

How the Lack of Access to Safe Water and Sanitation Hampers Growth and Development: The Case of Peru

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Abstract

Peru's failure to bring clean water and sanitation to many of the rural parts of the country has hampered its economic development as well as the health and living standards of many of its citizens. Failed policies for distributing and regulating clean water, coupled with a lack of urgency to attend to the rural population, are primarily responsible for keeping many Peruvians poor. The economic advantages of attending to these policy issues far outweigh the costs and provide compelling evidence for Peru's leaders to value the long-term benefits over the short-term costs.

I. Introduction

Peru, one of the seventeen countries in the world with the most freshwater per capita, is also paradoxically among the top thirty countries suffering from water stress and scarcity. The country faces multiple problems in sanitizing and distributing this precious commodity, creating grave effects on the nation's health and development. Droughts, crop loss, starvation, and water rationing are only a few of the direct consequences caused by Peru's inability to properly supply, distribute, and sanitize its water. Operational, maintenance and service costs that are not covered by tariffs create challenges for providing good services and create institutional and financial weaknesses within the country.

In 2006, the Peruvian government recognized the ineptitude of their water supply and sanitation sector, prompting creation of the *Agua Para Todos* program, geared towards increasing access to clean water and sanitation for some of the country's poorest citizens. The program's approaches toward improving service quality, low-cost technologies and corresponding tariffs have generated important advances in the last two decades. Positive reforms to the water and sanitation sector have significantly improved Peru's statistics in terms of clean water and sanitation access.

Through an analysis of Peru's access to safe drinking water and sanitation facilities, this article attempts to establish the correlation between the lack of clean water and sanitation and the lack of sustainable socio-economic development. "Water is a basic essential for all [...] of the world's

inhabitants; health has been shown to be dependent on a good supply of clean water, but water is also needed for almost all industry, small or large scale” (Berry, 2009, p. 45).

Therefore, we know that sufficient, good quality water and sanitation are critical elements for the well-being and development of Peru. Scholars have argued that “the viability and longevity of our fast growing worldwide network of cities is heavily dependent on access to economically sustainable sources of water” (Berry, 2009, p. 46). Based on actual data for Peru’s access to safe water, it is clear that there is a scarcity of clean drinking water in Peru despite the fact that Peru has an abundance of water sources nationally. This paradox is later explained by further examining water distribution policies, technology, water allocation and inefficient attempts of reform.

This article discusses the impact and correlation of poor sanitation and water supply in Peru with its national growth and development. Following this introduction, the article provides a brief literature review on the topic, followed by some empirical background and a discussion. The discussion will focus on identifying the national problem, determining its causes and effects, comparing Peru to other nations, and suggesting potential solutions. The last section provides some conclusions about Peru’s national development and its correlation with access to clean water and sanitation.

II. Literature Review

At the global level, there is a large body of literature linking the access to safe water and sanitation to economic growth and development. It has been widely recognized that “water is a component of all states of human economic activity” (Berry, 2009, p. 46). Furthermore, as Shafik (1994, p. 758) concludes, “there are clear relationships between specific environmental indicators and per capita incomes. Where environmental quality directly affects human welfare, higher incomes tend to be associated with less degradation.” Shafik (1994, p. 757) also concludes that “the poor are often the most vulnerable to health and productivity losses associated with a degraded environment.” An examination of the literature analyzing the linkage between access to safe water and development in Peru shows that there are various opinions on how the limited supply of clean drinking water has affected the nation and what feasible solutions exist for curing this national crisis.

- Hubbard, Sarisky, Gelting and Baffigo (2011) discuss a national infrastructure and development plan for Peru that if implemented may create universal access to sustainable water and sanitation. Specifically, the construction and installation of a condominal water system in Peru has the potential to greatly improve water distribution and supply. With this new water system, money will be saved, maintenance will be simplified and infrastructure will be enhanced. Progress with the development and planning of a condominal water distribution system has been delayed due to concerns about population demands overwhelming the nation’s environmental service capacity. Hubbard et al. conclude that without improved services in sanitation and water, Peru will not be able to improve its national health. The points made in this article present potential solutions and setbacks in terms of building a new, efficient, and coordinated national water distribution system. By executing a new national water system the money saved and infrastructure enhanced will serve as a catalyst for national growth and development.
- In an earlier article, Hubbard, Gelting, Baffigo and Sarisky (2005) discuss the improvement of national public health through technical assistance with the provision of health services.

The article argues that through the encouragement of these health services, community involvement can be promoted and the public can be educated about water sanitation and how to monitor it.

- Checkley, Gilman, Black, Epstein, Cabrera, and Sterling (2004) refute the argument that cleaner and better water is the direct antecedent to accomplishing full health benefits for Peru. Distribution and rationing of water does not seem to be the main problem presented by this article. Instead they argue that developments and advancements in national sanitation will improve national health that will in turn create an improved and more reliable clean water source.
- Beauduin and Norris (1997) claim that the limitation for human development in Peru is due to the inequality and injustices that fester within the country. They argue that because of these inequalities citizens are unable to play a participatory role in running and maintaining health services, and therefore cannot legitimately represent the people, depriving individuals of the ability to promote change. If citizens had these powers they would be able to promote health education and environmental hygiene in their communities.
- In a *World Bank Policy Research Working Paper*, Alcázar, Xu and Zuluaga (1999) argue that the reason for Peru's privatized water and sanitation failure is the high marginal costs allocated towards pumping water from wells and building water storage facilities. A lack of international experience and technological ability has continued to hamper Peru's access to clean drinking water in a practical and cost efficient manner.
- Last but not least, Julio F. Alegria (2007), who is Director of Rural Water Supply and Sanitation Project for the Southern Andes of Peru, argues that Peru's water problems mainly stem from an inadequate water policy, a weak and ineffective water authority and ill-suited institutional arrangements. Based on his analysis, he suggests that there are serious water use conflicts, which have increased in the last years, and that these conflicts are a manifestation of a causal problem. This situation has created a vicious cycle that impairs the governance of water. He also proposes a sweeping reform of water related institutions and new water policies in order to make them more effective and encourage public participation in decision-making processes.

III. Empirical Background

III.1. Historical Background

When examining the effects of poor water quality and the lack of sanitation on Peru's economic development, it is important to take into account the nation's past and current economic states as well as the country's historical development. Historically, Peruvians have had much success obtaining water by adapting to the arid and semiarid climates and mountainous regions through the use of technology and organization. The Incas developed watershed management techniques, hydraulic infrastructures, channels and aqueducts.

It was not until the Spanish conquered Peru that the water distribution methods of the indigenous people were dominated by the prevailing privileged ruling class. The ruling class, which then comprised the Republic, neglected the native culture of Peru and its environmental characteristics. Spanish domination during the colonial period created a large marginalization within the country,

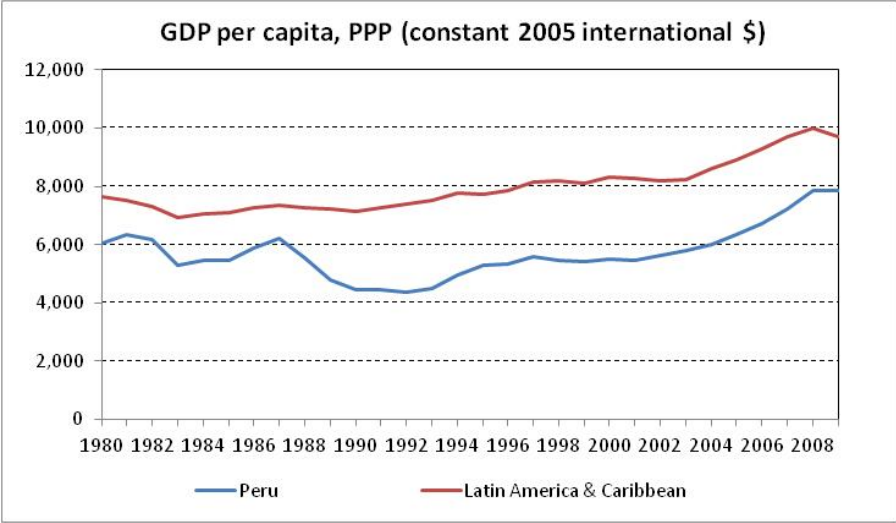
pushing millions of indigenous people into small communities and villages with little to say in the functionality and policies of the nation (Alcázar, Xu and Zuluaga, 1999).

Subsequently, from 1968 through 1980, the General Water Law was passed, which gave a hegemonic role to the state and a limited role to the private sector in terms of water management. Since the 1990s, the role of the state has started to change positively but the shift from public to private sectors has not been an easy or fast transition. As pointed out by Alegria (2007, p. 21): “Water policy and institutional arrangements developed in the last 37 years in Peru have caused severe deficiencies and flaws in the Peruvian water management situation.”

III.2. Socio-economic Background

Peru went through decades of economic stagnation and recessions during most of the 1980s and 1990s and only started to grow more sustainably since 2001. It was not until 2005 that Peru’s GDP per capita (measured in purchasing power parity-adjusted constant 2005 dollars) surpassed the 1980 level, see Figure 1. Figure 1 also shows that Peru did slightly worse than the average country in Latin America and the Caribbean (LAC) during the 1980s and 1990s, though the recovery in the first decade of this millennium was stronger than that of the average LAC country.

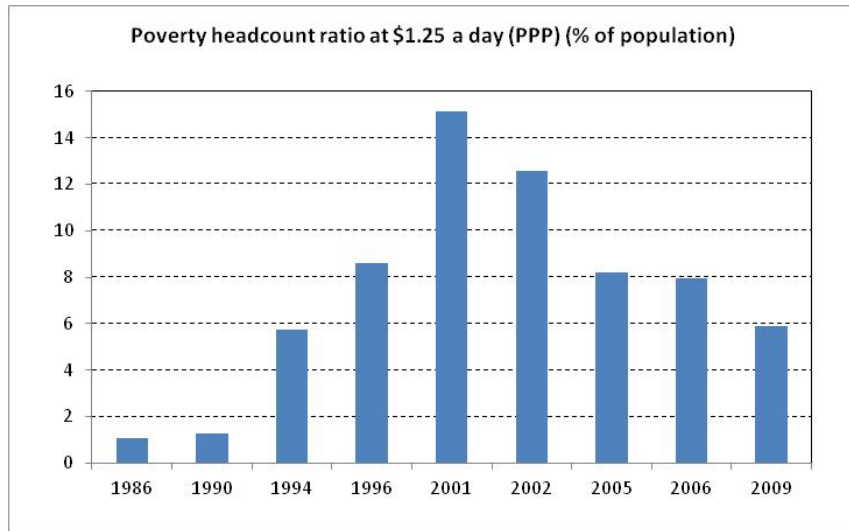
Figure 1: GDP per capita (constant PPP-adjusted 2005 dollar, 1980-2009)



Source: Created by author based on World Bank (2011).

Reflecting these economic developments, Peru also experienced a significant increase in the percentage of the population living below \$1-a-day from 1986 to 2001, after which extreme poverty has declined, though there were still nearly 6 percent of Peru’s population that lived below \$1-a-day in 2009; see Figure 2.

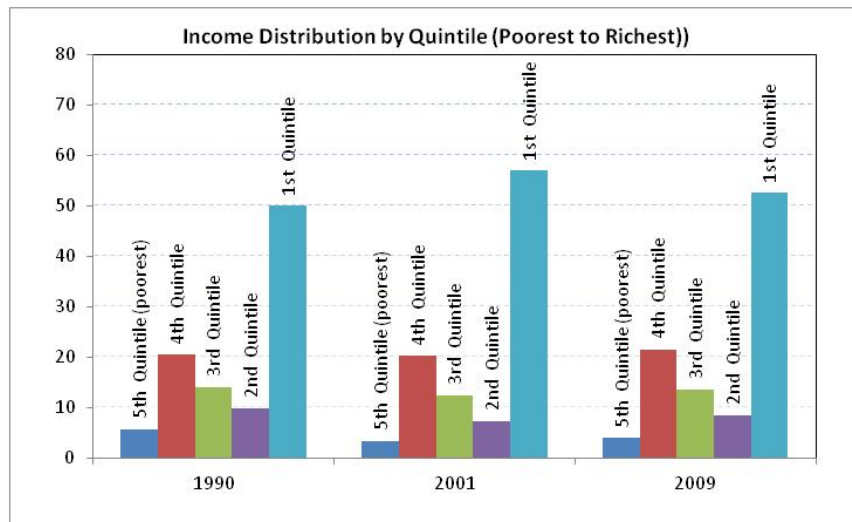
Figure 2: Population living below \$1.25 (percent), all available years



Source: Created by author based on World Bank (2011).

Furthermore, as Figure 3 shows, in 2000, the richest 20 percent earned always more than 50 percent of the total national income during the last three decades, while that earned by the poorest 20 percent was always below 5 percent.

Figure 3: Peru's Distribution of Income for Selected Years

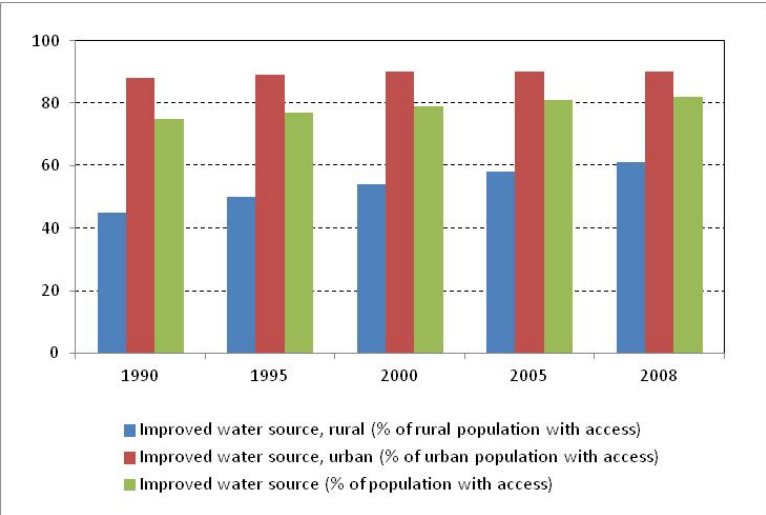


Source: Created by author based on World Bank (2011).

As Figures 4 and 5 show, the urban population in Peru has significantly greater access to clean drinking water sources and sanitation facilities than the rural population. While about 90 percent of Peru's urban population had access to clean drinking water during the last two decades, there were only 45 percent of the rural population with such access in 1990.

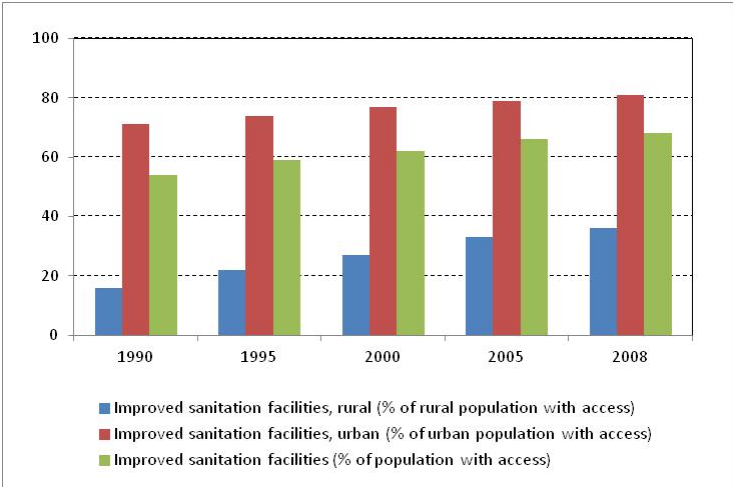
Even though access rates of the rural population increased to 60 percent by 2008, they were still only about two thirds of the urban access rate. The discrepancy between the rural and urban population with access to sanitation is even higher, as access rates of the rural population were about one third of access rates of the urban population during the last two decades.

Figure 4: Rural and Urban Access to Safe Water (all available years)



Source: Created by author based on World Bank (2011).

Figure 5: Rural and Urban Access to Sanitation (all available years)



Source: Created by author based on World Bank (2011).

IV. Discussion

In Peru, as in all countries, clean water and sanitation are necessary to fulfill many aspects related to economic development: basic human needs, agricultural production, industrial production, energy production, transportation, recreation and environmental sustainability. Given these

competing needs, sufficient and effective means of clean water distribution and sanitation must be implemented (Alcázar, Xu and Zuluaga, 1999).

The United Nations Environment Programme (UNEP) published findings stating that, “poor countries with access to clean water and sanitation services experienced faster economic growth than those without: one study found the annual economic growth rate was 3.7% among poor countries with better access to improved water and sanitation services, while similarly poor countries without access has an annual growth of just 0.1%” (underwater.org). Even though Peru is currently among the top 30 countries that suffer most from water stress and scarcity, it is also true that Peru is one of the top 17 countries of the world with the most freshwater available per capita (Alegria). Therefore, it is essential to examine why a country with such an abundance of resources is unable to deliver these resources throughout the country.

Unfortunately for Peru, the way in which its water systems are managed, significantly adversely affects the efficiency of water use, which is needed to promote and sustain domestic economic activity (Alcázar, Xu and Zuluaga, 1999). Studies have shown that, “sanitation and drinking water investments have high rates of return: for every \$1 invested, there is a projected \$3-\$34 economic development return.”¹ This discussion first addresses the overarching problem of the lack of clean water and sanitation, and then further explains the cause and effects of this problem. Then, after comparing Peru on a global and international platform, potential solutions will be discussed.

IV.1. Water and Sanitation Problems

This article proposes that the lack of clean water and sanitation in Peru is a problem that has contributed to hindering the nation’s economic development. Alegria (2007) shows that 24 percent of Peruvians have no access to water supply services, 43 percent have no basic sanitation facilities, and only 22 percent of total domestic wastewater is properly treated. These hauntingly low numbers communicate the gravity of the Peruvian water and sanitation crisis.

More importantly, these statistics underscore the exclusion, inequality, and corruption obstructing municipal water and sanitation authorities from effectively allocating and distributing economic resources. This in turn hinders certain sectors of Peru from transitioning out of poverty as lack of access to basic sanitation and health services prevents them from recognizing their full economic potential and productivity. In order for Peru and its citizens to prosper, the nation must improve its water and sanitation policies, systems, and efficiency by allocating tariffs towards physically improving the nation’s sanitation plants, facilities, and transportation; enforcing national policy regarding water and sanitation standards and regulations; and improving efficiency by reducing waste and coordinating national water and sanitation efforts.

Though recently some positive actions have been taken to improve Peruvian water distribution and sanitation, not all facets of the issue have gotten better; “Some indicators have unambiguously improved over time, such as water, sanitation, particulates, and sulfur oxides. But others, such as fecal coliform in rivers, has unambiguously worsened” (Shafik, 1994, p. 769).

Two major contributors to the continuing problem are implementing inadequate and unstable water policies and having a weak national water authority that is unable to fulfill its mandated role (Alegria, 2007). Table 1 illustrates the causes and effects of water-policy-related problems in Peru, while Table 2 illustrates the causes and effects of water-authority-related problems in Peru.

¹ See: <http://www.underwater.org>.

Table 1: Water-Policy-Related Problems in Peru

Cause	Effects
Water law biased to agricultural irrigation and coastal region conditions.	<ul style="list-style-type: none"> • Inappropriate water law framework for people of the Sierra and Jungle regions. • Sierra region stagnated, with little support to aid agricultural development.
Concentration of decision at the central level of government, decisions are taken in Lima.	<ul style="list-style-type: none"> • Laws and regulations are not appropriate for the regions and provinces outside of Lima. • Sense of frustration and discontent; people see a hierarchical and authoritarian decision-making process.
No acknowledgement of indigenous water rights.	<ul style="list-style-type: none"> • Mining users and Coast and Jungle regions' users are allocated water and land resources, which were formerly in hands of indigenous people. • Indigenous people's quality of life worsens and poverty increases.
Assigning an oversized role to water management from the supply side.	<ul style="list-style-type: none"> • During the period 1971-2001, US \$ 5,000 million were invested in large scale irrigation schemes with few results. • End-use efficiency measures/improvements are not emphasized. • Externalities from irrigation projects: 33% of irrigated area on the Coast region is affected by saline soils and flooded lands.
Allocation efficiency is not pursued (water transfers prohibited).	<ul style="list-style-type: none"> • Low productive agriculture due to low-yield crops allocation. • Farmers are not given incentives to be efficient (low end-use efficiency).
A welfare approach for state investment and expenditures.	<ul style="list-style-type: none"> • Subsidized water tariffs (irrigation and domestic). • Private initiatives are discouraged; therefore a lack of private investment for water resources development and for responding the demand.
No access to water supply for 38% of rural families; no basic sanitation services for 70% of rural families.	<ul style="list-style-type: none"> • High incidence of infant mortality and water-related diseases among deprived families. • Increasing poverty in deprived people.

Source: Adopted from Alegria (2007), Table 6, pp. 9-10.

Table 2: Water-Authority-Related Problems in Peru

Cause	Effects
Water authority is subordinated to the agricultural sector administration.	<ul style="list-style-type: none"> • Water authority decisions are biased to agricultural sector, which limits its leadership. • Water authority lacks a comprehensive view of the problems; therefore it cannot accurately assess supply and demands, nor propose solutions.
Concentration of power of the public administration at the central level (capital city of Lima).	<ul style="list-style-type: none"> • Laws and norms are not appropriate for regions and provinces outside of Lima. • Government decisions and actions are not supported by people.
Politicians' interference with water authorities' decisions and/or noncompliance of the law.	<ul style="list-style-type: none"> • Unjust and/or incorrect decisions are made against society's interests. • Water tariffs do not cover O&M, water conservation nor water treatment costs. • Public budget is wasted or ineffectively allocated.
Fragmentation, overlapping and/or poor coordination between various state water-related agencies.	<ul style="list-style-type: none"> • Inefficient and/or ineffective use of scarce public budget. • Pollution and depletion of water resources.
Corruption of some functionaries and officials.	<ul style="list-style-type: none"> • Sense of mistrust and discontent among the people in relation to government actions. • Pollution and depletion of water resources
Insufficient budget to fulfill water-related agencies' functions and plans.	<ul style="list-style-type: none"> • Agencies' functions and plans cannot be accomplished.
Illegal and informal users in water supply systems (irrigation and domestic), with no sanctions.	<ul style="list-style-type: none"> • Financial deficit by water management organizations. • Encouraging a norm-disobedient culture.

Source: Adopted from Alegria (2007), Table 7, p. 11.

One can conclude from the above tables that Peru's water and sanitation problems stem from poor policy and a partially ineffective water authority. The country's failures to implement good policy and to manage governmental authority create flaws in terms of agriculture, irrigation, water rights, investments, and distribution. These flaws have resulted in negative national effects, overall decreasing the quality of life of those deprived of and excluded from such resources.

IV.2. Effects of Water and Sanitation Problems

The direct effects of lacking access to clean water and sanitation facilities on Peru's development and growth are difficult to determine. As Shafik (1994, p. 757) explains: "The relationship between income and the costs and benefits associated with any given level of environmental quality is complex because it operates through a number of different channels, such as preferences, technology and economic structure." To understand how the failure of each of these channels has contributed to Peruvian development issues, it is important to individually analyze how these failures have led to poor national results in terms of clean water and sanitation.

Inefficient end-use, inefficient allocation of water, pollution and depletion of water resources are only some of the unfavorable results that have been created due to national failures (Alegria, 2007). Water resources are unevenly distributed and water management is strongly sectorial, fragmented

and inefficient due to failed Peruvian water policies, a weak legal framework and less than adequate institutional arrangements (Alegria, 2007). Primarily, the General Water Law has six major features, which have made obtaining and distributing water to rural and impoverished citizens more challenging. Some of these features include the facts that water resources are the property of the State, water rights transfers are prohibited, the water authority for quantity issues lies within the Ministry of Agriculture, and that the current law is biased toward agricultural use and to the coastal region while customary land and the Andean region is ignored (Alegria, 2007). These features allow for national water quality issues to be poorly addressed or even sometimes, neglected.

In addition to the poor implementation of laws, bureaucratic divisions of tasks and responsibilities have caused many problems in terms of efficient and effective water distribution and sanitation facility access. Water authority' roles, sectors and agencies can be described as disperse and overlapping. Currently eight ministries and thirteen main state agencies exist within Peru while the nation is divided into 68 irrigation districts (Alegria, 2007).

Alegria explains how and why the General Water Law, implemented by the Peruvian government has failed in successfully allocating water resources. He describes the law as “inadequate and obsolete” and argues that proposed reforms have failed because there is opposition from stakeholders and an inability to achieve consensus. What is inadequate and obsolete about this set of laws is originally, a hegemonic role was given to the State on the water supply side but the private sector was given a limited role from the demand side. Currently, the role of the State is to promote, enhance, oversee, and regulate the participation of the private sector but recently, Peru is realizing that the system of oversight to regulate national water and sanitation is ineffective due to the inequality of power between the public and private sector. Instead, plans for the modernization of the nation's legal framework need to be implemented rather than perpetually failing to change.

Often times, economic results indicate that “most societies choose to adopt policies and to make investments that reduce environmental damage associated with growth” but “where the costs of environmental degradation are borne by others (by the poor), there are few incentives to alter damaging behavior.”² Therefore, it is of no surprise that little has been done to resolve sanitation and water distribution issues as it primarily affects the nations marginalized and disenfranchised poor.

IV.3. Causes of the Water and Sanitation Problems

The causes resulting in poor sanitation and water quality can be categorized into three major effects: inefficient water end use, inefficient water allocation use, and conflicts among water users and stakeholders (Alegria). These main categories have many more specific effects that fall into their groupings. Water stress, water scarcity, poverty, job loss, food loss, droughts, starvation and unwillingness to invest are all direct effects resulting from the poor management and distribution of water and sanitation. Without resolving this Peruvian problem the water and sanitation crisis will continue to hinder national growth and development while also having increasingly grave consequences on the population and environment. Explicitly, “this situation, in turn, increases environmental degradation, the depletion of natural resources, and widespread poverty” (Alegria). By closely examining the outcomes of Peru's poor water distribution and sanitation access, it is easy to argue that these negative results impede national growth. By failing mass industries such

² Shafik (1994), p. 771.

as agriculture, destroying citizen's health, and creating social and governmental conflicts, it has deterred investors, stakeholders, and plans for development. The trepidation to invest and develop Peru is in part caused by the listed national problems created by the failure to provide adequate clean water and sanitation.

Investment is one of the core ingredients in perpetuating economic development. Therefore, it is essential for Peru to attract and gain domestic and foreign investors. Most businesses demand water in order to efficiently operate and run their factories and provide for their employees and employers. By making these correlations, it is evident Peru's economic development and growth is dependent on water as it affects all areas of business. As explained on the webpage of Lifewater International, "water is a cornerstone of development, and access to safe water is a fundamental catalyst for economic development in many communities around the globe."³ With a national and stable water supply, businesses can generate their own electricity, irrigate their croplands, and transport goods. Clean water is becoming increasingly valuable and hard to come by as businesses demand more and more of it. Hence, it is essential that Peru has the ability and capacity to provide a clean and proficient source of water to maintain and attract investors and businesses.

The use of water and sanitation access is essential for small, medium and large businesses and corporations.

- In the case of small businesses (such as informal ones run from the home) they often lack a formal right to the water supply they use and are dependent on larger economic and political actors for their water usage rights. This is threatening to small business owners as they can do little to protect this essential and precious resource that their livelihood is dependent on. If these small business owners live in fear that they will not be able to obtain and maintain water as a commodity it may deter them from expanding their business or investing in it.
- For medium size businesses, water is a major factor affecting profits. In order for these businesses to obtain functionality they must capitalize on the amount of obtainable water. This may often result in cutting corners. For example, a restaurant not efficiently preparing its food safely. Businesses violating necessary procedures not only have grave effects on businesses but have greater implications as well. These repercussions may additionally affect national productivity and health.
- For larger businesses, national and international companies rely on a consistent water supply to process their products. If the Peruvian government cannot ensure these corporations a proficient and consistent water supply the companies may question their ability to process their products and may decide not to invest in Peru or may decide to leave Peru, resulting in a loss of GDP and national employment opportunities (Lifewater International).

Accessibility to a clean water source and sanitation facilities has a large implication nationally in terms of Peruvian health, business, investment, agriculture, and productivity. If these aspects are hindered by the lack of clean water this in turn hinders Peru's economic growth and development. By identifying the negative effects resulting from an absence of adequate water and sanitation the problems creating these results can be acknowledged and reversed.

³ See: <http://www.lifewater.org/>.

IV.4. Potential Solutions

Many feasible solutions exist for resolving Peru's poor water sanitation purification and distribution but all of them require a unified effort from lawmakers, stakeholders, politicians, the government, and citizens. Each of these assemblages is a vital part in undertaking this national issue because the nation's current strategies have been atrociously ineffective in distributing, purifying, and allocating water efficiently. This failure is a result of uncoordinated municipal and private sector strategy, communication, and laws.

Changes such as "implementing a new water policy and water law; developing a strong, autonomous, reliable and participative water authority; encouraging public participation and decentralization; and promoting education and awareness in the public" (Alegria, 2007, p. 21) are vital for Peru to prosper. With the involvement of all factions in Peru, these changes can be implemented to include: national ownership of water, integrated water resource management, technological improvements, no subsidies to operation and maintenance costs, coordination between water sector policy-makers and macroeconomic policy-makers, stakeholder joint participation, allocation of money towards environmental services, and promotion of private investment and development especially in indigenous regions (Alegria, 2007, pp. 15-16). National improvements such as these would greatly increase water and sanitation quality and distribution and therefore, increase economic growth and development.

Changes in the Peruvian Government are essential in order to make the distribution of water and sanitation greater and more efficient. First, service quality must be improved so that inadvertent flaws such as wasting immense amounts of water in its transportation and distribution can be prevented. Second, the development and enhancement of low-cost technologies would greatly improve efficiency by losing less water due to leakage from old, cracked piping and hoses. These service and technological based changes can be made by allocating collected national tariffs towards repairing and upgrading water and sanitation technologies.

Other potential solutions can be suggested so that water may be distributed to the nation's more remote regions. One of the most obvious solutions is to have only one sector in charge of water sanitation and distribution instead of having two existing and competitive fractions. The national government should oversee all water and sanitation regulations and distribution, eliminating constant competition with independent contractors. By implementing overarching national regulations inconsistencies that currently exist within the nation, such as private and state water pipes that sabotage the others functionality will be dissolved.

By creating a unified national effort with consistent policies, regulations, and laws, both public and private sector adoption of these efforts and policies will strongly develop. If Peru develops a national unified water and sanitation sector, this will result in a more harmonized country, strongly reducing the chance of regional conflict and the need for government interference. In achieving national stability through the means of resolving Peru's water and sanitation distribution problems, domestic and foreign investors may be more prone to invest in and develop the nation as there would be less financial risk in doing so.

Lastly, the Peruvian government needs to increase spending on national education programs to teach the population about proper hygiene, storage techniques and purification, resulting in the improvement of national health. A paradigm shift, changing the way Peruvian society understands the realities of clean water and sanitation, is necessary for a progressive shift towards awareness (Alegria). Through a national education process shared values and attitudes about water and

sanitation will be acquired resulting in raised awareness and attentiveness towards proper and improper sanitation methods and practices. By simply changing the type of water storage bins used by poor Peruvian families and teaching citizens how to boil water to kill bacteria significant decreases in illnesses such as childhood diarrhea would take place. Improving national health would prevent sick children from missing school and employees missing work. Creating a more educated and therefore healthier population would result in a more productive and prosperous society, improving national efficiency, growth, and development. Thus having a healthy population may attract investment because there is an increased security in the dependency of employees' and local consumers.

Implementing these solutions can greatly improve Peru's national health by reducing sickness and death; increasing national and local security by eradicating the cause of water right conflicts; and improving water and sanitation efficiency by upgrading and repairing treatment facilities and transportation. All suggested resolutions if implemented would generate confidence in shareholders, investors, developers, and businesses that Peru is a sustainable environment for business, growth, and development.

V. Conclusion

The analysis of this article has shown that improvements in Peru's water and sanitation would support Peru's economic growth and development strategy. It is imperative to understand how the neglect of water and sanitation had helped to cause a devastating crisis in Peru, felt by all segments of Peru's population, especially the poorest citizens.

Even though the country is making rapid progress, much more needs to be done to advance clean water distribution and sanitation in order to improve the nation's overall physical health and development. Access to clean water and sanitation are a fundamental component for Peru's economic development and growth. In order for Peru and its citizens to prosper the nation must enforce the policies and regulations already in place, further enhance its water and sanitation policies, modernize its systems, and create greater efficiency by reducing waste and coordinating national water and sanitation efforts.

It is essential that the Peruvian government not only recognizes the errors of its past ways but also works to reform and implement new laws and practices for self-betterment. The government must also allocate a greater share of public funds towards physically improving the nation's sanitation plants, facilities, and transportation. In doing so, it will improve national health, increase domestic and foreign investment, and achieve sustainable growth and development.

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