical systems these organizations have used to study and manage water in Bolivia.

Fourth, there are several forthcoming documents that may help in understanding the priorities and state of water management in Bolivia. This includes the Plan de Cuencas that focuses specifically on water management. Furthermore, Bolivia has discussed reworking the 1906 water law since the beginning of the Morales Administration. However, as of 2022 no comprehensive water law has been developed. A study of the legislative history of a comprehensive water law could shed light on why Bolivia has yet to pass significant water law reform.

## **5. Assessment of the Feasibility of Implementing a Water Reserves Program in Bolivia at the National Level**

To assess the feasibility of implementing the Water Reserves Initiative in Bolivia at the national level this analysis discusses favorable elements and potential barriers within Bolivia's legal framework and government priorities. The analysis then discusses potential entry points to begin working with the Bolivian government to implement the Water Reserves Initiative.

### **A. Legal characteristics that may make Bolivia a favorable place to implement a water reserves program**

Numerous components of Bolivia's national legal framework and its priorities indicate that it is open to and eager to adopt a water reserves program at the national level. These include provisions of its Constitution, its laws protecting the environment, and its commitment to becoming a leader on environmental issues internationally.

The Constitution provides an important basis for protection of the environment and the implementation of a water reserves program. The fact that it mandates the State "to manage, regulate, protect and plan the adequate and sustainable use of water resources" and to conserve and restore "fossil, glacial, wetland, subterranean, mineral, medicinal, and other waters," indicates that a water reserves program would coincide nicely with the Constitution. Additionally, Article 376 states that the government "shall avoid actions in the sources and intermediary zones of rivers that may cause damages to the ecosystems or diminish the flow volume, shall preserve the natural state, and shall watch over the development and welfare of the population." Allocation of water to the environment is one of the few ways that the state could work towards this constitutional mandate.

The Law of the Rights of Mother Earth in 2010 (Law 071) and the Framework Law of Mother Earth and Integral Development for Living Well (Law 300) are also important laws that could be helpful in implementing the Water Reserves Initiative. Law 071 requires the state to guarantee "the functionality of the water cycles, of its existence and quantity, and the quality necessary to sustain living systems, and their protection," creating a statutory basis for the environmental allocation of water.

The MMAyA's commitment to the goals of the Ramsar Convention on Wetlands could be helpful in implementing the Water Reserves Program. The 2017, Ramsar plan calls for a program it terms "Flows for Life," in which it hopes to guarantee a minimum level of water in all basins in Bolivia. While the

MMAyA's definition of minimum levels may not be quite adequate to ensure the ecological benefits of environmental flows, it indicates that energy and resources within the MMAyA are dedicated to the idea of allocating water to the environment.

Finally, Bolivia's role internationally as a champion of indigenous rights and environmental protection may be a useful basis by which to sponsor a water reserves program. Bolivia is not only an active member of the Ramsar Convention on Wetlands, but it has signed onto the UN's Sustainable Development Goals and the Convention to Combat Desertification. Some of these goals specifically call for the allocation of water to the environment to maintain ecological balance. Furthermore, Bolivia has made efforts internationally to encourage other countries to recognize the rights of Mother Earth. Together, these international commitments may serve as a means of holding Bolivia accountable for policies at the national level.

### **B. Legal characteristics that may make Bolivia a challenging place to implement a water reserves program**

The contradictions between Bolivia's laws may serve as a barrier to the implementation of the Water Reserves Initiative at the national level. For example, Supreme Decree 2366, which sanctioned oil and gas exploration and drilling in protected areas (including Ramsar sites) across Bolivia suggests that the government is willing to compromise its environmental protections for economic development. Similarly, the Law of Mining and Metallurgy encourages the growth and development of mining leading to the allocation of more water resources to intensive and problematic water users. Even within the Framework Law of Mother Earth and Integral Development for Living Well (Law 300) there are contradictions that suggest that despite being a law claiming to protect Mother Earth the priorities of the Bolivian government are to ensure water for human consumption, agriculture, and mining.

The findings of 2016 Consultancy regarding a lack of institutional resources is likely still true today. Bolivia is a country that lags behind other countries in South America despite its significant growth in the last 15 years. Bolivia faces rapid urbanization and population growth which places major stresses on water in urban areas. Bolivia's development plans indicate that its priorities are to provide drinking water and sanitation to these populations first before it is likely willing to allocate water to the environment.

Furthermore, the institution most capable of carrying out a water reserves program, MMAyA, does not have exclusive control over the allocation of water resources. It shares responsibility with the Ministry of Mining and Metallurgy, the Ministry of Hydrocarbons, the Ministry of Energy and the Viceministry of Alternative Energy, and the Ministry of Rural Development and Land. While all these ministries are governed by Bolivia's Constitution and laws, these ministries have different priorities and may serve as a barrier for an integrated implementation of a water reserves program at the national level.

The geographic and climatic variations across Bolivia also create a barrier to implementing a water reserves program at the national level. The prospect of allocating water to the environment looks dramatically different in the Amazonian basin than the Altiplano Basin. In the Altiplano, the water supply is likely not enough to support the growing urban population in that region in future years. The government will likely spend considerable resources creating high mountain reservoirs to capture water for drinking water purposes for the major cities in that region. Therefore, priorities when it comes to the allocation of water will likely emphasize the immense human demands first. The glimmers of hope for this region are that the Bolivian government has passed a Law of Bofedales attempting to protect

Altiplano wetlands and the government's efforts to work with Peru to stamp out illegal mining operations that are siphoning water and compromising the quality of the Lake Titicaca watershed. In the Amazon Basin, the prospect of allocating water resources to the environment seems stronger as water is plentiful and mostly unallocated. However, the largest potential barrier in the Amazon Basin is Bolivia's stated desire to become an energy exporter through hydropower. The numerous hydropower projects that are under construction or proposed are a significant threat to the implementation of the Water Reserves Initiative.

Finally, Bolivia has yet to update its water law. While this creates an opportunity for the WWF to take an active role in shaping Bolivia's water policy in the future, the fact that no new water law is on the books suggests that Bolivia's political appetite for more comprehensive environmental legislation may be stalled. Bolivia has been calling for a water law since the Morales Government came to power in 2005. While it has made steps to pass laws that affect the allocation of water, it has yet to enact the comprehensive water reform it needs. The 2016 Consultancy expected a forthcoming water law, however, as of 2022 there is still no comprehensive water law. As problems related to the quality and quantity of water have only grown in recent years, the fact there is still no comprehensive update to the water laws is a source of serious concern.

### **C. What would it take to pursue water reserves in Bolivia at the national level?**

There are several potential entry points through which the WWF could influence policy and develop a water reserves program at the national level:

1. Numerous documents published by the MMAYA indicate that the Ministry recognizes the importance of allocating flows to the environment. Developing connections with high officials represents an opportunity to bring together water and environment teams within the ministry and provide numerous entry points before there is any comprehensive water law in place. This might include providing support to develop specific regulations on ecological flows as part of the licensing process of water infrastructure projects like dams.
2. The WWF should aim to provide expert support in developing a comprehensive water law that includes language specifically allocating water to the environment. Additionally, this water law should seek to centralize control of all water resources under the MMAyA by minimizing the level of control of other Ministries like the Ministry of Hydrocarbons and the Ministry of Mining and Metallurgy maintain over water resources related to their specific policy areas.
3. The WWF may be able to adapt the "Flows for Life" Program proposed in the MMAyA's Strategy for the Integral Management of Wetlands and Ramsar Sites. "Flows for Life" seeks to guarantee a minimum level of water in all watersheds in Bolivia. This language could be updated to emphasize the allocation of flows to the environment and to redefine what "minimum" means to coincide with the WWF's definition of environmental flows.
4. The WWF may be able to utilize existing systems to measure water flows that have been developed by the Cooperación Alemana and the Stockholm Environmental Institute to begin determining sustainable water levels.
5. The WWF should communicate the success of its pilot programs in local watersheds like in the Santa Cruz Department and seek to replicate it in other watersheds and basins across Bolivia.

## Conclusions

Bolivia remains a challenging venue for the implementation of the Water Reserves Initiative at the national level. However, Bolivia's legal framework makes a water reserves program eventually possible. The Constitution and the Rights of Mother Earth Laws provide a strong legal basis for a program allocating water to the environment. However, numerous barriers may make the implementation of a water reserves program an uphill battle. Most significantly, Bolivia has yet to update its water law for the modern context. While Bolivia has been calling for water reform since the start of the Evo Morales government, the lack of progress in passing comprehensive water reform is a source of major concern. Significant environmental legislation has not been passed since 2012, suggesting that political energy for the environment and the rights of Mother Earth has stalled. Meanwhile, Bolivia's environmental problems have only grown worse. Furthermore, the Bolivian government's appetite for large hydroelectric projects, its attempt to increase agricultural irrigation, and its attempts to grow its mining and natural gas industries in the name of economic development are also concerning.

All these barriers and concerns highlight the need to act quickly to influence policy at the national level while it still can. While most of Bolivia's water remains unallocated, it is a race against time before Bolivia's efforts to economically develop cause irreversible environmental damage and makes allocating flows to the environment less realistic.