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Management, Supply and Sanitation of Water in African Developing Countries

– The Case Studies of Ethiopia and Rwanda –

Gueguen Romaric

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Abstract

I. Background and Purpose

□ Background of this Study: The Importance of Water

○ Water is one of the most important resource for humankind. Yet, this resource is threatened everywhere, causing environmental stress, and human and biodiversity losses. This problem is also aggravated because of climate change.

○ Water issues are taken in consideration since a long time in developed countries. However, problems related to water have been relatively neglected in developing countries, even if they have a serious impact in those countries. Indeed, effects are made worse because of poverty.

○ Water is not only a national issue. Indeed, it is a finite resource which does not respect boundaries and international public law. Therefore, it is a global issue that must be addressed by the global community. In this regard, developed countries have the duty to provide support to developping countries. Ethiopia and Rwanda have been targeted because even if these countries have recently made significant progress, water problems have not been fixed.

□ Purpose of this Study: The Improvment of the Water Framework

○ A complete assessment of this framework is necessary in order to understand its strengths and weaknesses. The following step

consists in proposing solutions or remarks that are likely to improve the water framework.

○ Such improvements might be developed with reforms that could occur through policies, laws and regulations, and institutions.

Ⅱ. Main Contents

○ Outline: This report contains five chapters. The first one introduces the topic and defines the general problematic. The second chapter demonstrates that water is definitely a global issue and shows the leading role of International Organisations in this matter. Chapters three and four are devoted to assess the water framework of Ethiopia and Rwanda. The final chapter concludes on issues previsously assessed and recommendations that can be given to developed countries.

○ Details: Chapters three and four assess Ethiopian and Rwandan water framework. In order to be as complete as possible, the same methodology has been strictly followed. In this regard, the water framework has been studied considering policies, laws and regulations, and Institutions. A wide study is necessary because water is obviously a transverse issue which is stated through different means by different actors.

Ⅲ. Expected Effects

○ Improvement of the Water Framework: Developing countries can learn from fails and successes occured in developed countries. In

this regard, an assessment of their water framework in comparison with standards in effect in developed countries should be efficient. However, this methodology has limits. Indeed, solutions established in developed countries are adapted to these countries. And those solutions are not necessarily compatible with developing countries. Thus, a solution to a specific issue in a specific country cannot be automatically transfered to a similar issue in another country. Such a transfer depends on history, culture, but also finance. Developing countries does not have important financial means. In this regard, they might experience difficulties to ensure about human skill (capacity building is a long term investment), financing of projects in matter of water, implementation of policies and laws, etc.

○ Improvement of Health and Sanitation: Water is a top priority in developing countries and must be considered as a cornerstone of policy, legal, and institutional action. In this regard, all stakeholders must develop a proactive attitude through improvement of water framework with the main objective to enhance situation of human being in matter of health and sanitation.

Key Words : Water, Management, Supply, Sanitation, Pollution, Health, Environment, Environmental Impact Assessment, Water Resources, Integrated Resources Water Management, Basin, Decentralization, Law, Regulation, Policy, Ethiopia, Rwanda.

목 차

Chapter 1- Introduction

"Water is our most precious natural resource"[1], said Ban Ki-Moon, the Secretary-General of United-Nations, in his message on World Water Day[2], on March 22, 2009. This short sentence may first seem trivial. However, this message has to be continuously reminded because problems linked to water are far from having been settled. And water, as a global resource, has to be treated as a global issue, connected with several other issues[3]. All countries are concerned with water problems, even whether it is obviously on different scale depending on countries' developing level. But there is a real emergency in developing countries because what is at stake is nothing less than lives. These problems are a very high priority for international organizations involved in protection of human being, environment etc.

The last update on progress on sanitation and drinking-water[4], drew up by the WHO and the UNICEF through the Joint Monitoring Programme (JMP), provides good indicators about the progress to be made. For instance, 2.6 billion people do not use improved sanitation and 72% of them live in Asia. Furthermore, 884 million people do not use improved sources of drinking-water and 37% of them live in Sub-Saharan Africa.

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1) http://www.unis.unvienna.org/unis/pressrels/2009/unissgsm100.html

2) International World Water Day is held annually on 22 March as a means of focusing attention on the importance of freshwater and advocating for the sustainable management of freshwater resources. Source: http://www.unwater.org/worldwaterday

3) Health, agriculture, hydropower, ecosystems, social development. Jessica Vapnek, Bruce Aylward, Christie Popp and Jamie Bartram, *Law for Water Management: A Guide to Concepts and Effective Approaches, FAO,* Legislative Study, No. 101, 2009, pp. 4-8.

4) WHO and UNICEF, Joint Monitoring Programme for Water Supply and Sanitation, Progress on Sanitation and Drinking-water, 2010 update.

Moreover, 1.1 billion people still defecate in the open and this figure increases in urban areas. Lastly, 751 million people share their sanitation facilities.

Consequently, studies related to water management, supply, and sanitation are always relevant.

1) Definition of the topic

This topic consists in three different components of the water resources that are management (1), supply (2), and sanitation (3).

(1) Water Management

"States and local governments establish water management departments to oversee the drainage of surface water and the reclamation of wetlands, swamplands, overflowed lands and tidal marshes and flood prevention and the conservation, development, utilization and disposal of water"[5]. Some of the duties of water management include:

- To locate and establish levees, drains or canals and to cause to be constructed, straightened, widened or deepened any ditch, drain or watercourse;
- To construct for the purposes of flood prevention or the conservation, development, utilization or disposal of water works of improvement, including levees, embankments, floodwater retarding structures, water storage structures, outlets and tide gates, flood gates and pumping plants for preventing floods, providing drainage, reducing sediment

5) http://definitions.uslegal.com

and reclaiming wet, swamp or overflowed lands and other related works of improvement that will carry out the purposes of this article; and

- To provide maintenance for such installations.

All those duties have to be accomplished in compliance with laws related to water, including environment impact assessment, protected areas, protection of groundwater, protection of biodiversity etc.

(2) Water Supply

It is the provision by public utilities, commercial organizations, community endeavors or by individuals of water, usually by a system of pumps and pipes. Water supply systems get water from a variety of locations, including groundwater (aquifers), surface water (lakes and rivers), conservation and the sea through desalination. The water is then, in most cases, purified, disinfected through chlorination and sometimes fluoridated. Treated water then either flows by gravity or is pumped to reservoirs, which can be elevated such as water towers or on the ground (for indicators related to the efficiency of drinking water distribution see non-revenue water). Once water is used, wastewater is typically discharged in a sewer system and treated in a wastewater treatment plant before being discharged into a river, lake or the sea or reused for landscaping, irrigation or industrial use (see sanitation definition below).

- Providers have to ensure about quality of water. That means water must be good for human consumption (drinking water, bathing water etc.), but also for environment (when treated water is discharge in

rivers or lakes): So water quality must comply with standards, which means there should be such standards;

- Providers must comply with regulation: in matter of quality but also in matter of competition (transparency), social policy and regulation (proper pricing, welfare benefits) etc.;
- Which juridical framework for supply: public, private, public/ private partnership.

The JMP makes a difference between **improved** and **unimproved** access to safe drinking-water:

Improved drinking-water	Unimproved drinking-water
- Piped water into dwelling, yard or plot - Public tap or standpipe - Tubewell or borehole - Protected dug well - Protected spring - Rainwater collection	- Unprotected dug well - Unprotected spring - Cart with small tank or drum - Tanker truck - Surface water (river, dam, lake, pond, stream, canal, irrigation channel) - Bottled water[6]

(3) Water Sanitation

Water and sanitation are strongly interconnected, particularly concerning wastewater: “2.6 billion people lack access to adequate basic sanitation and the benefits that come with it: improved health, personal dignity, a cleaner environment, and economic advantages”[7]. And as a matter of

6) Bottled water is considered to be improved only when the household uses drinking-water from an improved source for cooking and personal hygiene; where this information is not available, bottled water is classified on a case-by-case basis.

7) http://www.wsscc.org/about-us/past-present-future

fact, access to sanitary water comes hand in hand with access to improved sanitation facilities for excreta.

In a general sense, wastewater[8] is any water that has been adversely affected in quality by anthropogenic influence. It comprises liquid waste discharged by domestic residences, commercial properties, industry, and/or agriculture and can encompass a wide range of potential contaminants and concentrations. In the most common usage, it refers to the municipal wastewater that contains a broad spectrum of contaminants resulting from the mixing of wastewaters from different sources. Therefore, water and sanitation concern wastewater collection, treatment and reuse which are very important issues in the field of public health.

The JMP[9] makes a difference between **improved** and **unimproved** sanitation:

Improved sanitation	Unimproved sanitation
- Flush or pour-flush to: . Piped sewer system . Septic tank . Pit latrine	- Flush or pour-flush to elsewhere (that is, not to piped sewer system, septic tank or pit latrine) - Pit latrine without slab/open pit

8) Wastewater is divided in two categories:
- Blackwater is a term dating to at least the 1970s (US Patent 3915857, issued in October 1975) used to describe wastewater containing fecal matter (human feces) and urine. It is also known as brown water, foul water, or sewage (Sewage is correctly the subset of wastewater that is contaminated with feces or urine, but is often used to mean any waste water. “Sewage” includes domestic, municipal, or industrial liquid waste products disposed of, usually via a pipe or sewer or similar structure, sometimes in a cesspool emptier);
- Greywater is wastewater generated from domestic activities such as laundry, dish-washing, and bathing, which can be recycled on-site for uses such as landscape irrigation and constructed wetlands. This wastewater contains no fecal matter.

9) WHO and UNICEF, Joint Monitoring Programme for Water Supply and Sanitation, Progress on Sanitation and Drinking-water, 2010 Update, p. 34.

Improved sanitation	Unimproved sanitation
- Ventilated improved pit (ViP) latrine - Pit latrine with slab - Composting toilet	- Bucket - Hanging toilet or hanging latrine - Shared facilities of any type - No facilities, bush or field

2) Geographic field of the study

Almost all countries around the world know problems linked with water. However, it appears that action, to be as efficient as possible, should be reinforced in developing countries where the situation is the most urgent. Africa seemed to be a good choice because it "usually lags behind Asia and the Americas on most issues"[10]. But one needed to narrow the field of research then our attention focused on Ethiopia and Rwanda because those two countries encounter problems in matter of water and have both expressed a strong will in order to fix them.

3) Methodology

In the outline, the following general scheme is developed:

Chapter 1- Introduction
Chapter 2- An Overview of Issues Globally Recognized
Chapter 3- Water in Ethiopia
Chapter 4- Water in Rwanda
Chapter 5- Conclusion

10) UN Water, *Status Report on Integrated Water Resources Management and Water Efficiency Plans*, 2008, p. 1.

The purpose of the Chapter 2 is to provide an overview of global issues linked to water. It is therefore a general presentation of global issues recognized and treated by countries and international organizations. This process allows defining legal issues in matter of water and also permits understanding the links between legal issues and other ones. Indeed, water issues can only be solved with a holistic approach, and that means having a comprehensive vision of the whole problematic. As a result, limiting our researches to only legal issues would be ineffective.

The purpose of Chapters 3 and 4 is to study management, supply and sanitation of water in Ethiopia and Rwanda. For each country, the following methodology is followed:

1) An Overview of the Juridical System
2) Policy, Juridical, and Institutional Framework of Water
3) National Issues and Recommendations

For each country, as preliminary remarks, a fact sheet is provided. The purpose of this brief statement is to clarify the general framework in which the reflection takes place. Some key figures may likely help to understand some specificities of each countries. E.g.: To know repartition of population considering urban and rural areas can be very important in order to understand water related issues; To know Freshwater withdrawal; etc.

(1) An Overview of the Juridical System

In order to understand the juridical system it is very important to clearly identify decision-making levels and repartition of competence in

both horizontal and vertical separation of power. The comprehension of water issues would be more difficult without this preliminary work.

- It is not about providing an exhaustive study of the Constitution: It is only about giving a brief knowledge of the juridical system[11]. That first allows a best understanding about the structure of the country which is studied. Then, that permits defining water linked competencies at the constitutional level.

(2) Policy, Juridical and Institutional Framework of Water

The purpose of this section is to provide a complete assessment of the whole water framework[12] and, to this end, to define clearly:

- Policies related to water. This task is harder than it appears to be. Indeed, water is obviously a cross-disciplinary theme.
- Regulations related to water but not only water Act. Indeed, "water protection provisions can be found in legislation governing other natural resources such as forest or land laws in addition to, or independent of water resources legislation"[13].

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11) A general overview is undoubtedly helpful and allows a better understanding of a specific part of the considered system. Therefore, it is necessary to known the whole system, as a brief and preliminary work, in order to understand weaknesses of the legal framework of water.

12) "Review of the national legal framework for water is laborious, but it is absolutely essential to ensure good governance and effective implementation of water policies. All aspects of the existing legal framework should be assessed to determine which provisions need to change". Jessica Vapnek, Bruce Aylward, Christie Popp and Jamie Bartram, Law for Water Management: A Guide to Concepts and Effective Approaches, FAO, Legislative Study, No. 101, 2009, p. 86.

13) Stefano Burchi, "Balancing Development and Environmental Conservation and Protection of the Water Resource Base - The 'greening' of Water Laws", FAO, *Legal Paper Online*, No. 66, June 2007.

- Protagonists involved: knowledge of the institutional framework is central.

(3) National Issues and Recommendations

This section consists in identifying specific issues of each country. To this end, key figures related to water, studies and papers issued by International Organizations and States' authorities help targeting issues. Logically, the following step consists in providing recommendations in order to solve issues previously emphasized. The best solutions are likely to be found in developed countries. But one has to be realistic and pragmatic: developing countries cannot often afford solutions coming from developed countries. Nevertheless, those examples may be considered as long term goals.

Chapter 2- An Overview of Issues Globally Recognized

According to the WHO, 3.6 million people die each year from a water-related disease[14]. Therefore, International action is obviously focused on improvement of poorest people's condition, particularly those without access to safe water and sanitation. In addition, helping those people also contributes to preservation of water as a world heritage, promoting the best practices all over the world. Indeed, water cannot be longer considered as a local or national issue. And as a matter of fact, water does not obey to International Public Law: water does not stop at boundaries; water does not have any passport; and one cannot put water under house arrest (meaning that water cannot indefinitely be caught).

In this regard, plenty of International Organisations and Programs are involved in water issues. This involvement demonstrates the importance of those issues, even if such a multitude could be questionable. Indeed, with all those programs, financings, etc. the question of liability, transparency, and moreover efficiency always remains pending. However, all those International Organisations and Programs are pursuing the same goal: to fix water related issues. This is why one first provides an assessment of International Organisations and Programs involved (1). Then, one takes in consideration issues globally considered by those International Organisations and Programs (2). This first step allows a better understanding of issues to be tackled during the assessment of Ethiopian and Rwandan situations.

14) WHO, *Safer Water, Better Health: Costs, Benefits, and Sustainability of Interventions to Protect and Promote Health*, 2008.

1) A Multitude of International Organisations and Programs

Several major International Organisations are involved in water issues through different programs shortly described below. Those programs are sometimes led in coordination by two International Organisations so a chart summarizes the situation in order to make it clear.

(1) United Nation Organisation

UNO is mainly involved in water related issues through UN-Water[15] which is "an inter-agency mechanism"[16] formally established in 2003 by the United Nations High Level Committee on Programmes, has evolved out of a history of close collaboration among UN agencies. It was created to add value to UN initiatives by fostering greater co-operation and information-sharing among existing UN agencies and outside partners. UN-Water focuses on:

15) http://www.unwater.org/

16) As UN-Water is not an implementing body, its specific activities and programmes are hosted by individual member agencies on behalf of UN-Water. Senior programme managers from UN-Water member agencies meet twice a year. An elected chair and a vice chair, which rotate among UN agencies usually every two years, represent UN-Water at international conferences, major fora and processes and oversee the implementation of the UN-Water work programme. A permanent Secretariat, hosted by the United Nations Department for Economic and Social Affairs (UNDESA) in New York, provides administrative, technical and logistical support. UN-Water collaborates closely with the UN Secretary-General's Advisory Board on Water and Sanitation (UNSGAB). UN-Water members are from the UN System while UN-Water partners represent civil society and various non-governmental organizations. While the coordination function of UN-Water is supported through internal resources provided by UN-Water members, activities are supported through donor trust funds. However, it is the members and partners who take part in various activities implemented primarily through time-bound task forces and UN-Water programmes that represent the primary 'capital' of UN-Water.

- Providing information, policy briefs and other communication materials for policymakers and managers who work directly with water issues, other decision-makers that have an influence on how water is used, as well as the general public.
- Building the knowledge base on water issues through efficient monitoring and reporting systems and facilitating easy access to this knowledge through regular reports and the Internet.
- Providing a platform for system-wide discussions to identify challenges in global water management, analyze options for meeting these challenges and ensuring that reliable information and sound analysis informs the global policy debate on water".

In addition, UNO has drawn up the Millennium Development Goals (MDGs)[17] during the Millennium Summit[18]. This program establishes the eight following MDGs: 1) eradicate extreme poverty and hunger; 2) achieve universal primary education; 3) promote gender equality and empower women; 4) reduce child mortality; 5) improve maternal health; 6) combat HIV/AIDS, malaria, and other diseases; 7) ensure environmental sustainability; and 8) develop a global partnership for development. Water is of course among these goals and the last UN update[19] provides an overview of progress:

> Target 7.C:
> Halve, by 2015, the proportion of the population without sustainable access to safe

17) http://www.un.org/millenniumgoals/
18) This summit was held from 6 to 8 September 2000.
19) UN, The Millennium Development Goals Report, 2010, pp. 58-61.

drinking water and basic sanitation

- The world is on track to meet the drinking water target, though much remains to be done in some regions
- Accelerated and targeted efforts are needed to bring drinking water to all rural households
- Safe water supply remains a challenge in many parts of the world
- With half the population of developing regions without sanitation, the 2015 target appears to be out of reach[20)]
- Disparities in urban and rural sanitation coverage remain daunting
- Improvements in sanitation are bypassing the poor

(2) World Health Organisation

WHO is currently involved in water issues through tree different programs:

- Water Sanitation Health (WSH): WHO works on aspects of water, sanitation and hygiene where the health burden is high, where interventions could make a major difference and where the present state of knowledge is poor. The work is divided into six core activities: Drinking-water quality management; Water supply and sanitation monitoring; Cholera surveillance and prevention; Water and sanitation in different settings; Water resources management; Miscellaneous activities (including Economic aspects, Climate change, and the MDGs).
- WHO also privileges household water treatment and safe storage in order to make water consumption safer.

20) "At the current rate of progress the world will miss the sanitation MDG target by 13 percentage points, meaning that in 2015 there will still be 2.7 billion people without access to improved sanitation. At this rate the MDG target will not be met until 2049 -a sad footnote for the globally agreed MDG development agenda". WSSCC, Annual Report, 2010, p. 7.

- Finally, WHO tries to develop Small Community Water Supply Network in order "to promote the achievement of substantive and sustainable improvements to the safety of small community water supplies around the world, particularly in rural areas, as a contribution to the Millennium Development Goal drinking-water target"[21].

(3) United Nations Children's Fund

UNICEF sector strategies are based on the UNICEF WASH Strategy Paper approved by the UNICEF Executive Board in 2006 for the 2006-2015 period[22]. The overall objective of UNICEF in the area of water, sanitation and hygiene (WASH) is to contribute to the realization of children's rights to survival and development through promotion of the sector and support to national programmes that increase equitable and sustainable access to, and use of, safe water and basic sanitation services, and promote improved hygiene[23]. Two measurable targets:

- Target 1: Halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation;
- Target 2: Ensure that all schools have adequate child-friendly water and sanitation facilities, and hygiene education programme.

(4) United Nations Educational, Scientific and Cultural Organisation

UNESCO has based its strategy in matter of water on tree different programs:

21) http://www.who.int/water_sanitation_health/dwq/scwsm_network/en/
22) UNICEF, *Water, Sanitation and Hygiene Strategies for* 2006-2015, 2006.
23) http://www.unicef.org/wash/index_43084.html

- The International Hydrological Programme (IHP): It "is the only intergovernmental programme of the UN system devoted to water research, water resources management, and education and capacity building". This programme has been tailored to Member States' needs and it is implemented in six-year phases: this step by step approach allows them adapting to a rapidly changing world[24].
- The World Water Assessment Programme (WWAP): Founded in 2000, the WWAP is the flagship programme of UN-Water and is housed in UNESCO. WWAP monitors freshwater issues "in order to provide recommendations, develop case studies, enhance assessment capacity at a national level and inform the decision-making proces s"[25]. WWAP products the World Water Development Report (WWDR) which is a periodic, comprehensive review providing an authoritative picture of the state of the world's freshwater resources.
- UNESCO-IHE Institute for water: This Institute has been established in 2003. It carries out research, education and capacity building activities in the fields of water, environment and infrastructure. UNESCO-IHE continues the work that began in 1957 when IHE first offered a postgraduate diploma course in hydraulic engineering to practicing professionals from developing countries[26].

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24) "IHP-VII: Water Dependencies: Systems under Stress and Societal Responses: This phase of IHP (2008-2013) will continue to promote and lead international hydrological research, facilitate education and capacity development and enhance governance in water resources management. The aim of these efforts is to help meet the MDGs on environmental sustainability, water supply, sanitation, food security and poverty allevi-ation". http://www.unesco.org/new/en/natural-sciences/environment/water/ihp/

25) http://www.unesco.org/water/wwap/

26) http://www.unesco-ihe.org/About/Introduction-to-UNESCO-IHE

(5) Food and Agriculture Organization

The FAO has recognized the increasing water scarcity, which is highly problematic considering its dominance in agricultural water use. Thus, FAO is in the forefront to enhance global agricultural performance while promoting the sustainability of water use for food production. In this regard, the Water Development and Management Unit (NRLW) is engaged in a programmatic approach to agricultural water management addressing water use efficiency and productivity, and best practices for water use and conservation, throughout the continuum from water sources to final uses. Consequently, the specific targets are IWRM, water harvesting, groundwater, use of non-conventional water, modernization of irrigation systems, on-farm water management, water-quality management, agriculture-wetlands interactions, drought impact mitigation, institutional capacities, national water strategies and policies, river basin and transboundary waters management[27].

(6) United Nations Office for Project Services

The UNOPS was established in 1974 as part of the United Nations Development Programme (UNDP) and became an independent organization in 1995. The "UNOPS mission is to expand the capacity of the UN system and its partners to implement peace building, humanitarian and development operations that matter for people in need"[28]. Since 2009, UNOPS hosts the Water Supply and Sanitation Collaborative Council

27) http://www.fao.org/nr/water/what.html

28) http://www.unops.org/english/whoweare/Pages/Missionandvalues.aspx

(WSSCC), which was firstly hosted by the WHO. The WSSCC has formally been recognized in 1990 through a United Nations General Assembly resolution (A/RES/45/181) in order to complete work left unfinished at the close of the International Drinking Water Supply and Sanitation Decade (1981-1990)[29].

(7) United Nations Development Programme

The UNDP notably focuses on water governance and ocean at local, national, global and regional levels. The UNDP's action takes the form of assistance and operational role in countries in matter of IWRM[30] and promotion of water and sanitation services[31]. In addition, the UNDP also cooperates with other International Organisations involved. The UNDP has launched many various programs: MDG GoAL-WaSH, CapNet, the Community Water Initiative, Every Drop Matters, Gender and Water, Human Rights Based Approach and Water Governance, etc.

(8) The World Bank

The World Bank "provides integrated support nationally and regionally across the macroeconomic, financial, technical, social and environmental dimensions. It does this through by helping countries create sound water management practices that focus on getting the right policies in place, building the capacity of governments, technical assistance and analytic work"[32]. In matter of water, the World Bank works with many partners,

29) http://www.wsscc.org/about-us/past-present-future
30) http://www.undp.org/water/integrated-water-resources-management.shtml
31) http://www.undp.org/water/water-supply-and-sanitation.shtml
32) http://water.worldbank.org/water/about-us

both institutional and non-governmental organisations. Thus, the World Bank cooperates with the following programs and institutions:

- The World Bank has created the Water and Sanitation Program (WSP). According to the article 7 of the WSP's Council charter, "The Water and Sanitation Program is a multi-donor program built on partnership principles. It is directed by its participating partners and administered by and within the World Bank on behalf of its donors. The WSP manager and staff report through the Director, Energy and Water, to the Vice President, Private Sector Development and Infrastructure Vice Presidency";
- The Global Water Partnership (GWP) has been established by the World Bank, the United Nations Development Programme (UNDP) and the Swedish International Development Cooperation Agency. The GWP is devised as a network and does not have any legal personality (article 1.2, Appendix 1 - Statutes). This Programme is particularly focused on Integrated Water Resources Management (IRWM);

Main International Organizations Involved in Matter of Water

<table>
<tr><td colspan="9">UNO UN-Water MDGs</td><td>World Bank</td></tr>
<tr><td colspan="3">WHO</td><td>UNICEF</td><td colspan="3">UNESCO</td><td>UNOP</td><td>UNDP</td><td rowspan="2">Water and Sanitation Program</td></tr>
<tr><td>Water Sanitation Health (WSH)</td><td>Household water treatment and safe storage</td><td>Small Community Water Supply Network</td><td>WAter, Sanitation and Hygiene (WASH) Strategies</td><td rowspan="2">International Hydrological Programme (IHP)</td><td rowspan="2">The World Water Assess_ment Pro-gramme (WWAP)</td><td rowspan="2">UNESCO-IHE Institute for Water</td><td rowspan="2">Water Supply and Sanitation Collaborative Council</td><td>MDG GoAL-WaSH, CapNet, CWI, EDM, Gender and Water, HRBA</td></tr>
<tr><td colspan="4">WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation[33)]</td><td colspan="2">Global Water Partnership</td></tr>
</table>

2) An Overview of Issues Linked to Water

Issues in matter of water are generally well known and all International Organisations aforementioned try to fix issues detailed in the list below and grouped as water resources management (1), water supply management (2), and water quality (3).

(1) Water Resources Management

Management of water resources is nowadays integrated. In this regard, it "is a process which promotes the coordinated development and management of water, land and related resources in order to maximise economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems and the environment"[34)]. IWRM is based on the fact that the many different uses of finite water resources are

33) http://www.wssinfo.org/

34) http://www.gwp.org/en/The-Challenge/What-is-IWRM/

interdependent[35]. This vision has been established in the Agenda 21, the action plan for sustainable development adopted at the Earth Summit in Rio de Janeiro in June 1992, in its chapter 18 where "Integrated water resources management is based on the perception of water as an integral part of the ecosystem, a natural resource and a social and economic good, whose quantity and quality determine the nature of its utilization". It has definitely "been accepted internationally as the way forward for efficient, equitable and sustainable development and management of the world's limited water resources and for coping with conflicting demands"[36]. This pattern is emerging as an accepted alternative to the sectorby-sector, top-down management style that has dominated in the past. As a matter of fact, IWRM, giving an overview of water sector, has allowed determining that following sub-sectors are often neglected and not integrated in water management: river basin management; groundwater; storm and stream water; flood and drought prevention and management.

① River Basin Management

France has established the first pattern of river basin management in 1964[37] and this form of management has been promoted by European Union through the Water Framework Directive (more formally the Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water

35) For instance: high irrigation demands and polluted drainage flows from agriculture mean less freshwater for drinking or industrial use; contaminated municipal and industrial wastewater pollutes rivers and threatens ecosystems; if water has to be left in a river to protect fisheries and ecosystems, less can be diverted to grow crops; etc.

36) UN Water, *Status Report on Integrated Water Resources Management and Water Efficiency Plans*, 2008, p. 1.

37) Law No. 64-1245, December 16, 1964, Official Journal, December 18, 1964, p. 11258. It defines six water basins and creates six water agencies.

policy). It is nowadays considered as the best type of management[38].

River basin management plans are a management tool in IWRM and generally contain descriptions of the water resources in a drainage basin and water allocation plans. They are a means of achieving the protection, improvement and sustainable use of the water environment across Europe. This includes surface freshwaters (lakes, streams and rivers), groundwater, and ecosystems such as some wetlands that depend on groundwater, estuaries and coastal waters out to one nautical mile.

② Groundwater Management

Groundwater is often underestimated. Yet, According to 2005 United States Geological Survey (USGS) figures[39], groundwater provides an estimated:

- 22% of all freshwater withdrawals;
- 37% of agricultural use (mostly for irrigation);
- 37% of the public water supply withdrawals;
- 51% of all drinking water for the total population;
- 99% of drinking water for the rural population.

This makes it an important resource which can act as a natural storage that can buffer against shortages of surface water, as in during times of drought. That also means this resource has to be clearly quantified in

38) Indeed, because drainage basins are coherent entities in a hydrological sense, it has become common to manage water resources on the basis of individual basins. In the U.S. State of Minnesota, governmental entities that perform this function are called watershed districts. In New Zealand, they are called catchment boards. Comparable community groups based in Ontario, Canada, are called conservation authorities. In North America this function is referred to as watershed management. In Brazil, the National Policy of Water Resources, regulated by Act n° 9.433 of 1997, establishes the drainage basin as territorial division of Brazilian water management.

39) http://www.groundwater.org/gi/depend.html

order to be efficiently integrated to water resources management and protected as well.

③ Storm Water Management

Managing the quantity and quality of storm water is termed Storm water Management. The term Best Management Practice (BMP) is often used to refer to both structural or engineered control devices and systems (e.g. retention ponds) to treat polluted storm water, as well as operational or procedural practices. There are many forms of storm water management and BMPs, including:

- Manage storm water to control flooding and erosion;
- Harvest storm water and treat it for human and livestock consumption and/or agricultural use;
- Manage and control hazardous materials to prevent release of pollutants into the environment (source control);
- Plan and construct storm water systems so contaminants are removed before they pollute surface waters or groundwater resources;
- Acquire and protect natural waterways where they still exist or can be rehabilitated;
- Build “soft” structures such as ponds, swales or wetlands to work with existing or “hard” drainage structures, such as pipes and concrete channels;
- Revise current storm water regulations to address comprehensive storm water needs;
- Enhance and enforce existing ordinances to make sure property owners consider the effects of storm water before, during and after development of their land;

- Educate a community about how its actions affect water quality, and about what it can do to improve water quality.

④ Floods and Droughts Prevention and Management

Floods and droughts are two plagues that can cause disease and death among human population and livestock, with economic and social aftermaths. That is why prevention and management of those plagues have to be taken in consideration in all countries, whether it is developed or developing one. For instance, European Union has understood this threat and has started to set up a framework for floods[40] and droughts[41] in 2007.

In this regard, European Union has drawn up the Floods Directive (Directive 2007/60/EC on the assessment and management of flood risks entered into force on 26 November 2007). At the same time, the Commission has written the Communication of 18 July 2007 "Addressing the challenge of water scarcity[42] and droughts[43] in the European Union" (COM(2007) 414 final - Not published in the Official Journal).

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40) "Between 1998 and 2004, Europe suffered over 100 major damaging floods, including the catastrophic floods along the Danube and Elbe rivers in summer 2002. Severe floods in 2005 further reinforced the need for concerted action. Since 1998 floods in Europe have caused some 700 deaths, the displacement of about half a million people and at least € 25 billion in insured economic losses". http://ec. europa.eu/environment/water/flood_risk/index.htm

41) "Since 1980, the number of droughts in Europe has increased, and they have become more severe, costing an estimated € 100 billion over the past 30 years. One of the worst droughts occurred in 2003, when one-third of EU territory and over 100 million people were affected. Between 1976 and 2006, the number of people and areas hit by drought rose by almost 20%, and the yearly average cost has quadrupled". European Union, *Water Scarcity and Drought in the European Union, August* 2010, p. 2.

42) "A sustained period of time in which the demand for water exceeds the exploitable water resources" in the Communication.

43) A "rainfall deficiency" in the Communication.

Such a framework has to be established in developing countries where population is particularly subject to climatic disasters, both floods and droughts. One always believes that Africa is only subject to droughts, which is fairly far from truth. Therefore, developing countries have to think about a two steps framework: Firstly, prevention of risk; Secondly, management of crisis. For instance, it could be:

- Prevention of risk: division of power between levels of decision for crisis management, flood prevention schemes, monitoring of under-ground water (in order to fight against drought, for instance), etc.
- Management of crisis: operational organization, administrative and financing mechanisms, flood and drought victims' compensation, etc.

(2) Water Supply Management

The management of water supply could be defined as the way that water is provided to users. That includes several aspects briefly outlined below.

① Decentralization

The question of the better level for decision making should be central in the process of decision. Even if it strongly depends of the State organization, Local authorities play an important role in matter of water management. Indeed, to be efficient, a decision must be enacted by a decision maker in touch with population targeted. However, water is not only a local resource and decisions must be taken according to a larger framework, sometimes beyond the National level, in a global scheme, particularly regarding trans-boundary waters.

Then, a distinction between rural/urban waters has to be made because issues are very different according to which area is concerned. Indeed, the

major goal in urban area consists in extending and maintaining services to a growing urban population while it is about creating those services in rural areas.

② Public and/or private management

Water is a very sensitive problem and choice for public or private management relies on a cost/benefit analysis. The main arguments in favour of public management are better control of the service by the municipality as well as some tax exemptions. In contrast, private operators usually have greater technical expertise and may manage services more efficiently (because of the profit motive and more flexible labour contracts in the private sector). The participation of the private sector may also be favoured by municipalities which have difficulties financing investments in network maintenance and complying with more stringent quality standards for drinking water and wastewater treatment. The private sector, in turn, is often accused of charging higher water prices to domestic customers[44]. However, public/private partnerships have recently demonstrated their efficiency.

③ Regulation

Public authorities use to act through regulation, and as a matter of fact, regulation usually establishes repression. Repression is recommended when it is about water quality for instance. Indeed, a provider is subject to fine if quality of provided water does not comply with legal requirement. Nonetheless, in some case, repression is not efficient at all. In matter

44) Céline Nauges, "Public versus private management of water services: A French case study", http://www.globalwaterforum.org

of water it could be, for instance, a fine for non-connection to sewage or to water pipe. However, such an infringement is more often due to poverty and lack of financing. So incentives could likely be more efficient.

④ Proper pricing

Determination of price settings can be very difficult. Indeed, such a price has to take in account offer and demand, population targeted, infra-structure costs (pipes, premises, treatment facilities, etc.) etc. Moreover, determining the proper pricing can help avoiding wastage of water. Indeed, cheap water encourages wastage[45] while expensive water certainly dissuades sound hygiene practices and reduces access to water for poorest people.

⑤ Governance and Transparency

Civil society influence and participation in water governance is important because other stakeholders cannot be relied upon to take due account of the needs of the poor. In this regard, one has to build civil society capacity to monitor and influence government on the transparency of their governance processes and monitoring their commitments[46]. As a matter of fact, poor governance is the underlying problem in the water sector with corruption at its core. Corruption pervades all aspects of the water sector, from water resources management to drinking water services, irrigation and hydropower. It contributes to polluted drinking water, altered water flows

45) "In every country [...] water pricing policies that may be encouraging over-use and water degradation should be considered first". UNEP, Water Supply & Sanitation Collaborative Council, and World Health Organization, Water Pollution Control - A Guide to the Use of Water Quality Management Principles, 1997, p. 176.

46) www.freshwateraction.net/content/governance-transparency-and-monitoring

and flooding patterns, reduced crop yields, and inadequate infrastructure - all problems that worsen the already precarious lives and livelihoods of the poor[47]. In order to help stakeholders, the World Bank has published a manual on *Improving Transparency, Integrity, and Accountability in Water Supply and Sanitation*[48] which tackles this issue mainly at the municipal level where corruption is most obvious for citizens.

(3) Water quality

Water pollution in developing Nations is caused by animal and human waste, over application of fertilizers, industrial chemicals, urban runoff, and a general lack of pollution prevention laws and their enforcement. This bad situation is made worse by lack of access to adequate wastewater treatment facilities. Obviously, one needs time to shift from this situation to a better one. However, a proactive policy must be led through a set of regulations and incentives (1) that has to take in consideration several issues (2).

① Environmental Regulations and Incentives

Public policy has nowadays evolved and the classical regulation, through command and control policies, is no longer sufficient. Indeed, an efficient public policy is grounded on both command and control policies and economic incentives policies which, "by contrast, provide financial rewards for facilities that cut pollution without dictating how or how much they

47) www.transparency.org/global_priorities/other_thematic_issues/corruption_in_water

48) World Bank, María González de Asís, Donal O'Leary, Per Ljung, and John Butterworth, Improving Transparency, Integrity, and Accountability in Water Supply and Sanitation. Action, Learning, Experiences, 2009.

should cut"[49]. Therefore an effort is required in this direction regarding following water quality issues.

② Water Quality Issues

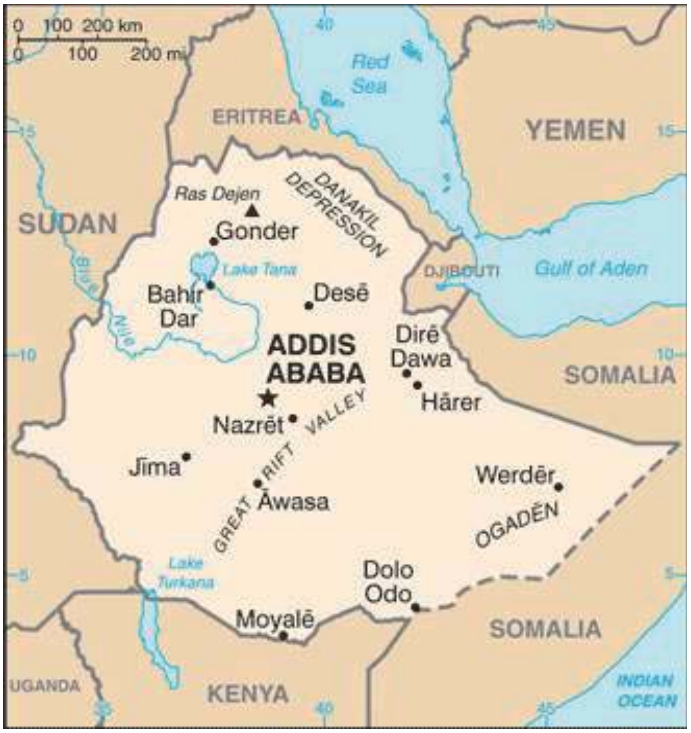
Water quality issues are numerous and various and one can provide few examples exemplifying this variety:

- Quality control: Which standards? Which means of control? Which monitoring? Human skills? Capacity building?
- Sanitation service (three time process: water collect; de-pollution; return to natural environment). Sanitation service and de-pollution of water is a full cycle including several operations: evaluating the type of pollution (industrial and agricultural use and/or household consumption); sanitation services (collect and treatment); de-pollution of rivers etc.
- Fight against pollution: Regulation of effluent discharge, etc.
- Wastewater and sewage processing; Recycling;
- Public policies and governance: promoting hygiene etc.
- Etc.

49) Allen Blackman, "Economic Incentives to Control Water Pollution in Developing Countries. How Well Has Colombia's Wastewater Discharge Fee program Worked and Why?", *Resources*, Spring 2006, Issue Number 161, p. 21.

Chapter 3- Water in Ethiopia

Fact sheet[50)]



Capital: Addis Ababa (2.863 million, 2009)

Population: 90.873.739 (July 2011 est.)

Density: 82.30 persons per sq km

Urbanization:

- Urban population: 17% of total population (2010)
- Rate of urbanization: 3.8% annual rate of change (2010-2015 est.)

Area:

- Total: 1.104.300 sq km

50) Source: The World Factbook, https://www.cia.gov/library/publications/the-world-factbook/index.html

- Land: 1.000.000 sq km
- Water: 104.300 sq km
- Irrigated land: 2.900 sq km (2003)

Total renewable water resources: 110 cu km (1987)

Freshwater withdrawal:
- Total: 5.56 cu km/yr (domestic: 6%; industrial: 0%; agricultural: 94%)
- Per capita: 72 cu m/yr (2002)

GDP (official exchange rate): 30.94 billion $ (2010 est.)
Population below poverty line: 38.7% (FY05/06 est.)

1) An Overview of the Juridical System Through Water Competence

The current Ethiopian system is grounded on the Constitution adopted on December 8, 1994, establishing the Federal Democratic Republic of Ethiopia (FDRE). It is important to understand the functioning of the juridical system so horizontal and vertical separations of powers have to be briefly explained first when potentially connected with water linked issues.

(1) The Horizontal Separation of Powers : A Parliamentary System

In the framework of a parliamentary system the function of the President is usually residual and the Ethiopian Constitution provides that “The Highest executive powers of the Federal Government are vested in the Prime Minister and in the Council of Ministers” (article 72(1))[51]. In that way,

they are responsible for ensuring the implementation of laws, policies, directives and other decisions adopted by the House of Peoples' Representatives (HPR) (article 74(3) and 77(1)). Furthermore, they may also "submit draft laws to the House of Peoples' Representatives on any matter falling within its competence" (article 77(11)). The Council of Ministers also has the possibility to act besides the HPR and to "formulate and implement economic, social and development policies and strategies" (article 77(6)). More classically, the Council of Ministers has to decide about the organizational structure of ministries (article 77(2)), that can have consequences on water management.

The legislative power is divided in two houses but with a very specific organization since the House of the Federation does not deliberate laws[52]. One must emphasize how important is the HPR in the Ethiopian Constitution. Indeed, as "the highest authority of the Federal Government" (article 50(3)), and also as the only house which could be dissolved[53], the HPR deliberates laws alone. And according to the article 55(2)(a), the HPR shall enact laws related to "Utilization of land and other natural resources, of rivers and lakes crossing the boundaries of the national territorial jurisdiction or linking two or more States". Furthermore, the HPR has a lead role in the legislative process because laws enter into effect within a period of fifteen days following submission to the President, even if this latter has not signed them (article 57).

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51) Articles of the Ethiopian Constitution come from the Internet Website of The Parliament of the FDRE: http://www.ethiopar.net/

52) "Although the FDRE Constitution establishes a two houses parliament, the Ethiopian Parliament is not bicameral in the strict sense of the term". Girmachew Alemu Aneme, *Introduction to the Ethiopian Legal System and Legal Research*, New-York University, 2010, http://www.nyulawglobal.org/Globalex/Ethiopia.htm

53) Ethiopian Constitution, article 60.

(2) The Vertical Separation of Powers: A Federal State

As a federal State, the FDRE distinguishes between, on the one hand, the federal level, named the Federal Government, and, on the other hand, the federate level, made up of the State members (article 50(1))[54].

In matter of water, the competence of the Federal Government may be grounded on four articles which can be divided in two categories. First, provisions indirectly connected to water. Indeed, according to the article 51(2), the Federal Government "shall formulate and implement the country's policies, strategies and plans in respect of overall economic, social and development matters". And, according to the article 51(3), the Federal Government "shall establish and implement national standards and basic policy criteria for public health [···]". Then, two provisions evoke more concretely water issues. And, based upon the article 51(5), the Federal Government "shall enact laws for the utilization and conservation of land and other natural resources [···]". Furthermore, the Federal Government "shall determine and administer the utilization of the waters or rivers and lakes linking two or more States or crossing the boundaries of the national territorial jurisdiction", according to the article 51(11). Therefore, the Federal Government has a strong competence in matter of water.

However, the article 52(1) provides that "All powers not given expressly to the Federal Government alone, or concurrently to the Federal Government and the States are reserved to the States". And the article

54) "Article 47. Member States of the Federal Democratic Republic of Ethiopia are the Following:
1) The State of Tigray; 2) The State of Afar; 3) The State of Amhara; 4) The State of Oromia; 5) The State of Somalia; 6) The State of Benshangul/Gumuz; 7/ The State of the Southern Nations, Nationalities and Peoples; 8) The State of the Gambela Peoples; 9) The State of the Harari People".

52(2)(c) allows State members "To formulate and execute economic, social and development policies, strategies and plans of the State", while the article 52(2)(d) provides that State members shall "administer land and other natural resources in accordance with Federal laws".

2) Policy, Juridical, and Institutional Framework of Water

(1) The Policy Framework of Water

The awareness of environmental issues has appeared relatively slowly[55] in Ethiopia and has first led to the development of the Conservation Strategy of Ethiopia[56], which consists in a general framework for environment. Then, water has been identified as a top priority and several policies have been since drawn up.

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55) However, the institutional development of Ethiopia's water sector has been slow and irregular. It is mainly due to a "bumpy political climate and the rather weak economic development of the country". Teshome A., Performance and Future Prospect of Water Supply and Sanitation in Ethiopia, Part II, 2008, http://www.aigaforum.com/articles/TeshomeAdu.P.II.pdf, p. 4.

56) "In the early 1990s, the Ethiopian government made progress in laying the foundations for addressing environmental problems. One major initiative for introducing environment into the national policy arena was the Conservation Strategy of Ethiopia (CSE) process, which started in 1989 and went on for 13 years, culminating in a five-volume report. The CSE process comprised three phases. Phase 1 (1989-90) focused on identifying key environmental issues and developing a framework and process for the CSE. Phase 2 (1990-94) focused on developing an environmental policy, an institutional framework and an investment program. Phase 3 was devoted to the preparation of Regional Conservation Strategies (RCSs) in all regions. The CSE was first hosted in the Planning Ministry where it was perceived as one of a number of overarching policy frameworks to which all sector policy would refer. It was subsequently transferred to the short-lived Ministry of Natural Resource Development and Environmental Protection until it finally came under the umbrella of the newly established federal Environmental Protection Authority". Jonathan Mckee, Ethiopia. Country Environmental Profile, European Commission, 2007, p. 50.

Ministry	Policy
Ministry of Water and Energy (MoWE)	Water Resources Management Policy, 1999[57]
Ministry of Finance and Economic Development (MoFED)	Plan for Accelerated and Sustained Development to End Poverty, 2005[58]
Ministry of Infrastructure	National Policy and Strategy for Water Supply and Sanitation Services, February 2010

- Water Sector Strategy, 2001[59]

Water Sector Development Program 2002-2016, 2002[60]

More recently, since 2007, the MoWE has launched the Ethiopian Global Initiative for Rationalizing Water Information and Monitoring Systems (GIRWI) which main thrust "is on supporting policy monitoring for strategic national planning, covering water resources, water services and waterrelated productive activities, in terms of relevant economic, environmental and social variables, in order to ensure a robust bulk of information on water related phenomena at the national level"[61]. Consequently

57) Policy prepared by MoWE and approved by the Council of Ministers in 1999.

58) This plan provides for specific strategies in matter of water resources management and also regarding water supply and sanitation. MoFED, PASDEP, 2005, pp. 127-128.

59) Strategy sought to develop a national water sector strategy to translate the policy into action.

60) Institutional aspects of water resources management are developed in detail.

61) "The Global Initiative for Rationalizing Water Information and Monitoring Systems (GIRWI) has been launched in 2006 by the Water, Natural Resources and SIDS Branch of the United Nations Department of Economic and Social Affairs (UN/DESA), with the financial support of the Italian Ministry of Foreign Affairs. The main goal of the GIRWI is to develop, test and validate in two pilot countries an approach to monitor the whole water sector *vis-à-vis* the goals of the national water policy". Ministry of Water and Energy, Legal Aspects for Institutionalizing Regular Monitoring of the Whole Water Sector, Final Report, July 2009, p. 7.

to this Global Initiative, the MoWE has elaborated a final report regarding legal aspects[62].

(2) The Juridical Framework of Water

The Juridical framework has to be strongly taken in consideration because it allows defining exactly roles and responsibilities of all stakeholders[63].

① Constitutional Provisions

The Ethiopian Constitution evokes rights related to water in two different chapters, revealing a need to strengthen the juridical framework of water. One has also noticed rights related with water: environment, social rights and health.

First of all, water rights are mentioned in the Chapter 3 dedicated to Fundamental Rights and Freedom, in its second part, entitled Democratic Rights. The Constitution creates the obligation, for the State, "to allocate ever increasing resources to provide to the public health, education and other social services" (Article 41(4)). This provision obviously aims to prevent a decrease of financing such activities. Then, the article 43(1) gives Ethiopian "the right to improved living standards and to sustainable development" while the article 43(4) explains that "The basic aim of development activities shall be to enhance the capacity of citizens for development and to meet their basic needs"[64]. Finally, the article 44(1)

62) Ministry of Water and Energy, Legal Aspects for Institutionalizing Regular Monitoring of the Whole Water Sector, Final Report, July 2009, 116 p.

63) Ministry of Water and Energy, Legal Aspects for Institutionalizing Regular Monitoring of the Whole Water Sector, Final Report, July 2009, p. 71.

64) "Therefore the sub-article can be interpreted as implicitly recognizing the right to water amongst basic needs essential for an adequate standard of living". Hiwote Mekonnen, *Gendered Implication of Access to Clean Water for the Girl Child: A Case*

exclaims “the right to a clean and healthy environment”.

However, the most explicit provisions take place in the Chapter 10 related to National Policy Principles and Objectives in 3 different sub-sections respectively dedicated to Economic Objectives (article 89), Social Objectives (article 90) and Environmental Objectives (article 92). First, the article 89(3) put the Government in charge of averting “any natural and man-made disasters, and, in the event of disasters, to provide timely assistance to the victims”. This hypothesis could fit with flood and drought, sanitary disaster etc. In addition, according to the article 89(5), the State has the responsibility to control land and natural resources in the name of the people and to utilize them for the common good of the people and for their development. Also, the article 89(8) provides that the “Government shall endeavor to protect and promote the health, welfare and living standards of the working population of the country”. Secondly, in terms of article 90(1), every Ethiopian is entitled “within the limits of the country’s resources” to clean water and to public health. Finally, the article 92(1) engages the Government to provide “a clean and healthy environment” to all Ethiopians. The article 92(2) also forbids “The design and implementation of programmes and projects of development” that could “damage or destroy the environment” while the article 92(3) gives people the right to be fully consulted and to express their views about “the planning and implementations of environmental policies and projects that affect them directly”. Those two provisions are clearly the constitutional ground for environmental impact assessment which can be initiated about project connected with water.

Study in Two Rural Villages in Ethiopia, Southern and Eastern African Centre for Women’s Law, 2004, p . 24.

② Legal Provisions

The Ethiopian Government has recently understood the importance of water issues and has tried to catch up by implementing a complete legal framework since 2000. The Water Resources Utilization Proclamation No. 92/1994, the original water law adopted under the previous Constitution, has been repealed by the *Ethiopian Water Resources Management* Proclamation in 2000 (see below (ii)). The latter provides the main framework for water management. However, many other provisions regarding water have to be taken in account in various laws, including Civil and Penal Codes.

List of relevant proclamations and regulations

- Proclamation No. 129/1998 *Establishment of the Awash Basin Water Resources Administration Agency* - November 10, 1998
- Proclamation No. 197/2000 *Ethiopian Water Resources Management* - March 9, 2000
- Proclamation No. 200/2000 *Public Health Proclamation* - March 9, 2000
- Proclamation No. 268/2002 *Water Resources Development Fund and its Administration* - March 9, 2000
- Proclamation No. 295/2002 *Environmental Protection Organs Establishment* - October 31, 2002
- Proclamation No. 299/2002 *Environmental Impact Assessment* - December 3, 2002
- Proclamation No. 300/2002 *Environmental Pollution Control* - December 3, 2002
- Regulation No. 115/2005 *Ethiopian Water Resources Management* - March 29, 2005
- Proclamation No. 534/2007 *River Basin Councils and Authorities Proclamation* - July 23, 2007

- Regulation No. 151/2008, *Establishment of the Abbay Basin High Council and Authority* - May 12, 2008
- Proclamation No. 581/2008 *Water Resources Development Fund Establishment and its Administration (Amendment)* - May 27, 2008
- Proc No. 691/2010 *Definition of Powers and Duties of the Executive Organs of the Federal Democratic Republic of Ethiopia Proclamation* - October 27, 2010

The aforementioned laws and regulations are concisely described and summarized below, in chronological order.

ⅰ) Proclamation No. 129/1998 *Establishment of the Awash Basin Water Resources Administration Agency*-November 10, 1998

1. Short Title
2. Definitions
3. Establishment
4. Head Office
5. Objectives
6. Power and Duties of the Agency
7. Organization of the Agency
8. Members of the Board
9. Powers and Duties of the Board
10. Meetings of the Board
11. Power and Duties of the General Manager
12. Budget
13. Books of Account
14. Effective Date

This Proclamation is really important because it establishes the first water basin management with the creation of the Awash Basin Water Resources Agency, in 1998. For instance, France has started a water basin management since 1964. However, since 2007, another Proclamation has repealed this one, enlarging the framework of the water basin management to the whole Ethiopia. Therefore, to describe the present one is not useful and one defines the basin water management below (ix).

ii) Proclamation No. 197/2000 *Ethiopian Water Resources Management* -March 9, 2000

Part One: General Provision
1. Short Title
2. Definitions
3. Purpose
4. Scope of application
5. Public Ownership of Water Resources
6. Fundamental Principles
7.. Preference Among Uses

Part Two: Supervising Body
8. Power and Duties of the Supervising Body
9. Settlement of Dispute

Part Three: Inventory of Water Resources and Registry of Actions
10. Inventory of Water Resources and Registry of Actions

Part Four: Permits and Professional Licenses
11. Necessity of Permits
12. Types of Water Uses Not Requiring Permits
13. Application for Permit
14. Issuance of Permits
15. Duration and Renewal of Permit

Based on the principle according to which all water resources of the country are the common property of the Ethiopian people and the State[65],

65) "This section of the aforementioned Proclamation has considerably simplified the old customary. Indeed, the old customary water law was fairly complicated and depending on proper rules of various ethnic groups even if, due to drought, people from Ethiopia were tolerant" (http://waterlex.fao.org). For instance, people belonging to the ethnic

"The purpose of the Proclamation is to ensure that the water resources of the country are protected and utilized for the highest social and economic benefits of the people of Ethiopia, to follow up and supervise that they are duly conserved, ensure that harmful effects of water are prevented, and that the management of water resources is carried out properly" (Article 3). Revealing the seriousness of water issues in Ethiopia, this Proclamation provides that "domestic use shall have priority over and above any other water uses" (Article 7) before to establish the legal framework based on the Supervising Body[66]. Generally, the Supervising Body is responsible for the planning, management, utilization and protection of water resources. More specifically, the present Proclamation (hereafter the Proclamation) provides many powers and duties to the Ministry in charge of water[67], implemented five years later with the Regulation No. 115/2005[68] (hereafter the Regulation).

A Rule Maker Activity

The Supervising Body has to draw up standards and directives in the following fields:

- Quality standards for surveys, design and specification of waterworks, as well as for the construction of waterworks;

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group Adcheme Melga of Serae Region had a proverb, "Mai ab aini aibcol", which can be translated as "water doesn't gush out of the eyes", meaning that "water cannot be denied to anyone" (Marco Ramazzoti, "Ethiopia (Including Eritrea)", *Readings in African Customary Water Law*, FAO, Legislative Study, No. 58, 1996, p. 84).

66) "Means the Ministry where it pertains to water resources at central level, or any organ delegated by the Ministry". Article 2(7).

67) Which is the Ministry of Water since the Proclamation No. 471/2005. See Below.

68) See below, section (viii) Regulation No. 115/2005 *Ethiopian Water Resources Management* - March 29, 2005.

- Directives that ensure that water resources are not polluted and hazardous to health and environment;
- Directives that ensure of safety of hydraulic structures for the prevention of damages caused by dam water to dam, persons, property and crops;
- Quality or health standards that allow public bodies to entertain an application for a permit to discharge or release polluted water into water resources;
- Directives regarding water use restrictions in a situation of water shortage emergency.

Inventory of Water Resources and Registry of Action

The Supervising Body is "responsible to ensure acquiring adequate knowledge of the water resources available" (Article 10(1)). In this connection, its first task is to ensure that studies relating to water resources development, protection, utilization and control have been carried out (Article 8(1)(b)). Then, according to the article 10(1), the Supervising Body has to establish an inventory including:

- Identification and description of the occurrence, availability, location, amount and quality of water resources at any significant points in time of a year;
- Identification and description of seasonally expected demands for the supply of water;
- Periodically compiled data on consumptive and non-consumptive use of water.

This inventory cannot be efficient without registers established at all levels which record "all actions taken with respect to applications which pertain to water use, discharge or release of waste into water resources,

and construction of waterworks" (Article 10(2)). In order to create and regularly update a central level inventory, information of those registers shall be given to the Supervising body (Article 10(3)).

Permits and Professional Licenses

The Supervising Body has the power to issue permits and certificates of professional competence. In this regard, it can require submission of plans and proposals from any person who applies for a permit to undertake any kind of waterworks. Thus, it can approve, reject or amend such application. Furthermore, it can "give an order of rectification or suspension of waterworks which are incompatible or inconsistent with the Ethiopian water resources policy, relevant Basin master plan studies and water resources legislative framework" (Article 8(1)(i)). The present Proclamation details elements relating to the whole process.

Necessity of Permits

The following activities require a permit issued by the Supervising Body:

- Construction of waterworks;
- Supplying water, whether it is for personal use or for other people;
- Transfer of water which has been abstracted from a water source or received from another supplier;
- Release or discharge into water resources unless otherwise provided for in the regulations to be issued.

On the other hand, the following activities do not require any permit[69] and are exempted of license:

69) Subject to directives that may be issued in order to prevent inappropriate use and wastage of water.

- Digging water wells by hand or use water from hand-dug wells;
- Use water for traditional irrigation, artisanal mining and for traditional animal rearing, as well as for water mills.

Application for Permit

In principle, "any application for a permit to release or discharge any waste, which endangers human life, animals, plants and any living things, into water resources shall not be accepted. However, the Supervising body may accept the application requiring the applicant to release or discharge after having treated the pollutant" (Proclamation, article 13). According to the Regulation, an application to be submitted to the Supervising Body for a water use permit shall contain the following information:

- The name and permanent address of the applicant;
- The location of the water resources and the intended place of use;
- The intended use of the water resources;
- The volume of water required monthly and annually;
- The intended method and manner of use of the water resources;
- Where appropriate, investment certificate;
- Feasibility studies and maps reasonably required by the Supervising Body.

Issuance of Permits

The Supervising Body has to issue permits within 60 days after receipt the application where the proposed use of water does not infringe any person's legitimate interest upon water or does not entail pollution or harmful effects on water and environment (Proclamation, article 14). Any

decision has to be notified to the applicant in writing, including reasons thereof. Furthermore, the article 4(4) of the Regulation provides that the Supervising Body must register all decisions given with respect to an application for a permit.

Duration and Renewal of Permit

Duration and appropriate time limit have not been provided by the present Proclamation. It has to be done by regulations but the Regulation has not provided anything related to this issue. However, the article 15(3) provides that a permit has to be considered as cancelled if it has not been renewed within time limit. The Proclamation and the Regulation only provide about termination and suspension of permits (See below).

Amendment and Transfer of Permit

An amendment consists in a modification of the permit regarding a decrease or an increase of the quantity of water. Such an amendment may be applied by the holder or may be decided by the Supervising Body as an administrative measure. When such a request occurs from a permit holder, the Supervising Body has to decide within 10 days. This Proclamation (Article 16(3)) provides three situations in which an amendment is grounded:

- Change of environmental conditions;
- Increase in the demand of water;
- Any other satisfactory grounds for necessary adjustment.

The latter gives a wide leeway to the Supervising Body. However, in such a case, amendments enter in force after a 60 days prior written

notice. Furthermore, a compensation is payable to permit holders in accordance with the Civil Code, unless amendments are made due to occurrence of natural changes in the environment.

Finally, a permit may be transferred on the demand of the holder and upon approval by the Supervising Body.

Termination or Suspension of Permit

According to the article 17 of the Proclamation, the Supervising Body has the power to revoke or suspend a permit at any time, wholly or partially, where the holder fails to observe or fulfill the obligations. This article impliedly gives a monitoring and enforcement role to the Supervising Body[70]. The implementing Regulation (Article 6) has made a distinction between termination and suspension.

On the one hand, a permit may be terminated, if the permit holder fails to refute by evidence about the facts stated in the prior warning within the given 15 days, due to the following reasons:

- A voluntary failure, in excess of the period fixed in the permit, to utilize the water represented by the permit;
- An undertaking to transfer the permit without the authorization of the Supervising Body;
- A finding that the usage of the water resources causes a negative impact on the environment as per the Provisions of Environmental Impact Assessment Proclamation No, 299/2002.

Besides, a permit is terminated without delay in the following situations:

70) http://waterlex.fao

- A discovery by the Supervising Body, that the permit holder has obtained the permit by giving false evidence;
- A finding that the water resources involved is being permanently depleted;

On the other hand, the Supervising Body may suspend a permit, partly or wholly, if the permit holder fails to refute by evidence about the facts stated in the prior warning within the given 15 days, for the following reasons:

- A failure to comply with the terms and conditions prescribed in the permit;
- A use of water for purposes not authorized;
- A failure to pay the required water charges within sixty (60) days following a written notification;
- A finding by the Supervising Body that the water resources involved is being temporarily depleted;
- A failure to keep a water quality standard.

Grievances

Grievances have to be submitted to the Supervising Body in first instance. The proclamation provides followings hypotheses:

- To use a resource water, to discharge or release waste into a water resource;
- To undertake construction of waterworks;
- To amend or transfer a permit;
- Seeking a decision on a dispute arising from water use between persons who have legal rights to use such a water resource.

According to the Regulation, the Civil Procedure Code of Ethiopia, regulating proceedings before Court of first instance, applies to proceedings before the Supervising Body[71]. A party aggrieved by any decision or measure of the Supervising Body may appeal to the competent court within 60 days.

In addition, there is also an arbitration proceeding when a dispute arises between the Supervising Body and a permit holder. In such a case, each party nominates an arbitrator and the two arbitrators nominate a third one as presiding one. The Ethiopian Civil Code and the Civil Procedure Code apply. A party disfavored has right of appeal.

Certificate of Professional Competence

Any person who wants to engage for commercial or other purpose must hold a Certificate of Professional Competence given by the Supervising Body. That includes “water-works construction activity pertaining to surface water, or water well drilling, or cleaning activity or giving a consultancy service related thereto”.

The holder of a Certificate of Professional Competence, before entering into a contract with anybody pertaining to water works constructions, has to ensure that such a construction has been approved by the Supervising Body. And any person who wants to contract with such holder has to ensure that the latter has a legal license and, when it is a professional, that he has a Certificate of Professional Competence.

71) Concretely, the plaintiff sends a memorandum summarizing the dispute to the Supervising Body which forwards a copy to the adverse party. Time and place are designated and parties confront arguments and evidences. Then the Supervising Body decides and notifies its decision to the parties.

A Certificate of Professional Competence may be revoked at any time by the Supervising Body when the contractor fails to meet requirements specified in the permit.

Fees and Water Charges

Fees are connected with permits and must be paid to the Supervising Body in the following situations:

- Permit for waterworks constructions;
- Permit for water use;
- Permit to release or discharge waste into water resources;
- Permit renewal or transfer.

The Proclamation does not provide for a schedule and it has been implemented five years later, with the Regulation No. 115/2005[72].

Schedule of Fees

No.	Type of Permits	Amount in Birr
1	Certification of Professional Competence for Water Engineering	60.00
2	Certification of Professional Competence for Water Works Construction	67.00
3	Certificate of Highly Experienced Professional Designer	85.00
4	Consultancy Services Competence Certificate	151.00
5	Certificate of Professional Competence for Water Well Drilling and/or Rehabilitation Permit	72.00

72) Regulation No. 115/2005 *Ethiopian Water Resources Management*-March 29, 2005.

6	Water Works Contractors Permit	162.00
7	Waste Discharge Permit	81.00
8	Water Use Permit	87.00
9	Water Works Construction or Alteration Permit	94.00
10	To Open File for Works which Interfere with Inland Waters or Water Works	88.00
11	Water Use Permit Cancellation, Transfer or Alteration Permit	55.00
12	Water Works Construction or Alteration Permit Extension, Transfer or Alteration	54.00
13	Waste Discharge Permit Alteration or Cancellation	41.00
14	Water Users Association Certification	54.00
15	Renewal of Certificate of Professional Competence for Water Engineering	44.00
16	Certificate of Professional Competence for Water Works Renewal	52.00
17	Highly Experienced Professional Designer Certificate Renewal	74.00
18	Consultancy Services Competence Certificate Renewal	91.00
19	Certificate of Professional Competence for Water Well Drilling and/or Rehabilitation Renewal	63.00
20	Water Works Contractors Permit Renewal	102.00
21	Waste Discharge Permit Renewal	74.00

Furthermore, the article 20(5) of the present Proclamation provides that the Supervising Body may exempt from payment of service fee for certain services of public use. However, the Regulation No. 115/2005 has not yet implemented this provision.

Charges are connected with water uses and any use allowed by the present Proclamation must be paid to the Supervising Body. This provision has been specified in the Regulation No. 115/2005. But the aforementioned Regulation does not provide charges for water use and refers to the Council of Ministers for that task (Article 31(4)). Besides, the article 32 provides a schedule relating to charges for the discharge of treated wastes into water resources (but the schedule seems to be missing in the PDF file available on Internet[73]). Finally, the article 21(3) of the Proclamation provides that the Supervising Body may exempt certain person from payment of water charges. Yet the Regulation does not provide for exemption and only adds that charges for the use of water from Government projects shall be determined by the Supervising Body based on the principle of cost recovery (Article 33).

Fees and Charges According to Relevant Proclamation and Regulation

	Proclamation No. 197/2000	Regulation No. 115/2005
Fees	*Article 20* Principle: Fees, which shall be specified by an implementing regulation, must be paid by **permit applicants** Exception: For **certain services of public** use to be determined by an implementing regulation	*Article 30* Schedule: Fees are specified Exemption: nothing about it
Charges	*Article 21* Principle: Charges, which shall be specified by an implementing regula-	*Article 31, 32, 33* Schedule: Charges are not specified (it must be determined by the Council

73) Confirmed by Imeru Tamrat, Policy and Legal Framework for Water Resources Management in Ethiopia, International Conference on Water Management in Federal and Federal-Type Countries, July 9-11, 2008, Zaragoza.

	tion, must be paid by **users** Exception: For **certain persons** to be determined by an implementing regulation	of Ministers) Exemption: Charges for the use of water from Government projects shall be determined by the Supervising Body based on the principle of cost recovery

Servitude

The Proclamation also provides about servitude required for implementation and enforcement of all permitted waterworks and rights which must be obligatory on possessors of land. But provisions are written in general terms. Thus, acquisition of servitude has to be subject to conditions to be approved by the Supervising Body on the basis of regulation to be issued. Besides, buyer of servitude must not alter or modify conditions laid by the Supervising Body. Furthermore, the Proclamation recognizes the right to receive a compensation for the possessor of the land encumbered by the servitude. The Proclamation also rules the termination of servitude. And "when the possessor of the land so encumbered demonstrates to the Supervising Body that the servitude has not been exercised by the beneficiary"[74] within the time limit specified by the regulations to be issued, he is entitled to ask for the termination of the servitude. However, that process does not work when the beneficiary can prove that his failure in the exercise of the servitude is due to causes of *force majeure*.

For more details the Proclamation refers to implementing regulation that has to be issued. However, the Regulation No. 115/2005 does not provide anything about servitude.

74) Article 24(1).

Water Banks and Harmful Effects of Water

The Supervising Body has a preventive role to play in matter of water banks and harmful effect of water. Indeed, in the first case, and in collaboration with the appropriate public body, it delimits boundaries of the bank of certain water bodies. Thus, it can prohibit certain activities such as clearing, cutting trees or vegetations and construction of residential houses etc. within the limit of the aforementioned boundaries. In the second case, the Supervising Body can be consulted by the appropriate public body before allowing or causing the founding of towns or villages. So the expertness of the Supervising Body can be utilized in order to avoid aftermaths of floods, for instance.

Association of Water Users and Irrigation Cooperative

There are two different ways to initiate an association of water users[75]. Firstly, it can be encouraged by the Supervising Body in consultation with the appropriate public bodies as it deems necessary to utilize water for beneficial uses. Secondly, such association can be established upon the will of users. The Proclamation (Article 27(4)) refers to the Civil Code for establishment of those associations while the Regulation (Article 28(2)) refers to the Cooperative Societies Proclamation No. 147/1998.

75) "Water user associations could be defined as social units commonly organized by communities themselves for their own benefits of fair water distribution, improved water delivery and accounting". Fitsum Hagos, Amare Haileslassie and Seleshi Bekele Awulachew, "Assessment of Local Land and Water Institutions in the Blue Nile and their Impact on Environmental Management", *Improved Water and Land Management in the Ethiopian Highlands: Its Impact on Downstream Stakeholders Dependent on the Blue Nile, International Water Management Institute*, Workshop February 5-6, 2009, Addis Ababa, Ethiopia, p. 199.

Besides, a water user's cooperative society established to undertake medium or large scale irrigation must be registered by the Supervising Body while such a cooperative established for small scale irrigation must be registered by an organ established by law at Regional or City level administration. Those provisions drew up in order to organize and register Cooperative Society also provide that Regional and City administration organs in charge of this task must transmit information to the Supervising Body.

iii) Proclamation No. 200/2000 *Public Health Proclamation* - March 9, 2000

Part One: General
1. Short Title
2. Definitions

Part Two: Advisory Board
3. Establishment of Advisory Board
4. Powers and Duties of the Board
5. Meetings of the Board

Part Three: Inspection
6. Appointment of Inspectors
7. Powers and Duties of the Inspector

Part Four: Public Health
[…]
10. Water Quality Control
[…]
13. Availability of Toilet Facilities
14. Control of Bathing Places and Pools
[…]
Part Five: Miscellaneous Provisions

19. Obligation to Cooperate
20. Penalty
21. Repealed and Applicable Laws
22. Power to Issue Regulations
23. Power to Issue Directives
24. Effective Date

A Public Advisory Board at both Federal and Regional level is established in order to advise the appropriate health authority[76] in the proper implementation of this Proclamation. Boards have to conduct studies and researches necessary for health activities and submit them to public health authorities.

More concretely, the Public Health Authority appoints qualified inspectors and provides them with important powers and duties. Inspectors have important powers including mainly powers of inspection and seizure. In this connection, they can request a police support, they can interrogate people and they can take samples, measurements, photographs etc. They are also allowed to order that a building remains closed for a limited period of time. Furthermore, they can cause the destruction of goods that are dangerous to health. Finally they can cause the institution of prosecution by the authorized organ.

This proclamation concerns water on three different points. First, it is about water quality control. According to the Ethiopian law, it is prohibited to give water supply service from springs, wells or through pipes unless its quality has been verified by the Health Authority. Furthermore, bottled mineral water or plane water cannot be imported, produced or distributed

76) That means the Ministry of Health or the Health Bureau of a Regional State or a City accountable to the Federal Government.

unless its quality has been verified by the Health Authority. This proclamation also prohibits the discharge into water bodies or water convergences of untreated liquid waste generated from septic tank, seepage pits, and industries. Secondly, any city administration and organization or institution providing public service has the obligation to provide clean, adequate and accessible toilet facilities. Thirdly, it is about bathing places and pools control.

iv) Proclamation No. 268/2002 *Water Resources Development Fund and its Administration* - March 9, 2000

17. Budget
18. Books of Account

Part Four: Miscellaneous Provisions
19. Inapplicable Laws
20. Effective Date

The aforementioned Proclamation has been recently amended by the Proclamation No. 581/2008 *Water Resources Development Fund Establishment and its Administration (Amendment)* on May 27, 2008. The establishment of a Water Resources Fund follows two main goals:

- To enable the population to be beneficiary of reliable and sustainable water supply and sanitation services;
- To create conducive conditions for development of food self sufficiency irrigated agriculture.

To do so, the Proclamation rationalizes fund management by bringing together grant and loans from foreign government, international donor agencies made in connection with the fund, and budgetary allocations by the Federal Government. And management of the Fund is given to an Office, consisting in a Board and a General Manager.

Members of the Board[77], including the Chairman, are designated by the Government. The Board is particularly responsible for issuing directives on the procedure of collection of the Fund and withdrawal and payments of money from the Fund. It also has to ensure the timely collection of money due to the Fund and their entry in the account of the Fund.

77) According to the article 12(3), their number has "to be determined as may be necessary".

Besides, it sets criteria for granting of loans[78]. Furthermore, it advises the Government on policy issues related to the Fund. In addition, it has administrative responsibilities including audits, reviews of the annual work program and budget etc. The Board has regular meetings every three months, but the day-to-day management is ensured by the General Manager, who is appointed by the Government upon the recommendation of the Board.

v) Proclamation No. 295/2002 *Environmental Protection Organs Establishment* - October 31, 2002

78) The present Proclamation only provides that applicant must have legal personality. Article 7(1).

Part Four: Miscellaneous Provisions
16. Repealed Laws
17. Effective date

This Proclamation repeals the Proclamation No. 9/1995 to provide for the *Establishment of the Environmental Protection Authority*. It creates an Environmental Protection Authority (hereafter EPA), an autonomous public institution of the Federal Government accountable to the Prime Minister. The objective of the EPA "is to formulate policies, strategies, laws and standards, which foster social and economic development in a manner that enhance the welfare of human and the safety of the environment[79] sustainable, and to spearhead in ensuring the effectiveness of the process of their implementation" (article 5).

The EPA has received wide powers and duties including, not exhaustively:

- The EPA has to ensure that environmental objectives are met;
- In cooperation with competent agencies, EPA has to prepare, review and update environmental policies strategies, laws and directives, to set environmental standards, to take part in the negotiations of international environmental agreements. Competent agencies and the EPA also have to propose incentives or disincentives to discourage practices that may hamper sustainable use of natural resources or the prevention of environmental degradation or pollution;

79) Where environment "means the totality of all materials whether in their natural state or modified or changed by human, their external spaces and the interactions which affect their quality or quantity and the welfare of human or other living beings, including but not restricted to, land atmosphere, weather and climate, water, living things, sound, odor, taste, social factors, and aesthetics". Article 2(3).

- An inspection power: The EPA can enter any land, premise or any other place that fall under federal jurisdiction, take samples, with a view to check compliance with environmental protection requirement;
- The fight against desertification and drought;
- To establish an environmental information system that promotes efficiency in environmental data collection, management and use. Besides, the EPA has to promote and provide non-formal environmental education programs and to integrate environmental concerns in regular educational curricula;
- To coordinate and promote research on environmental protection;
- To provide advices to regions and to competent agencies in matter of environment, but also to the Government on measures necessary to cope with environmental emergency situations;
- Etc.

The EPA consists in a Council and a Director General (assisted by a Deputy Director General). The Council, which is very eclectic in its composition[80], holds regular meetings twice a year but can meet at any time whenever it deems necessary. The Director General and its Deputy are appointed by the Federal Government and ensure the day-to-day management.

Furthermore, the Proclamation innovates with the creation of Sectoral and Regional Environmental Units and Agencies. The former one are Units created in every competent agency with the purpose to ensure that

80) It is composed with: the Prime Minister, members designated by the Federal Government, a representative designated by each National Regional State, a representative of the Ethiopian Chamber of Commerce a representative of local non-governmental organizations, a representative, a representative of the Confederation of Ethiopian Trade Unions and the Director General of the Authority. Article 8.

the activities of agencies comply with environmental protection requirement. The latter one are Agencies created in each Regional State ensuring public participation in the decision making process. Those Regional Environmental Agencies are also in charge of coordinating the formulation, implementation, review and revision of regional conservation strategies. Besides, they are responsible for environmental monitoring, protection and regulation. When they implement Federal regulations, they cannot issue less stringent standards but, according to the local situation, Federal regulations may be strengthened. Finally, those agencies have to prepare reports regarding environment and sustainable development of their respective States that have to be submitted to the EPA. This measure allows a necessary National coordination in matter of environment because environmental issues do not cease at State borders and require a holistic approach. Thanks to that, the Federal policy can be more coherent.

vi) Proclamation No. 299/2002 *Environmental Impact Assessment* - December 3, 2002

In 2005, "apart from Ethiopia and Kenya, no other African country has a legal framework for Strategic Environmental Assessment in place"[81]. Indeed, "Much past experience in water development projects shows failure in environmental protection, and it is now realized that sustainable development and environmental protection have to be closely linked. Environmental impact assessments have become mandatory for all national water resources projects"[82].

81) ECA, *Review of the Application of Environmental Impact Assessment in Selected African Countries*, 2005, p. XVII.

82) The Nile basin initiative: http://wrpmp.nilebasin.org

This proclamation is highly connected with the latter one (No. 295-2002) because the EPA is strongly involved in the environmental impact assessment (EIA) process[83]. And according to the article 3, without authorization from the EPA or from the relevant regional environment agency, no person shall commence implementation of any project that requires EI A[84]. On the other hand, when the EPA or the relevant regional environment agency believes that possible impacts of the project are insignificant, it may decide not to require the EIA. Besides, any licensing agenc y[85], is responsible for ensuring that the EPA or the relevant regional environment agency has authorized its implementation. However, approval of an EIA or granting of authorization by the aforementioned authorities does not exonerate the proponent from liability for damage, except when damage occurred because of the victim himself or a third party. The article 4(1) defines basis of assessments:

- Size;
- Location;
- Nature;
- Cumulative effects with other concurrent impacts or phenomena;
- Trans-regional effect;
- Duration;

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83) An EIA process existed before but it was not legally binding. UNEP, *EIA Training Resource Manual, Case studies from developing countries,* Yonas Tekele Michael, "Current status of the environmental impact assessment system in Ethiopia", Case study No. 3, 2002, p. 21.

84) EIA can be required by any directive issued pursuant to the present Proclamation. Directives that require EIA have to determine which projects are likely or not to have negative impacts and, consequently, to define the need for EIA.

85) Means organs of government empowered by law to issue an investment permit or a trade or operating license or a work permit or to register a business organization (Article 2(5)).

- Reversibility or irreversibility;
- Other effects related to the project.

The Proclamation also provides that the EPA or relevant regional environment agency "shall err on the side of caution" when effects are slightly or arguably beneficial (Article 4(2)).

Proponents undertaking an EIA have to identify the adverse impacts of the project. He also has to incorporate the means of their prevention or containment. The EIA report must be written by experts and submitted to the relevant authority with all necessary documents. The article 8 provides for sufficient information that should allow relevant authority to determine the project feasibility and the EIA report shall contain, as a minimum, a description of:

- The nature of the project, including technologies and processes to be used;
- The content and amount of pollutant that will be released during implementation as well as during operation;
- Source and amount of energy required for operation;
- Information on likely trans-regional impacts[86];
- Characteristics and duration of all the estimated direct or indirect, positive or negative impacts;
- Measures proposed to eliminate, minimize, or mitigate negative impacts;
- Contingency plan in case of accident; and
- Procedures of self auditing and monitoring during implementation and operation[87].

86) The article 6 provides for trans-regional impact assessment.
87) Indeed, according to the article 12, relevant authorities have to monitor the imple-

In order to help proponents, the EPA is in charge of issuing guidelines that determine the necessary elements for specific situation[88].

The EPA or the relevant regional environment agency who has to evaluate the EIA report can take into account any public comments[89] and expert opinion. The aforementioned authorities, which have to respond within 15 days, may express three different opinions and shall:

- Approve the project without condition and issue authorization if it is convinced that the project will not cause negative impact;
- Approve the project and issue authorization with conditions that must be fulfilled in order to eliminate or reduce adverse impact or reduce adverse impact to insignificance if it is convinced that the negative impacts can be effectively countered; or
- Refuse implementation of the project if it is convinced that the negative impact cannot be satisfactory avoided.

It is noteworthy that an authorization is given for a specific duration. Consequently, if a project is not implemented in due time, the proponent has to ask for an extension of the EIA report validity. Besides, occurrence

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mentation of an authorized project in order to evaluate compliance with all commitments imposed.

88) The EPA has still issued the following guidelines relevant in matter of water:
- Environmental Impact Assessment Procedural Guideline Series 1, 2003;
- Guidelines for Dams and Reservoirs, 2004;
- Integrated Environmental and Social Impact Assessment Guidelines on
- Hydropower Production, Transportation and Distribution, 2004;
- Environmental impact assessment guidelines on irrigation, 2004;
- Integrated Environmental and Social Impact Assessment Guidelines Water Supply, 2004. Guidelines available on the website of the EPA: http://www.epa.gov.et/

89) According to article 15, relevant authorities have to make any EIA report accessible to the public and must solicit comments on it. Besides, they have to ensure that public comments are incorporated into the EIA study report.

of any new circumstance allows relevant authorities ordering the EIA to be revised or to be redone (Article 11).

More specifically, the EPA or the relevant regional environment agency has the ability to attribute incentive for project destined to rehabilitate a degraded environment to the extent that its capacity allows. In this connection, the aforementioned authorities may provide any environmental rehabilitation or pollution prevention or cleanup project with financial and technical support to cover additional costs (Article 16).

Finally, the Proclamation provides offences and penalties without prejudice to the provisions of the Penal code (See below):

Offences	Penalties
To start a project without authorization or to make false presentations in an EIA study report	Fine: 50.000 to 100.000 Birr
To fail keeping records or fulfilling conditions of authorization issued	Fine: 10.000 to 20.000 Birr
In case of offences committed by a juridical person, the manager who failed to exercise all due diligence is liable	Fine: 5.000 to 10.000 Birr

In addition to any penalty, a court may order the convicted person to restore or in any other way to compensate for damage inflicted.

vii) Proclamation No. 300/2002 *Environmental Pollution Control* - December 3, 2002

Part One 1. Short Title

"To complement and support the EIA process in Ethiopia, the Environmental Pollution Control Proclamation was passed in 2002"[90]. This Procla-

90) ECA, *Review of the Application of Environmental Impact Assessment in Selected African Countries*, 2005, p. 49.

mation entrust the EPA and Regional Environmental Agencies with the mission to control pollution[91] of the environment[92]. In this regard, the first mission consists in formulating environmental standards. And in matter of water, the Proclamation provides that discharge of effluents[93] into water bodies and sewage system require standards (Article 6(1)(a)). The aforementioned authorities may take an administrative or legal measure against a person who, in violation of law, releases any pollutant to the environment. But concretely, the real fieldwork is operated by Environmental Inspectors. The latter are assigned by the EPA or by the relevant environmental agency with the wide following powers and duties[94]:

- Ensure compliance with environmental standards and related requirements;
- Enter any land or premises at any time which seems appropriate to them without prior notice or court order. When an Inspector on duty visits and undertaking, he notifies the proprietor unless he considers that such notification may be prejudicial to the efficient performance of his duties;
- Question any person, alone or in the presence of witnesses;

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91) Where pollution "means any condition which is hazardous or potentially hazardous to human health, safety, or welfare or to living things created by altering any physical, radioactive, thermal, chemical, biological or other property of any part of the environment in contravention of any condition, limitation or restriction made under this Proclamation or under any other relevant law". Article 2(12).

92) Where environment "means the totality of all materials whether in their natural state or modified or changed by human, their external spaces and the interactions which affect their quality or quantity and the welfare of human or other living beings, including but not restricted to, land atmosphere, weather and climate, water, living things, sound, odor, taste, social factors, and aesthetics". Article 2(6).

93) Where effluents mean "waste water, gas or other fluid, treated or untreated, discharged directly or indirectly into the environment". Article 2(5).

94) Article 8.

- Check, copy or extract any paper, file or any document related to pollution;
- Take, free of charge, sample[95] or any materials as required and carry out or cause to be carried out tests to determine whether or not it causes harm to the environment or to life;
- Take photographs, measure, draw, or examine any commodity, process or facility in order to ensure compliance with relevant laws and standards;
- Seize any equipment or any other object which is believed to has been used in the commission of an offence under relevant laws or standards;
- If an Inspector on duty suspect that any activity may cause damage to environment, he orders corrective measures up to the immediate cessation of the activity.

Any person dissatisfied by any decision taken by an Inspector may appeal to the Head of the EPA or the relevant environmental agency, within 10 days following the decision. Then two hypotheses occur. Firstly, a decision is given by the appeal authority but the claimant is still dissatisfied. Then the latter may institute a court case within 30 days following the decision of the appeal authority. Secondly, the appeal authority has not given any decision. Then the claimant may appeal within 30 days following the day when the deadline for decision has elapsed.

The right to standing is open to any person, who may lodge a complaint at the EPA or the relevant environmental agency against any person

95) "Whenever a sample is to be taken, the proprietor has the right to be present or to send his representative and he shall be informed accordingly". Article 8(5).

allegedly causing actual or potential damage to the environment, without the need to show any vested interest. When the EPA or the relevant regional environmental agency fails to give a decision within 30 days or when the person who has lodged the complaint is dissatisfied with the decision, he may institute a court case within 60 days from the date the decision was given or the deadline for the decision has elapsed (Article 11(2)).

Offences	Penalties
Offences against an Inspector[96]	Natural person: fine, 3.000 to 10.000 Birr
	Juridical person: fine, 10.000 to 20.000 Birr; Regarding to the officer: imprisonment, one to two years or fine, 5.000 to 10.000 Birr (or both)
Offences relating to records[97]	Fine: 10.000 to 20.000 Birr
Offences relating to waste and other materials that are hazardous[98]	Natural person: fine, 20.000 to 50.000 Birr
	Juridical person: fine, 50.000 to 100.000 Birr; Regarding to the officer: imprisonment, five to ten years or fine, 5.000 to 10.000 (or both)
Offences relating to pollution[99]	Natural person: fine, 1.000 to 5.000 Birr
	Juridical person: fine, 5.000 to 25.000 Birr; Regarding to the officer: imprisonment, five to ten years or fine, 5.000 to 10.000 (or both)

96) "A person commits an offence if he hinders or obstructs an inspector on duty in the execution of his duty, fails to comply with a lawful order or requirement made by an inspector, impersonates an inspector, or refuses an inspector entry into any land or premise or hinders an inspector from getting access to records, 'prevents an inspector from checking, copying or extracting any paper, file or any other document, withholds, misleads or gives wrong information to an inspector". Article 13(1).

In addition, a court may impose the following measures to the convicted:

- Confiscation of any things used in the commission of the offence in favor of the State or in any other way;
- Cost of cleaning up and/or disposal of waste;
- Restoration of the environment and, when such a restoration is impossible, to pay a compensation.

Finally, this Proclamation also provides for incentives. This is, however, in very vague terms. Indeed, the article 10(1) provides that regulations issued hereunder shall determine incentives for the introduction of methods that enable the prevention or minimization of pollution into an existing undertaking. More concretely, the article 10(2) exempts importation of new equipment that is destined to control pollution from payment of custom duty.

viii) Regulation No. 115/2005 *Ethiopian Water Resources Management* - March 29, 2005

Part One: General
1. Short Title
2. Definitions

97) "A person commits an offence if he fails to comply with this Proclamation or any regulations issued hereunder to keep records of activities or products or of the types, characteristics or amounts of waste or of any other information, or if he alters any record". Article 14.

98) "A person commits an offence if he fails to manage a hazardous waste or another substance according to the relevant laws, mislabels or fails to label or in any way withholds information about any hazardous waste or other material or attempts to take part or takes part or attempts to aid or aids in the illegal traffic of any hazardous waste or other material". Article 15(1).

99) A natural or juridical person commits an offence "if he discharges any pollutant contrary to the provisions of this Proclamation or regulations issued hereunder". Article 16.

This Regulation appears in this section in order to respect the timeline. However, to be coherent, this Regulation has been studied above since it is the implementation[100] of the Proclamation No. 197/2000[101].

ix) oclamation No. 534/2007 *River Basin Councils and Authorities Proclamation* - July 23, 2007

100) "The contents of the regulation are those covered in the proclamation, but detailing the procedures as to how the various legal materials contained in the proclamation are to be made effective on the ground". Amare Haileslassie and alii, *Institutional Settings and Livelihood Strategies in the Blue Nile Basin: Implications for Upstream/Downstream Linkages*, Working Paper 132, IWMI, 2008, p. 46.

101) See above, section (ii) Proclamation No. 197/2000 *Ethiopian Water Resources Management*-March 9, 2000.

This Proclamation finally makes the water management through river basin a reality. Indeed, it extends the Proclamation No. 129/1998 establishing the Awash Basin Water Resources Administration Agency, in 1998. This Proclamation allows implementing an integrated water resources management[102] and is the juridical expression of the Ethiopian Water Resources Management Policy (see below).

The Proclamation classically defines a basin as "a geographical area, described by the watershed limits of water system including surface and underground water flowing into a common terminus" (Article 2.1) and creates twelve basins[103]. The article 3 provides that "River Basins High Councils and Authorities shall be established by regulations to be issued by the Council of Minister"[104]. Only one regulation has been yet enacte d[105], the Proclamation provides for outlines for, on the one hand, Basin High Councils (a) and, on the other hand, Basin Authorities (b).

Basin High Councils

Basin High Councils are in charge of "highest policy" and are considered as "strategic decision-making body"[106]. Members of Basin High Council shall be designated by the Government with powers and duties to:

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102) That means, according to the article 2.4, "an arrangement for balanced and sustainable development of water, as an economic, social and environmental resource, reconciling, fully, its various uses within a river basin".

103) "a) the Abbay Basin; b) the Aisha Basin; c) the Awash Basin [this basin was established by the Proclamation No. 129/1998]; d) the Baro-Akobo Basin; e) the Danakil Basin; f) the Genale-Dawa Basin; g) the Mereb Basin; h) the Ogaden Basin; i) the Omo-Ghibe Basin; j) the Tekeze Basin; k) the Rift Vally Lakes Basin; and l) the Wabi-Shebelle Basin".

104) That means "the Council of Ministers is given the mandate to create specific River Basin Organizations through more detailed regulations which presumably will further elaborate the powers and responsibilities of the River Basin Organizations to be established in the respective basins of the country". Imeru Tamrat, Policy and Legal Framework for Water Resources Management in Ethiopia, International Conference on Water Management in Federal and Federal-Type Countries, July 9-11, 2008, Zaragoza.

105) Regulation No. 151/2008, *Establishment of the Abbay Basin High Council and Authority*- May 12, 2008

106) Imeru Tamrat, Policy and Legal Framework for Water Resources Management in Ethiopia, International Conference on Water Management in Federal and Federal-Type Countries, July 9-11, 2008, Zaragoza.

"1/ Provide policy guidance and planning oversight to ensure high level of coordination among stakeholders for the implementation of integrated water resources management in the basin;

2/ Direct the preparation of the river basin plan and submit same for approval by the Government;

3/ Propose to the Government the rate of the water charges to be paid by water users in the basin;

4/ Examine and decide on the appropriateness and prioritization of constructing major water works in the basin;

5/ Examine and decide on water allocation rules and principles in normal times and in times of water shortage as well as in times of drought or flooding;

6/ Manage water use disputes between Regional States in the basin;

7/ Provide information and advisory support to the body in charge of negotiating with neighboring countries with respect to the basin where the basin is part of a trans boundary basin;

8/ Establish standing or ad-hoc committees necessary for discharging specific activities".

According to the Proclamation, the Basin High Council shall hold regular meetings, at least twice in a year. However, the Chairman can decide, on his own or upon the joint request of three members, to call extraordinary meeting at any time. This Proclamation also provides for main rules of functioning. Thus, there is quorum where more than half of members are presents. Furthermore decisions are passed by majorities with casting vote of the Chairman in case of a tie.

Basin Authorities

Basin Authorities are "administrative and technical arm of Basin High Councils"[107]. A Basin Authority is composed with a Director General appointed by the Government upon recommendation of the Minister of Water Resources and Energy and by the necessary staff (Article 11.1 and 11.2). As a matter of fact, Basin Authorities face a dual accountability: to Basin High Councils and to the Minister of Water Resources and Energy. The article 9 of the Proclamation provides for powers and duties of Basin Authority which has to:

"1/ Initiate and submit to the Basin High Council policy measures needed to create a conducive environment for the implementation of an integrated water resource management process within the basin; and follow up the implementation of same upon approval;
2/ Undertake activities necessary for, and facilitate, the implementation of integrated water resources management in the basin;
3/ Ensure that projects, activities and interventions related to water in the basin are, in their content, schedule, impacts and management are in line with the integrated water resources management process;
4/ Prepare, and submit to the Basin High Council, the basin's plan and monitor its implementation upon approval[108];
5/ Without prejudice to the power given to Regional State by law, issue permits applicable to the basin's water use and water works

107) Imeru Tamrat, Policy and Legal Framework for Water Resources Management in Ethiopia, International Conference on Water Management in Federal and Federal-Type Countries, July 9-11, 2008, Zaragoza.
108) River Basin Plans are developed in the article 18.

in accordance with Article 15 of this Proclamation, and ensure that the terms of the permits are complied with[109];

6/ Collect, compile, analyze and disseminate information for proper planning, administration and steering of water resources in the basin[110];

7/ Develop and use a river basin model in order to guide and support its basin water resources strategic planning and water administration functions;

8/ give advice and technical support to the Basin High Council and the Ministry on dispute resolution in relation to the allocation and use of water resources of the basin;

9/ Set up a forum for effective networking among stakeholders;

10/ Collect water charges from users;

11/ On the basis of instructions of the Basin High Council, prepare and provide necessary information for the concerned body in charge of negotiations with other countries concerning trans-boundary river basins;

12/ Undertake studies, surveys and researches that are deemed necessary to carry out its functions;

13/ Own property, enter into contracts, sue and be sued in its own name;

14/ Carry out other functions necessary for the implementation of its objectives".

The Director General also has administrative tasks such as employ and administer employees of the Basin Authority, effect expenditure, represent the Basin Authority, prepare an submit annual reports etc.

109) Permits are developed in the article 15.

110) Basin Information System is developed in articles 16 and 17.

x) gulation No. 151/2008, *Establishment of the Abbay Basin High Council and Authority* - May 12, 2008

1. Short Title
2. Establishment
3. Objective
4. Head office
5. Members of the High Council
6. Powers and Duties of the Authority
7. Effective Date

xi) Poclamation No. 691/2010 *Definition of Powers and Duties of the Executive Organs of the Federal Democratic Republic of Ethiopia,* October 27, 2010

Part One: General

1. Short Title
2. Definitions

Part Two: The Prime Minister, the Deputy Prime Minister and the Council of Minister

[…]

Part Three: Ministries

[…]

15. The Ministry of Water and Energy

[…]

33. Other Federal Government Executive Organs

Part Four: Miscellaneous Provisions

34. Repeal Laws
35. Transfer of Rights and Obligations

36. Transitory Provisions
37. Effective date

This Proclamation[111] provides for repartition of competences within the Federal Government. In matter of water, the leading role belongs to the Ministry of Water and Energy (MoWE) which receives the following powers and duties, according to the article 26:

- Promote the development of water resources and energy;
- Undertake basin studies and determine the country's ground and surface water resource potential in terms of volume and quality, and facilitate the utilization of same;
- Determine conditions and methods required for the optimum and equitable allocation and utilization of water bodies that flow across or lie between more than one regional States among various uses and the regional States;
- Undertake studies and negotiation of treaties pertaining to the utilization of boundary and trans-boundary water bodies, and follow up the implementation of same;
- Cause the carrying out of study, design and construction works to promote the expansion of medium and large irrigation dams;
- Administer dams and water structures constructed by federal budget unless they are entrusted to the authority of the relevant bodies;
- In cooperation with the appropriate organs, prescribe quality standards for waters to be used for various purposes;

111) Repealing Proc No. 471/2005 *Definition of Powers and Duties of the Executive Organs of the Federal Democratic Republic of Ethiopia* - November 12, 2005.

- Support the expansion of potable water supply coverage; follow up and coordinate the implementation of projects financed by foreign assistance and loans;
- Undertake studies concerning the development and utilization of energy; and promote the growth and expansion of the country's supply of electric energy;
- Promote the development of alternative energy sources and technologies;
- Set standards for petroleum storage and distribution facilities, and follow up the enforcement of same;
- Issue permits and regulate the construction and operation of water works relating to water bodies referred to in paragraph (c) and (d) of this sub-article;
- In cooperation with the appropriate organs, determine the volume of petroleum reserve and ensure that it is maintained;
- Ensure the proper execution of functions relating to meteorological service.

xii) The Civil Code

The Civil Code, which concerns Ownership and use of water[112], has obviously a private purpose that does not really interest our research. Nonetheless, few articles may be quoted because they take into account large scale aftermaths of water uses by private owners, involving other owners and authorities. Those provisions seem to be relevant because they are related to resource management, pollution, scarcity, etc. and they were the first legal provisions related to water (not to mention customary rules).

112) Articles 1228-1256.

So the Civil Code provides that the Community has priority regarding the usage of all running and still water. Besides, it also adds that competent authorities have to control and protect those waters (article 1228, (1) and (2)). Furthermore, a landowner using a well, a spring or other water may object any constructions (e.g. sewer or latrine) which are capable of polluting the domestic water[113]. To this end, a landowner may require the destruction of such a construction (article 1235 (1) and (2)). Then, in order to avoid abuses and local scarcity, the Civil Code allows owners to irrigate unless if this right is "exercised to the detriment of those who, on the land or downstream, use such water for domestic purposes or to water their cattle" (article 1236 (2)). In this connection, the Civil Code also provides dispositions related to penalties, compensation and jurisdiction (article 1237 to 1241). Also, industrial or commercial uses (water-mills, wash-houses, bathing establishment) may be exercised whether the owner ensures that water flowing from his land is "unsoiled and fit for the uses to which it may normally be put" (article 1242 (2)).

The Civil Code intervenes as well in other fields. And whoever wants to distribute, to carry or to sell hydraulic power must have been granted by the competent authority to do so (article 1244). Furthermore, regarding rainwater, the article 1245 requires that owners of buildings endow them with gutters or pipes in order to bring the water to public sewers. Finally, the Civil Code takes underground water into consideration, determining their belonging to the public domain. Nevertheless, whoever can construct a drilling which depth is less than 100 meters (article 1255).

113) According to the article 1232 of the Civil Code, domestic waters are waters used by a landowner for persons living with him and for watering his cattle.

xiii) The Penal Code

The Penal Code also tries to protect water. In this connection, the article 270(i) foresees the worst with the hypothesis of war crimes against the civilian population. And "whoever, in time of war, armed conflict or occupation organizes, orders or engages in, against the civilian population and in violation of the rules of public international law and of international humanitarian convention [⋯] the confiscation, destruction, removal, rendering useless or appropriation of property such as [⋯] drinking water installations and supplies and irrigation works [⋯] is punishable with rigorous imprisonment from five years to twenty-five years, or, in more serious cases, with life imprisonment or death". Furthermore, the article 353(1)(b) also envisages the crimes against the National economy and State monopolies. And "whoever, apart from the cases especially specified above or petty infringements punishable under the Code of petty offences (Art. 784-790), intentionally violates the provisions concerning [⋯] water [⋯] is punishable, where the crime does not come under a specific provision prescribing a more severe penalty, with simple imprisonment or fine, in addition to the forfeiture of the subject matter of the crime and the withdrawal of any license and work certificate, and the suspension or closing down any business".

Then, the Penal Code rules the case of water contamination. First of all, the article 517(1) provides for intentional contamination of drinking water serving the needs of men or animals by means of substances harmful to health. In such a case, and according to the circumstances, the offender can be sentenced with fine or simple imprisonment for not less than 1 month and, in more serious cases, with rigorous imprisonment

not exceeding 7 years. Then, the article 517(2) foresees the intentional poisoning of wells or cisterns, springs, water holes, rivers or lakes where the punishment shall be rigorous imprisonment not exceeding 15 years. Finally, the article 517(3) envisages the two aforementioned hypotheses but without the intentional element, meaning negligently committed: the crime "is punishable with simple imprisonment, or, if less serious, with fine".

Furthermore, according to the article 830(a), whoever "contravenes the directives or regulations regarding [⋯] the cleanliness, salubrity and hygiene of water and water installation [⋯] is punishable with fine or arrest".

Finally, whoever "defaces or depreciates another person's property [⋯] by the diversion or defective upkeep of water or drain [⋯] is punishable with fine or arrest", said the article 856.

xiv) Standards/Guidelines

Standards, Guidelines and quality criteria are very important because they allow a strong and complete implementation of the legislative framework. However, there is a lack of guidelines in Ethiopia and only few of them are available in matter of water.

The **Environmental Protection Authority**, which is accountable to the Prime Minister, has drawn up few guidelines related with water:

- Environmental Impact Assessment Procedural Guideline Series 1, 2003;
- Guidelines for Dams and Reservoirs, 2004;
- Integrated Environmental and Social Impact Assessment Guidelines on Hydropower Production, Transportation and Distribution, 2004;
- Environmental impact assessment guidelines on irrigation, 2004;

- Integrated Environmental and Social Impact Assessment Guidelines Water Supply, 2004
- Industrial Pollution Prevention And Control Regulation, Directive and Standard, 2009 (Draft)

Furthermore, the **Ministry of Water and Energy** has elaborated Guidelines on the basis of WHO Guidelines for Drinking water Quality in an official document named Specification for Drinking Water Quality (2002) which is relevant to all domestic water uses such as drinking, food preparation and personal hygiene. In addition, this document also provides for sanitary survey considering that survey is complementary with water quality analysis.

Finally, the **Ministry of Agriculture** has drawn up guidelines named Community-based Participatory Watershed Development: A Guideline, Part 1, 2005 with the purpose "to provide development agents and rural communities with a workable and adaptable planning tool, whether located in a low rainfall or high rainfall area, in a severely degraded and food-insecure area or in a food secure and not yet seriously affected by land degradation area, in a cereal-plough farming system or on an Enset-hoe one, for both men, women and for the youth"[114]. The expected benefits of those guidelines are wide[115]:

114) Ministry of Agriculture, Community-based Participatory Watershed Development: A Guideline, Part 1, 2005, p. 15.

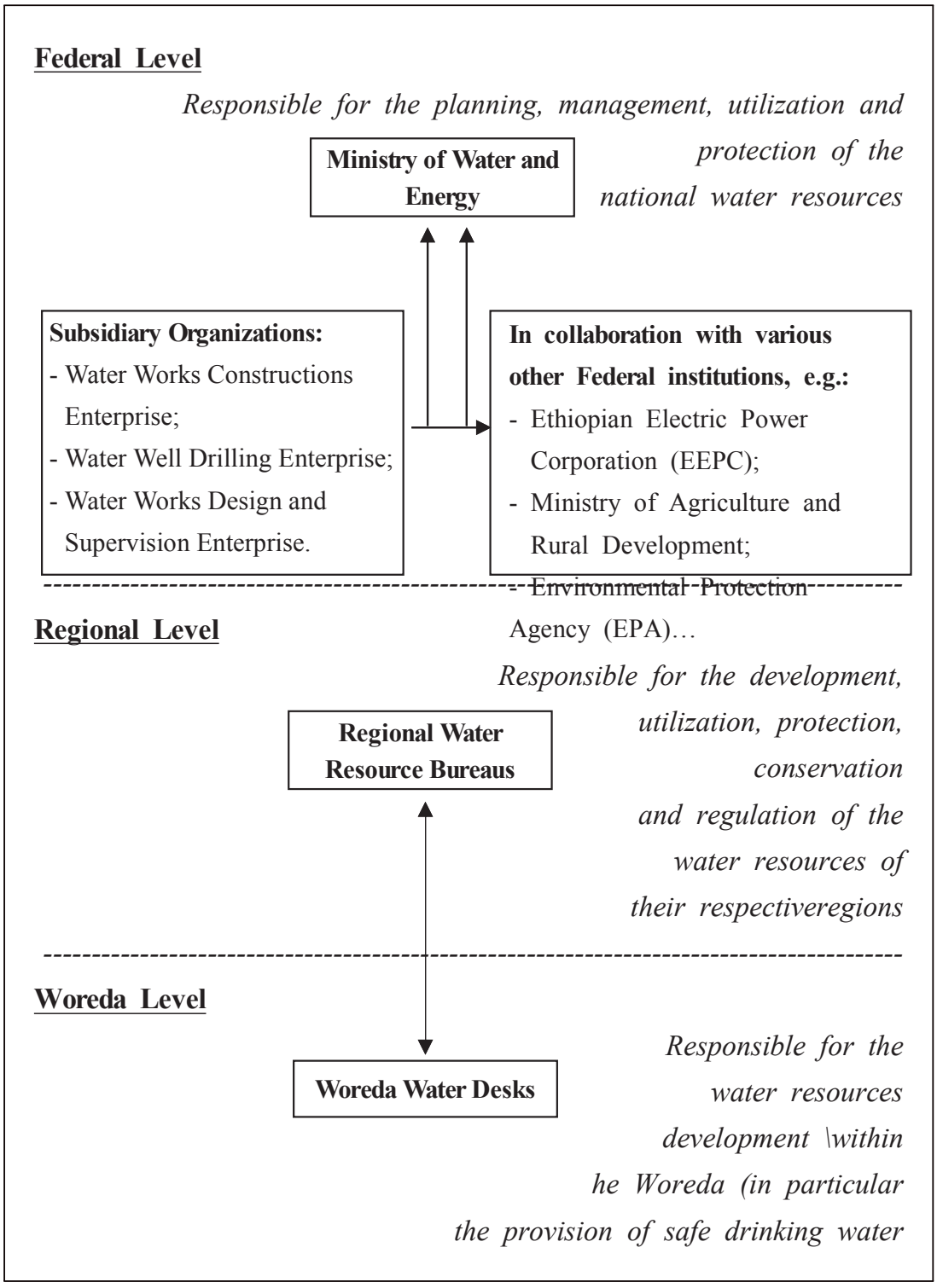
115) Ministry of Agriculture, Community-based Participatory Watershed Development: A Guideline, Part 1, 2005, p. 17.

Benefits to households	Benefits to local community	Benefits to the society at large
• Improved water availability and fertility levels for crop production and diversification • Improved soil quality and better drainage • Increased access to biomass for multipurpose use (firewood, fodder, fruits, construction, and others) and higher profits • Increased resilience to shocks and Improved livelihoods • Increased participation in income generation activities	• Lower land development costs • Reduced erosion, deforestation, flooding and waterlogging • Increased overall agricultural productivity and access to markets and basic services • Improved livelihood options, including for the poorest households • A more dependable, clean water supply for domestic and industrial use - recharge of aquifers	• Better conservation of natural resources and biodiversity • Less danger from floods to downstream farmlands • Reduced sedimentation of costly irrigation projects and protection of major infrastructure (e.g. roads) Increased water supply and improved health • Reduced occurrence of drought and increased stability of production systems

(3) The Institutional Framework of Water

Ethiopia is a Federal Democratic Republic with at present nine member states which have equal rights and powers. In terms of article 51(16) of the Constitution, the Federal Legislature has the power to enact laws relating to the utilization and protection of natural resources. At the Federal level, the Minister of Water Resources has the power and duty to administer the management and allocation of water resources while the article 52(2) of the Constitution gives Regional States the power to administer natural resources in accordance with Federal laws.

Governance and Institutional Set-up for the Water Sector[116)]



The current organization has been established by recent reforms taking in account key issues such as good governance, decentralization, sustainability and poverty reduction. The table below identifies the respective institutional roles and responsibilities

Water Supply and Sanitation Institution Roles and Responsibilities[117)]

Institution	Responsibilities
Federal	- Policy setting: preparation and enforcement of policies, standards, and regulations - Technical assistance to regional bureau for big projects - National database development - Coordination and resource mobilization for the Water Fund
Regional Water Bureaus	- Preparation of regional policies, and regulations - Study, design, supervision and regulation of water supply projects - Construction of schemes: spring developments, small & large gravity schemes, motorized schemes, boreholes and shallow wells - Contract out to the private sector - Build the capacity of zonal and woreda water offices - Set water tariffs
Zonal Water Office	- Capacity building and technical support to the woreda - Implementation and monitoring assignments from regional bureau - Operation and maintenance in complex cases
Woreda Water Desk	- Construction and maintenance of hand-dug wells and spring developments - Monitoring construction done by regional bureau or private

116) Ministry of Water and Energy, Achieving Water Security: Lessons of Ethiopia, Country Experience, March 2007, quoted in Ministry of Water and Energy, Legal Aspects for Institutionalizing Regular Monitoring of the Whole Water Sector, Final Report, July 2009, p. 36.

117) Teshome A., Performance and Future Prospect of Water Supply and Sanitation in Ethiopia, Part II, http://www.aigaforum.com/articles/TeshomeAdu.P.II.pdf

	contractors contracted by the bureau - Simple operation & maintenance
Kebeles	- Community mobilization and contributions of labor and/or cash - Site selection

① The Federal Level

The Ministry of Water and Energy (i) is mainly concerned with water issues at the Federal level. Nonetheless, water does not and cannot belong to a single entity because it affects several different matters. Therefore, powers and duties in matter of water are necessarily shared with many other ministries, administrations etc. (ii) which are involved in the water sector.

ⅰ) The Ministry of Water and Energy

According to the Proclamation No. 691/2010, article 33, the Ministry of Water and Energy[118] is the main administration in charge of water (see above). Four departments and two Basin Authorities are currently accountable to the MoWE:

- The National Meteorological Service Agency[119] since the Proclama-

118) An organizational chart is available in Ministry of Water and Energy, Legal Aspects for Institutionalizing Regular Monitoring of the Whole Water Sector, Final Report, July 2009, p. 38.

119) With following powers and duties:
- Establishing and operating a national network of meteorological stations designed to represent various climatic regions of Ethiopia and to satisfy the needs of various national development plan and activities;
- Collecting all meteorological data and establishing & operating communication systems for the collection and dissemination of meteorological data;
- Publishing and disseminating analyzed and interpreted meteorological data and meteorological forecasts;

tion No. 471/2005. It was initially connected with the Civil Aviation Authority (Proc No. 201/1980);

- The Water Resources Development Fund Office (Proc No. 268/2002[120]);
- The Ethiopian Electricity Agency (Proc No. 86/1997);
- The National Petroleum Reserve Depots Administration (Proc No. 82/1997);
- The Awash Basin Authority (Proc No. 129/1998);
- The Abbay Basin Authority (Reg No. 151/2008).

ii) Other Ministries and Administrations

Ministry of Finance and Economic Development

This Ministry is in charge of monitoring data and information in every sector and appears to be a key institution in the water sector. Indeed, all data and information end up in the Ministry's information system. Furthermore, This Ministry supervises the Central Statistics Agency that activities[121]

- Giving advance warning on the adverse weather conditions;
- Disseminating advice and educational information through the mass media; and providing meteorological services to any person;
- Controlling and centrally administering any meteorological data collected by any person in the country;
- Permit any person to register and collect meteorological data when it deems it necessary; and,
- Undertaking meteorological studies and researches as well as implementing the results thereof.

Available at: www.ethiomet.gov.et

120) See above.

121) Proclamation No. 442/2005, article 6/1:

- Collection, processing, compilation, analysis, publication and dissemination of statistical data;
- Preparation, execution and monitoring of periodic short, medium and long-term national statistical programs by other government agencies and institutions;

are directly connected with water monitoring.

Ministry of Mines

The mandate of this Ministry also includes hydropower and, in this regard, it is very important in water sector. In addition, the ministry supervises numerous autonomous federal agencies which play "essential roles"[122] in the water sector:

- The Ethiopian Geological Survey. The type of information falling within powers and duties of the Survey includes all geological, hydro-geological, geothermal, geophysical, geochemical and drilling data, which it may legally require and obtain from any relevant sources (Proclamation No. 194/2000, articles 2/4 and 6/7).
- The Ethiopian Rural Energy Development and Promotion Center. The powers and duties of the Center include: conducting, coordinating and assisting in studies on the development and utilization of energy resources including power generated from geothermal and water sources (Proclamation No. 269/2002, articles 6 and 2/1). More relevant to water sector monitoring and information management, the Center is mandated to periodically compile data on the energy demand, supply and consumption patterns of rural areas, and to collect, own, make

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- Undertaking studies and research on statistical methods and ensure the utilization of the results thereof;
- Prescribe the system for the collection, compilation, classification and flow of statistical data and monitor its implementation;
- Assisting and coordinating the activities of regional states in the collection, organization, analysis, publication and dissemination of statistical data; and,
- Design, follow up and monitor the establishment and operations of statistical systems to be followed by government institutions and other organizations.

122) Ministry of Water and Energy, Legal Aspects for Institutionalizing Regular Monitoring of the Whole Water Sector, Final Report, July 2009, p. 53.

available to users, publish and distribute information related to energy studies (Articles 6/4 and 6/8).

- The Ethiopian Electricity Agency. The powers and duties of the Agency include: supervising the generation, transmission, distribution and sale of electricity; determining quality standards for electricity services and ensuring their implementation; and, cooperating with training institutions in the field of technical development of electricity (Proclamation No. 86/1997, article 6). More specific to hydropower generation, the Agency was mandated to issue the required water use permit to the licensee in accordance with the Water Resources Utilization Proclamation No. 92/1994 (Articles 26 & 2/4), repealed by Proclamation No 197/2000.

Ministry of Agriculture

The Ministry of Agriculture "is possibly the most important water sector institution among the line ministries in terms of mandates over the actual use of water resources"[123]. It has to "formulate and facilitate the implementation of a strategy for natural resources protection and development through sustainable agricultural development" (Proclamation No. 691/2010, article 19(1)(e)) and that mission is obviously linked with water sector. For instance, the Ministry encourages and supports the expansion of water harvesting and small scale irrigation schemes[124].

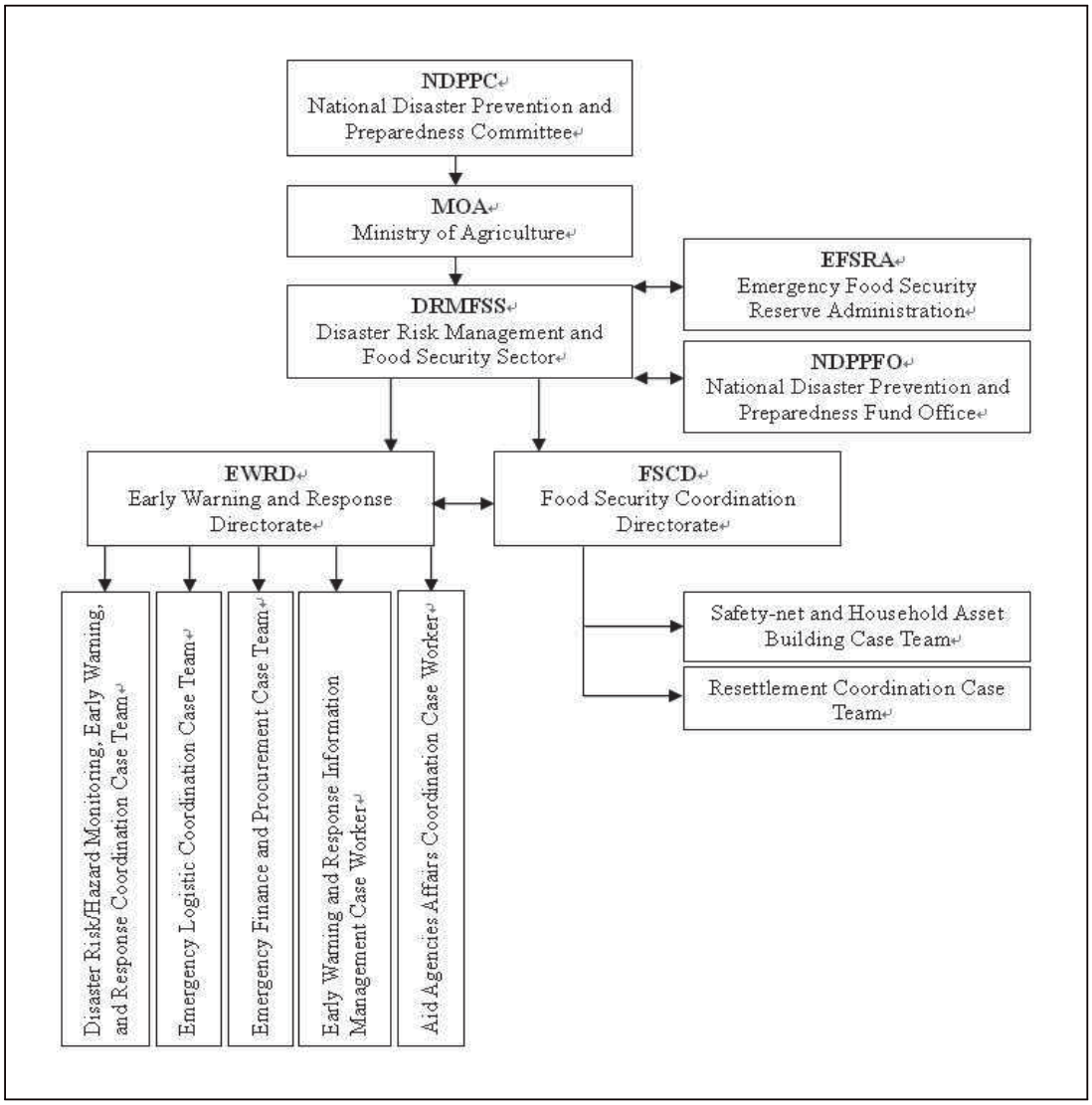
Furthermore, the Ministry has supervisory authority over several important agencies with mandates relevant to the water sector:

123) Ministry of Water and Energy, Legal Aspects for Institutionalizing Regular Monitoring of the Whole Water Sector, Final Report, July 2009, p. 53.

124) "Up to 2.7 million hectares of land in Ethiopia have irrigation potential, but fewer than 300,000 hectares are developed". UNDP, Human Development Report 2006, *Beyond scarcity: Power, poverty and the global water crisis*, p. 197.

- The Disaster Prevention and Preparedness Commission (See chart below);
- The Ethiopian Institute of Agricultural Research;
- The National Agricultural Input Authority;
- The Ethiopian Environment Protection Agency.

Organizational Structure of Disaster Prevention, Preparedness and Management in Ethiopia[125)]



125) http://www.dppc.gov.et

Ministry of Health

Even if the role of the Ministry of Health (MoH) mainly relates to overall health activities, that obviously includes, among areas of public health, water quality control, waste management, regulation of sanitation facilities, and control of bathing places and pool (Proclamation No. 200/2000, articles 10, 12, 13, and 14).

In addition, the Ministry also supervises the Ethiopian Health and Nutrition Research Institute which is mandated to support activities for the improvement of health through research on the causes and spread of diseases, nutrition, traditional medicines and medical practices, and modern drug (Regulation No. 4/1996, articles 2 and 4). Some of its mandates are closely linked with important water sector such as sanitation services and control of waterborne diseases.

Ministry of Education

Certain institutions and programs particularly focused on the water sector deserve to be mentioned:

- Arbaminch University Water Technology Institute;
- Soil & Water Management & Engineering Program at Haromaya University;
- MSc and PhD programs offered by the School of Graduate Studies at Addis Ababa University; and,
- Groundwater development and water supply programs at the Ethiopian Water Technology Center (EWTEC).

Agencies Accountable to the Prime Minister and Council of Ministers

- The Environment Protection Authority (EPA). The EPA is, among other areas, in charge of carrying out studies to combat desertification and effects of the drought[126]. The Proclamation No. 295/2002 establishing the EPA also requires that line ministries create environmental unit within their respective institutional structure. The MoWE was the first Ministry to do so in order to coordinate and oversee environmental concerns within the water sector.
- The Ethiopian Science and Technology Commission. The Commission, among other powers and duties, is mandated to "establish a system for the collection of information on science and technology accomplishments, research work and results … [and] … keep a list of professionals and institutions that engage in research and development activities" (Proclamation No. 7/1995, article 5/9-10). That makes the Commission "a key actor in the technical, human resources and R&D aspects of the water sector"[127].
- The Information Network Security Agency. The Agency is responsible for monitoring "the collection, processing and dissemination of remotely sensed data… and handling of geospatial information databases to

126) As a matter of fact, "almost all actors in the disaster management community have invariably been preoccupied with and investing heavily in drought disaster. In other words, actors in the realm of disaster management in Ethiopia pay little or no attention to other hazards (namely, crop pests, flood, disease epidemics, war, civil conflicts and traffic accidents) to which citizens are vulnerable". Mulugeta Abebe, "Emerging trends in disaster management and the Ethiopian experience: genesis, reform and transformation", Journal of Business and Administrative Studies, Vol. 1 No. 2, Sept. 2009, p. 62.

127) Ministry of Water and Energy, Legal Aspects for Institutionalizing Regular Monitoring of the Whole Water Sector, Final Report, July 2009, p. 60.

ensure their compliance with national information security standards" (Regulation No. 130/2006, article 6/5). As such, the Agency monitors the existing and future water sector information systems.

The Ethiopian Development Research Institute. The Institute has to undertake studies and research related with development policies, to carry out impact analysis on development policies implemented, to collect data, and finally to publish and distribute results (Regulation No. 54/1999, articles 4 and 5). As a matter of fact, these mandates are also exercised across the water sector.

Special Regime for the Two Federal City Administrations
(Addis Ababa and Diredawa city governments)

- The Ministry of Federal Affairs is responsible for supervising the two federal city administrations (Proclamation No. 471/2005, article 21). And even if this mandate does not directly relate to water sector, the Ministry has a pertinent role in monitoring the functions of water sector institutions within the governments, including water and sewage services (Proclamations No. 311/2003, article 61/5 and No. 416/2004, article 51/5.
- The Ministry of Works and Urban Development is also responsible to follow up the activities of the city administrations (Proclamation No. 471/2005, article 18/1/m).

② The Regional and Local Levels

In terms of Article 52(c) of the Constitution the States have responsibility for the administration of natural resources in accordance with federal laws. That means the Federal State provides a global framework for water. However, the MoWE has the possibility, when it deems necessary,

to delegate all or some powers and duties to Regions or River Basin Organizations (Proclamation No. 197/2000, articles 2/7 and 8/2). That could be understood as an illustration of the principle of subsidiarity which is based on the idea that decisions must be taken as closely as possible to the citizen. One can imagine that there must be conflicts between Federal State and Member States[128].

Regional Water Bureaus (RWBs) are the focal institutions responsible for water resources management at the regional and local levels. Each of the 9 regional states as well as the Dire Dawa Federal City Administration already has a RWB.

Usually, RWBs have subsidiary structures extending to lower levels in the form of Zonal water offices, Woreda[129] water desks (WWDs) and within Kebeles. WWDs are responsible for:

- Promotion, planning and managing their own programs, which include water supply activities within the Woreda, as well as the coordination of NGO activities[130] in the Woreda. That also includes carrying out simple feasibility studies and appraisals of simple projects;

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128) "The main issue, as already mentioned, lies in the role of regions versus the Federal State. It is clear that 'framework' laws (such as proclamations and policies) are clearly the mandate of the Federal Government. However, it is also necessary that the different administrative and political levels develop policymaking activities (such as specific regulations) applicable to their territorial level, as long as they bring value-added and abide by the federal laws and policies". Amare Haileslassie and alii, *Institutional Settings and Livelihood Strategies in the Blue Nile Basin: Implications for Upstream/Downstream Linkages*, Working Paper 132, IWMI, 2008, p. 46.

129) Administrative divisions, like districts, managed by local government. Girmachew Alemu Aneme, *Introduction to the Ethiopian Legal System and Legal Research,* New-York University, 2010, http://www.nyulawglobal.org/Globalex/Ethiopia.htm

130) It is an important task. Indeed, more than 100 NGOs were involved in the water sector in 2002. Ministry of Water and Energy, Water Sector Development Programme 2002-2016, 2002, p. 126.

- Financial and procurement management (approving projects financed with the Woreda development budget);
- Monitoring and evaluation (to ensure that schemes financed by others are properly appraised and implemented to the required standards), and;
- Contracting and supervising Local Service Providers at the Woreda and community levels.

Core Mandates of Regional Executive Organs Responsible for Water and Related Sectors[131)]

Levels	Institutions[132)]	Mandates and Responsibilities
Regions	Regional Executives	- Regional executives, through their water and health bureaus, are responsible for program planning, overall coordination and providing support to Woredas
	Regional Water Bureaus	- Regional water bureaus are responsible for planning and designing water schemes and providing technical assistance to Woredas as well as non-technical areas such as contract management
	Regional Health Bureaus	- Regional health bureaus exercise mandates in sanitation and other health related issues in the water sector
Woredas	Woreda Water Resource Development Office	- Development decision-making and implementation has been devolved to the Woreda level including on water issues - Woreda Water Resource Development Offices are responsible for planning and managing their own

131) Ministry of Water and Energy, Legal Aspects for Institutionalizing Regular Monitoring of the Whole Water Sector, Final Report, July 2009, p. 64.

		rural water supply and sanitation program in collaboration with Woreda Health Offices
Water Users	Water User Committees and Water Boards	- Water user committees and water boards are responsible for the management of existing services
	Associations of Water Users	- Details of the organization of water users' association are to be determined pursuant to regulations to be issued for the implementation of Proclamation No. 197/2000

Water Supply and Sanitation

"The management and delivery of water and sanitation services is the major responsibility of regional and local institutions, with most functions concentrated at the Woreda or District level. Normally, regional bureaus take roles limited to policy design and overall supervision while zonal offices exercise capacity building related functions. On the other hand, the Woreda Water Desk (WWD) is generally responsible for planning and managing its own programs; financial and procurement management; monitoring and evaluation; and for contracting and supervising Local Service Providers at the Woreda and community levels. In a typical case, the WWD is responsible for the coordination promotion, planning and implementation of water supply activities within the Woreda; feasibility studies and appraisals of simple projects; approval of projects financed from the Woreda development budget; and ensuring proper appraisal and standard compliant implementation of schemes financed from other sources. In most cases,

132) One utilizes generic names since regional and local government institutions are established through regional laws, which vary among regions in their approaches to structure and mandates. For instance, the Somali and Harari regional states have organized water resources, mines and energy related functions under one Bureau while separate water resources development bureaus have been established in the Oromia, Amhara, Afar, Somali and SNNP regions.

WWDs also take a role in initiating, facilitating and providing motivation for community management of rural water services, the application of cost recovery principles, and the monitoring and evaluation. The planning and management of town water supply and sewerage services are the responsibility of Town Water Boards who are expected to contract out operation and maintenance services to Town Water Utility Operators under performance or service contracts"[133)]

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③ River Basin Management

The aforementioned Proclamation No. 534/2007 provides a framework (See above) for river basin management. According to the article 3, "River Basins High Councils and Authorities shall be established by Regulations to be issued by the Council of Ministers". Two basins have been yet established. The first one is the Awash Basin Water Resources Administration Agency established by a Proclamation in 1998[134)]. The second one is the Abbay Basin High Council and Authority established through a Regulation[135)] pursuant to article 21 of River Basin Councils and Authorities Proclamation No. 534/2007. The article 6 provides the Authority with following powers and duties:

"1. Initiate and submit to the Basin High Council policy measures needed to create a conducive environment for the implementation of an integrated water resource management process within the basin; and follow up the implementation of the policy upon approval;

133) Ministry of Water and Energy, Legal Aspects for Institutionalizing Regular Monitoring of the Whole Water Sector, Final Report, July 2009, p. 66.

134) Proclamation No. 129/1998 *Establishment of the Awash Basin Water Resources Administration Agency* - November 10, 1998.

135) Reg No. 151/2008 *Abbay Basin High Council and Authority Establishment* - May 12, 2008.

2. Undertake activities necessary for, and facilitate, the implementation of integrated water resources management in the basin;
3. Ensure that projects, activities and interventions related to water in the basin, in their content, schedule, impacts and management are in line with the integrated water resources management process;
4. Prepare, and submit to the Basin High Council, the basin's plan and monitor its implementation upon approval;
5. Without prejudice to the power given to Regional States by law, issue permits applicable to the basin's water use and water works in accordance1 with Article 15 of the River Basin Councils and Authorities Proclamation No. 534/2007 and ensure that the terms of the permits are complied with;
6. Collect, compile, analyze and disseminate information for proper planning, administration and steering of water resources in the basin;
7. Develop and use a river basin model in order to guide and support its basin water resources strategic planning and water administration functions;
8. Give advice and technical support to the Basin High Council and the Ministry of Water Resources on dispute resolution in relation to the allocation and use of water resources of the basin;
9. Set up a forum for effective networking among stakeholders;
10. Collect water charges from users;
11. On the basis of instructions of the Basin High Council, prepare and provide necessary information for the concerned body in charge of negotiations with other countries concerning trans-boundary river basins;

12. Undertake studies, surveys and researches that are deemed necessary to carry out its functions;
13. Own property, enter into contracts, sue and be sued in its own name;
14. Carry out other functions necessary for the implementation of its objectives".

Major River Basins, Catchments Areas and Annual Discharges[136)]

Number	Basins	Catchments Area		Annual Discharge	
Km^2	%	Billion m^3	%	Billion m^3	%
1	Abbay	199,812	17.56	54.4	43.05
2	Awash	112,700	9.9	4.9	3.76
3	Baro-Akobo	74,102	6.51	23.23	19.31
4	Genele-Dawa	171,050	15.03	6.1	4.81
5	Tekeze	90,000	7.9	8.2	6.24
6	Wabi-Shebele	200,214	17.59	3.16	2.59
7	Omo-Ghibe	78,200	6.87	16.6	14.7
8	Mereb	5,900	0.52	0.72	0.21
9	Rift valley Lakes	52,740	4.63	5.64	4.62
10	Danakil	74,002	6.5	0.86	0.7
11	Ogaden	77,100	6.77	0.0	0.0
12	Aisha	2,200	0.19	0.0	0.0
	Total	1,138,020	100	123.81	100

136) http://www.mowr.gov.et

3) Ethiopian Issues and Recommendations

By studying the political and juridical framework of water in Ethiopia, one has defined strengths and weaknesses of the system. According to the Ministry of infrastructure, "The WSS sector is undergoing significant institutional changes including the establishment of a dedicated sector Authority and a new financing mechanism, the reorganization of the Utility in charge of urban WSS service provision, the systematic introduction of delegated management (PPP), the emerging role of RURA in regulation, and last but not least the transfer of implementation responsibilities to the districts. In addition to ensuring the smooth cooperation of government entities the sector is also developing mechanisms to consult and involve nongovernment stakeholders, and to ensure sector-specific monitoring and knowledge management"[137]. However, even if "Ethiopia posts big gains in access to drinking water"[138], particularly thanks to international aid[139], the situation cannot be considered as sufficient in matter of water, as shown by the following figures.

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137) Ministry of Infrastructure, National Policy and Strategy for Water Supply and Sanitation Services, February 2010, p. 26.

138) John Vidal, "Ethiopia posts big gains in access to drinking water", The Guardian, Poverty Matters Blog, http://www.guardian.co.uk/global-development/poverty-matters/2011/mar/04/ clean-drinking-water-ethiopia-access

139) "Ethiopia is also one of the world's largest recipients of foreign development aid. It receives approximately US$3 billion in funds annually - more than a third of the country's annual budget - from external donors, including the World Bank, the United States, the European Commission, the United Kingdom, Germany, the Netherlands, Canada, and Japan. Indeed, Ethiopia is today the world's second largest recipient of total external assistance, after Indonesia and excluding wartime Iraq and Afghanistan". Human Rights Watch, *Development without Freedom, How Aid Underwrites Repression in Ethiopia*, October 2010, http://www.hrw.org/sites/default/files/reports/ethiopia1010webwcover.pdf, p. 4

Use of sanitation facilities and of drinking-water sources[140)]

Year	Population (thousand)	Percentage urban population	**Use of sanitation facilities** (percentage of population)												Number of people who gained access to improved sanitation 1990-2008 (thousand)
			Urban				Rural				Total				
			Improved	Unimproved			Improved	Unimproved			Improved	Unimproved			
				Shared facilities	Unimproved defecation	Open		Shared facilities	Unimproved defecation	Open		Shared facilities	Unimproved defecation	Open	
1990	48.292	13	21	25	7	47	1	0	0	99	4	3	1	92	
2000	65.515	15	26	30	18	26	5	1	8	86	8	5	10	77	7.754
2008	80.713	17	29	34	29	8	8	2	19	71	**12**	**7**	**21**	**60**	

Use of drinking-water sources (percentage of population)												Number of people who gained access to improved sources of drinking-water sources 1990-2008 (thousand)
Urban				Rural				Total				
Improved			Unimproved	Improved			Unimproved	Improved			Unimproved	
Total improved	Piped on Premises	Other improved		Total improved	Piped on Premises	Other improved		Total improved	Piped on Premises	Other improved		
77	10	67	23	8	0	8	92	17	1	16	83	
88	26	62	12	18	0	18	82	28	4	24	72	22.461
98	40	58	2	26	0	26	74	**38**	**7**	**31**	**62**	

Those figures illustrate the difference between urban and rural areas, and the latter one "is the most disadvantaged in the provision of basic social service in most of the developing countries"[141)], but the "tendency to channel more funds to the urban than to the rural sector"[142)] must be underlined. Anyway, as a matter of fact, "most of the Ehiopians do not have access to safe water and sanitation"[143)].

140) Source: WHO and UNICEF, Progress on Sanitation and Drinking-water, 2010 update, p. 42.

141) Teshome A., Performance and Future Prospect of Water Supply and Sanitation in Ethiopia, Part I, 2008, http://www.aigaforum.com/articles/TeshomeAdu.P.I.pdf, p. 6.

142) Jonathan Mckee, Ethiopia. *Country Environmental Profile*, European Commission, 2007, p. 78.

143) UNESCO, The 2nd UN World Water Development Report: Water, a Shared Responsibility, 2006, p. 479.

Moreover, Addis Ababa is the sixth dirtiest city in the world with a 37.9 score, according to Mercer Health and Sanitation Index. The capital of Ethiopia "faces one of the worst sanitation problems on both the continent of Africa as well as in the world. The lack of adequate sanitation programs results in infant mortality, low life expectancy and the transmission of water-borne diseases"[144].

The assessment of the Ethiopian water system has revealed many issues that can be gathered under climatic (1), policy (2), institutional (3) and juridical (4) issues. Foremost, one has to emphasize that policy and institutional issues mentioned below may likely find solution through a better juridical framework, however policy plays a fundamental role by initiating changes[145]. Indeed, those institutional issues are consequences of juridical framework imperfections. However, one has decided to separate these questions in order to clarify the presentation of water related issues.

(1) Climatic Issues

First of all, Ethiopia is subject to climatic issues. Indeed, this country is "hostage to hydrology"[146]. And the World Bank has stated "that unmitigated hydrological variability currently costs the economy more than one-third of its growth potential. The very structure of the Ethiopian

144) http://www.forbes.com/2008/02/24/pollution-baku-oil-biz-logistics-cx_tl_0226dirtycities_slide_21.html

145) "Policy plays a vital role in the formulation and implementation of any regulatory framework. Based on the national policy, laws have been enacted". Mulugeta Getu, "Ethiopian Floriculture and its Impact on the Environment: Regulation, Supervision and Compliance", Mizan Law Review, Vol. 3, No. 2, September 2009, p. 252.

146) David Grey and Claudia W. Sadoff, "Sink or Swim? Water security for growth and development", *Water Policy*, No. 9 (2007), p. 557.

economy with its heavy reliance on rainfed subsistence agriculture makes it particularly vulnerable to hydrological variability. Its current extremely low levels of hydraulic infrastructure and limited water resources management capacity undermine attempts to manage variability. These circumstances leave Ethiopia's economic performance virtually hostage to its hydrolog y"[147]. According to the same report, hydrological variability increases poverty rates by about 25% and costs the Ethiopian economy about 40% of its growth potential[148]. Therefore, it is very important to mitigate hydrology variability effects such as droughts and floods: there is a need for "managing uncertainty"[149]. That can be done through several means: to strengthen water resources management capacity and institutions (see below, institutional issues); to explore, to protect, and to exploit groundwater resources (see below, juridical issues); to invest in irrigation and drainage; to enhance disaster management of flood and drought[150] (see below, juridical issues); to develop hydropower energy which could be an alternative to biomass fuel (protecting forestry[151] and subsequently preventing soil erosio

147) World Bank, *Ethiopia: Managing Water Resources to Maximize Sustainable Growth*, A World Bank Water Resources Assistance Strategy for Ethiopia, 2006, p. xi.

148) World Bank, *Ethiopia: Managing Water Resources to Maximize Sustainable Growth*, A World Bank Water Resources Assistance Strategy for Ethiopia, 2006, p. xxiii.

149) UNDP, Human Development Report 2006, *Beyond scarcity: Power, poverty and the global water crisis*, p. 15.

150) "To help reduce community's vulnerability to drought hazard in mainly drought prone areas where intermittent or inadequate rainfall has for many years been common, government, NGOs and donors have relentlessly been working towards improving water resource development and utilization, natural resource protection and agricultural technology" (Mulugeta Abebe, "Emerging trends in disaster management and the Ethiopian experience: genesis, reform and transformation", *Journal of Business and Administrative Studies*, Vol. 1 No. 2, Sept. 2009, p. 79). However, The National Disaster Prevention and Preparedness Committee "is invariably unresponsive to other hazards other than drought" such as flood for instance. *Ibid*., p. 83.

151) "For example, land use planning, agro-forestry, water-harvesting and food security

n[152] and then flood) and might help to overcome droughts and floods: dams can provide water storage and flood control mean.

(2) Policy Issues

The "water sector is characterized by complex institutional arrangements, and a variety of channels and sources of funds are used to finance the sector"[153]. And the MoWE and the UN Department of Economic and Social Affairs have stated that "The multiplicity of existing frameworks poses serious challenges for integrated management"[154]. Indeed, only the more recent policy is supposed to be in effect and at the same time is supposed to repeal the former one. In case of water, three different Ministries have drawn up policies: Ministry of Water and Energy, Ministry of Finance and Economic Development, and Ministry of Infrastructure. This situation induces, *ipso facto*, a confused understanding of the water framework. Yet, policy framework has to be clear because juridical framework is based on it. At the same time, policy has to be implemented because "policies do not have binding effects in giving people rights and obliging States"[155].

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programs in a drought prone country like Ethiopia could forestall potential famine". Mulugeta Abebe, "Emerging trends in disaster management and the Ethiopian experience: genesis, reform and transformation", *Journal of Business and Administrative Studies,* Vol. 1 No. 2, Sept. 2009, p. 66.

152) "Deforestation and soil erosion are very significant environmental problems". The Nile basin initiative: http://wrpmp.nilebasin.org

153) Teshome A., Performance and Future Prospect of Water Supply and Sanitation in Ethiopia, 2008, Part II, http://www.aigaforum.com/articles/TeshomeAdu.P.II.pdf, p. 3.

154) Legal Aspects for Institutionalizing Regular Monitoring of the Whole Water Sector, Final Report, July 2009, p. 78.

155) Hiwote Mekonnen, *Gendered Implication of Access to Clean Water for the Girl Child: A Case Study in Two Rural Villages in Ethiopia*, Southern and Eastern African Centre for Women's Law, 2004, p. 25.

In addition, "poor coordination and experience sharing"[156] is another challenge that Ethiopia faces. Indeed, one can learn a lot from success and failures and it is important to share those lessons. So the Government should make easier experience sharing by playing a catalyst role in matter of information within and between Regions.

Moreover, there is a lack of appropriate technology[157]. The level of development of Ethiopia must be taken in account. Therefore, through its policy, the Government should favours:

- Local manufactured technologies (to avoid the need of external assistance, to enhance local economy, to develop local skills);
- Affordable technologies;
- Really needed technologies.

However, policy problems not only arise at the Federal level and another issue regards the Regional implementation of the Federal policy. Two different situations may occur: On the one side, the Federal Government does not provide the Regions with enough details; On the other side, Regions do not enforce the Federal policy. So the Government should enact more detailed regulations and should also ensure of the efficient implementation at the local level.

Furthermore, one would like to reconsider the policy approach in matter of access to improved water supply and to improved sanitation - the latter one has been neglected since the beginning[158] and that is a major policy

156) Teshome A., Performance and Future Prospect of Water Supply and Sanitation in Ethiopia, 2008, Part II, http://www.aigaforum.com/articles/TeshomeAdu.P.II.pdf, p. 8.

157) Teshome A., Performance and Future Prospect of Water Supply and Sanitation in Ethiopia, 2008, Part II, http://www.aigaforum.com/articles/TeshomeAdu.P.II.pdf, p. 8.

158) However, sanitation has "generally been under supported". Jonathan Mckee,

issue. Indeed, the key figures shown above demonstrate that aforementioned access remains weak even if it has been improved. Until now, access (to improved water supply and sanitation) was developed by public authorities (Government, local governments). One thinks that approach could be effectively completed through social safety nets. Indeed, besides classical public works, Government, local governments, foreign donors, NGO, etc. could establish conditional cash transfer[159] to housing owners in following hypotheses[160]:

- To link housings to sewage;
- To link housings to piped water;
- To favour building of housing tank water;
- To favour building of flush toilets in housings;
- To institute tariff structure with social safety net;
- To favour building of wells;
- Etc.

Conditional cash transfers are very important at least for two reasons. On the one hand, housing owners could be tempted to use this money for another purpose which could appear to be more urgent than water and sanitation. So conditional cash transfer allows a (comprehensive) monitoring of the process. On the other hand, it could be a guarantee particularly for foreign donors and NGO which can be sure that money is not misused by public authorities[161].

Ethiopia. Country Environmental Profile, European Commission, 2007, p 78.

159) "Conditional Cash Transfer programs provide cash payments to poor households that meet certain behavioral requirements". http://web.worldbank.org

160) Romaric Gueguen, *Development of Global Social Safety Nets through Water Management and Sanitary Facilities*, The 16th IAP Annual Conference & General Meeting, Korea Legislation Research Institute, Seoul, June 28th, 2010.

Finally, one has to highlight the possibility of shifting from a repressive policy to an incentive policy[162]. Indeed, the Ethiopian Government has introduced incentives for investment in irrigation. For instance, investors engaged in irrigation and related water works construction development are entitled to exemption from water use charges until the investment cost is recovered. The Proclamations No. 285/2002, No. 299/2002, and No. 300/2002 (See above) provide the EPA or relevant public body with power to establish incentives in different matter. This type of policy should be enlarged to other fields and above all really implemented.

(3) Institutional Issues

One of the main challenges facing Ethiopia remains the establishment of a complete River Basin Organisation because this is the only way to establish an integrated water resources management. Indeed, "Watershed management is crucial for water resources, livelihoods, and the environment"[163]. A framework Act has still been enacted but, "due to the fact that there is as yet no significant water resources development projects/ activities in most of the river basins of the country at present"[164] only

161) Human Rights Watch, *Development without Freedom, How Aid Underwrites Repression in Ethiopia*, October 2010, http://www.hrw.org/sites/default/files/reports/ethiopia1010webwcover.pdf, 105 p.

162) "Overall there is tendency to focus on command-and-control type policies, more so in the environmental policy documents, than carefully devised incentive mechanisms for improved environmental management". Fitsum Hagos, Amare Haileslassie and Seleshi Bekele Awulachew, "Assessment of Local Land and Water Institutions in the Blue Nile and their Impact on Environmental Management", *Improved Water and Land Management in the Ethiopian Highlands: Its Impact on Downstream Stakeholders Dependent on the Blue Nile, International Water Management Institute*, Workshop February 5-6, 2009, Addis Ababa, Ethiopia, p. 227.

163) World Bank, *Ethiopia: Managing Water Resources to Maximize Sustainable Growth*, A World Bank Water Resources Assistance Strategy for Ethiopia, 2006, p. 88.

two basins have been yet considered[165] - among twelve major basins (See chart above) - even though the "Ministry of Water and Energy Water Sector Development Programme 2002-2016" proposed the development of seven basin authorities[166]. However, RBOs should be implemented as soon as possible considering that an improved watershed management can slow water erosion; moderate the hydrological cycle; regulate runoff and groundwater; improve infiltration, water retention, and base flows; reduce potential flood damage; etc.

Another institutional issue regards the links between the MoWE, Regional States, River Basin Organisations (RBOs), and local institutions: repartition of competences is not clear enough and that leads to "implementation inertia and even failure"[167]. Indeed, the MoWE originally had powers and duties in matter of water but the FDRE has implemented a strong decentralization because "the role of government is changing from service provision to facilitating and providing an enabling environment"[168]. Nevertheless, this decentralisation has not been clearly addressed[169] and

164) Imeru Tamrat, "Policy and Legal Framework for Water Resources Management in Ethiopia", *International Conference on Water Management in Federal and Federal-Type Countries*, July 9-11, 2008, Zaragoza.

165) Ministry of Water and Energy, Legal Aspects for Institutionalizing Regular Monitoring of the Whole Water Sector, Final Report, July 2009, p. 44.

166) Ministry of Water and Energy, Water Sector Development Programme 2002-2016, 2002, p. 103.

167) Fitsum Hagos, Amare Haileslassie and Seleshi Bekele Awulachew, "Assessment of Local Land and Water Institutions in the Blue Nile and their Impact on Environmental Management", *Improved Water and Land Management in the Ethiopian Highlands: Its Impact on Downstream Stakeholders Dependent on the Blue Nile, International Water Management Institute*, Workshop February 5-6, 2009, Addis Ababa, Ethiopia, p. 225.

168) Teshome A., Performance and Future Prospect of Water Supply and Sanitation in Ethiopia, 2008, Part II, http://www.aigaforum.com/articles/TeshomeAdu.P.II.pdf, p. 4.

169) "In Ethiopia decentralization has transferred a high level of authority to district- and villagelevel bodies. But financial and human capacities remain weak, and in some areas

distribution of competence between Federal, Regional levels and other public authorities is not satisfying.

Moreover, there is an asymmetry between Regions and river basin. Indeed, powers and duties in matter of water have been delegated to RBOs, but only in two basins (Abbay basin and Awash basin). However, river basin areas do not match with Regional boundaries and this situation is complicated on two different angles:

The RBO angle:

- The Awash basin is located on the territory of the following Regions: Amhara, Beneshangul Gumuz, and Oromiya;
- The Abbay basin is located on the territory of the following Regions: Afar, Amhara, Dire Dawa, Oromya, and Addis Ababa.

Where it has been established, the BHC is in charge of managing water use disputes between Regional States. So the Abbay Basin High Council is able to manage conflicts between authorities of Amhara, Beneshangul Gumuz, and Oromiya Regions while the Awash Basin High Council may do the same between authorities of Afar, Amhara, Dire Dawa, Oromya, and Addis Ababa Regions. However, in other river basins there is nothing regarding conflicts between States.

The Region angle

For instance, in the Oromya Region there are six different river basins: Abbay, Awash, Baro Akobo, Genale Dawa, Omo Gibe, and Wabi Shebele.

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the legal status of village water supply and sanitation committees is not recognized". UNDP, Human Development Report 2006, Beyond scarcity: Power, poverty and the global water crisis, p. 102.

So, in this State, the Abbay Authority and the Awash Basin Authority are in charge of water in the corresponding river basins. On the other hand, the Regional bureau of the State of Oromiya is still responsible for water in the other river basins.

In addition, there is nothing regarding conflicts between sectoral Ministries or bureaus at the Federal and Regional levels or between basin authorities and Regional administrations where likely tensions may arise[170]. As a matter of fact, one has to emphasize the "inadequate legislation to govern conflicts between different sectors and users of the common resource"[171].

(4) Juridical Issues

There is a lack regarding control of application and implementation of the juridical framework (This is regrettable because the juridical framework of water is fairly good in the outlines).

On the one hand, there is no efficient control regarding the application of proclamations and regulations. Indeed, one of the duties of a parliament /government consists in ensuring of correct application of laws/ regulations, which means:

- To control enforcement of laws/regulations: parliament/government should ensure that laws/regulations are efficiently enforced by public authorities;
- To control the quality of laws/regulations: laws/regulations cannot be perfect but are most certainly perfectible. Consequently, when a law/ regulation has been enacted, the "job" is not finished yet. Indeed,

170) Imeru Tamrat, "Policy and Legal Framework for Water Resources Management in Ethiopia", *International Conference on Water Management in Federal and Federal-Type Countries*, July 9-11, 2008, Zaragoza.

171) The Nile basin initiative: http://wrpmp.nilebasin.org

parliament/government has the duty to monitor the law/regulation in order to discover weaknesses and to fix them.

Yet, in Ethiopia many weaknesses or lacks have never been fixed by any repealing proclamation or regulation.

On the other hand, there is a lack regarding the implementation of the proclamations and regulations at both Federal and local[172] levels. Indeed, in some case to be fully efficient a Proclamation needs a Regulation. Yet, for instance, five years have elapsed between the Proclamation No. 197/2000 relative to *Ethiopian Water Resources Management* and its implementing eponymous Regulation No. 115/2005[173]. In some other case, a Proclamation /Regulation needs an implementing Directive which has not been yet enacted[174]. In other case, a Proclamation/Regulation needs to be implemented by a Region or other public authority.

Furthermore, there are also failings from the administration regarding to guidelines and standards - even if proclamations and regulations stated above make provision for such standards and guidelines[175] - particularly in matter

172) "The next step in Ethiopia's WSS sector development must be focused on local WS service provider capacity building so that national policies and strategies are effectively implemented and sustainable service expands to semi-urban and rural population". USAID, Ethiopia, Water and Sanitation profile, p. 1.

173) The Proclamation 197/2000 has been criticized because the rights-based approach is almost ignored (Hiwote Mekonnen, *Gendered Implication of Access to Clean Water for the Girl Child: A Case Study in Two Rural Villages in Ethiopia*, Southern and Eastern African Centre for Women's Law, 2004, p. 25). However, the Regulation 115/2005 does not change anything to that.

174) For instance, the article 13 of the Proclamation No. 197/2000 provides that "Any application for a permit to release or discharge any waste, which endangers human life, animals, plants and any living things, into water resources shall not be accepted. However, the Supervising body may accept the application requiring the applicant to release or discharge after having treated the pollutant. The details shall be determined by directives to be issued by the Ministry". Nevertheless, such directives do not exist yet.

of quality[176] which need to be scrupulously monitored regarding the level of pollution[177]. Although the MoWE has recognised the need for such guidelines and standards, only one guideline has entered into effect: Ethiopian Guidelines, Specification for Drinking Water Quality, 2002. And the MoWE also knows that there is no effluent quality standard[178] and

175) "But there seems to be a gap regarding when and by whom these standards are to be formulated". Mulugeta Getu, "Ethiopian Floriculture and its Impact on the Environment: Regulation, Supervision and Compliance", *Mizan Law Review*, Vol. 3, No. 2, September 2009, p. 253.

176) Teshome A., Performance and Future Prospect of Water Supply and Sanitation in Ethiopia, 2008, Part II, http://www.aigaforum.com/articles/TeshomeAdu.P.II.pdf, p. 4.

177) "Overall compliance with WHO guideline values and national standards was 68% for the 1570 water supply samples tested for thermotolerant coliforms, fluoride, arsenic and nitrate (Table 4.1). Overall compliance for fluoride, arsenic and nitrate was generally high (94-100%), but was significantly lower for thermotolerant coliforms and faecal streptococci (72% and 66%, respectively). Of the four water supply technologies assessed (Table below), utility piped supplies had the highest overall level of compliance (80%) and protected springs the lowest (44%)".

Parameter	Overall for all Ethiopia (%)	Utility piped supplies (%)	Boreholes (%)	Protected springs (%)	Protected dug wells (%)
Thermotolerant coliforms (TTC)	72	88	68	43	55
Faecal streptococci	66	68	68	77	44
Arsenic	100	100	100	100	100
Fluoride	94	90	99	100	99
Nitrate	99	98	100	100	100
Overall compliance for TTC, As, F and NO3	68	80	66	44	55
Iron	94	95	86	98	94
Turbidity	87	94	80	78	80
Conductivity	95	94	94	99	96

UNICEF-WHO, *Rapid Assessment of Drinking Water Quality in the Federal Democratic Republic of Ethiopia*, Country Report, Prepared by Dagnew Tadesse, Assefa Desta, Aberra Geyid, Woldemariam Girma, Solomon Fisseha, Oliver Schmoll, 2010, p. 39.

178) "Except the drinking water quality guidelines, there are no prepared standards for the purpose of controlling effluent discharge, irrigation and industrial water qualities. Moreover there is no well-established water pollution monitoring system". http://www.mowr.gov.et/index.php?pagenum=2.3

at the same time the Environmental Protection Authority has not yet developed standards for different kinds of effluents[179]. This lack also includes the field of guidelines for local water supply and sanitation technology development. Of course, other guidelines and standards related to water have been enacted by the EPA[180] and the Ministry of Agricultur e[181] but in very specific fields. Yet, those guidelines and standards are very important because they do what laws and regulations cannot do: to go into details. Indeed, they provide assistance to the competent authorities in order to fulfill the obligations under proclamations/regulations, including guidance on deciding what actions to take in what situation.

The river basin organisation provides a good example. The establishment of the Abbay Basin (Regulation No. 151/2008) does not add much to what is provided in the Proclamation No. 534/2007 relative to River Basin Councils and Authorities, except for providing the establishment of the Abbay Basin High Council and Authority and powers and responsibilities of the aforementioned administrations are same as in the Proclamation: it is only a repetition. Moreover, the regulation does not fill gaps not addressed in the Proclamation[182]: lack of coordination between various stakeholders;

179) Fitsum Hagos, Amare Haileslassie and Seleshi Bekele Awulachew, "Assessment of Local Land and Water Institutions in the Blue Nile and their Impact on Environmental Management", *Improved Water and Land Management in the Ethiopian Highlands: Its Impact on Downstream Stakeholders Dependent on the Blue Nile, International Water Management Institute*, Workshop February 5-6, 2009, Addis Ababa, Ethiopia, p. 221.

180) Environmental Impact Assessment Procedural Guideline Series 1, 2003; Guidelines for Dams and Reservoirs, 2004; Integrated Environmental and Social Impact Assessment Guidelines on Hydropower Production, Transportation and Distribution, 2004; Environmental impact assessment guidelines on irrigation, 2004; Integrated Environmental and Social Impact Assessment Guidelines Water Supply, 2004; Industrial Pollution Prevention And Control Regulation, Directive and Standard, 2009 (Draft).

181) Community-based Participatory Watershed Development: A Guideline, Part 1, 2005.

182) Imeru Tamrat, Policy and Legal Framework for Water Resources Management in

lack of reflection regarding repartition of competences between Regions and RBOs[183]; financial resources of RNOs; issue of administration and enforcement of permit system in river basin; etc.

In addition, and as a consequence of institutional issues emphasized below, the river basin organisation also exemplifies another juridical issue: the fragmentation[184] of the water framework. Indeed, according to the geographical situation, a river basin is not ruled by the same juridical principles because regions have mandates to determine the use and administration of water resources that do not link regional states.

The juridical framework also suffers a lack of integrated approach and it seems that politicians and the legislature have not thought globally. Thus, a main issue should have been questioned before making proclamations and regulations: How best should the federal government delegate its powers to Regions or other bodies (RBOs for instance)? That means to think about repartition of competences between Federal, Regional and RBOs levels. That also means to think about the better level of exercise for each competence. Without this preliminary work, main laws related to water cannot be integrated.

Finally, one could say that the water framework is fairly good in the outlines, but it remains perfectible.

Ethiopia, International Conference on Water Management in Federal and Federal-Type Countries, July 9-11, 2008, Zaragoza.

183) As a matter of fact, there is no law/regulation that addresses the question of competences of RBOs.

184) Imeru Tamrat, Policy and Legal Framework for Water Resources Management in Ethiopia, International Conference on Water Management in Federal and Federal-Type Countries, July 9-11, 2008, Zaragoza.

First of all, water is more and more protected but several aspects of water are not taken in consideration and are neglected in the juridical framework. For instance, urban and rural waters do not suffer from the same pollution, there is no care for groundwater, bathing water are not protected, etc.

Secondly, one would like to emphasize that groundwater[185] is taken in consideration on a geological and human point of view[186], but is almost ignored in the juridical framework. The Government has started the development of the Ethiopian National Groundwater Database in 2003[187], but there is no specific proclamation or regulation regarding this matter. Indeed, groundwater is mentioned few times in some proclamation[188] and regulation[189], but these mentions do not concern management and barely address protection of groundwater.

Thirdly, one would like to highlight the need in a Federal State to establish uniform standards and process of monitoring in order to facilitate an integrated management of water (The Ethiopian system looks fairly

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185) Groundwater can be very important, particularly in countries suffering frequent droughts.

186) For more information, see the website of UNECA, http://www.uneca.org/groundwater /documents.htm; See also Ministry of Water and Energy, Water Sector Development Programme 2002-2016, 2002, pp. 85-86.

187) The development of the Ethiopian National Groundwater Database (ENGDA) was started in 2003 by USGS experts in collaboration with the Ministry of Water Resources (Hydrology Department) under the project ETH/8/007 which is supported by the International Atomic Energy Agency (IAEA) and finalized in January 2005. http://www.mowr.gov.et/index.php?pagenum=2.2

188) Procl. No. 534/2007 establishing *River Basin Councils and Authorities*. However, this proclamation only includes groundwater in the definitions of “basins” and “water resources”.

189) Reg. No. 115/2005 regarding *Ethiopian Water Resources Management*. However, this regulation only provides for application for wastewater discharge permit in groundwater and for groundwater quality through test of new wells.

complicated[190]). Such a system deserves to be established as it can allow a monitoring of both quantity and quality of water.

Fourthly, one would like to underline the need for a flood framewor k[191]. The European Union provides a good example of such legislation with the Directive 2007/60/EC of the European Parliament and of the Council of 23 October 2007 on the assessment and management of flood risks. Flood risk must be taken in account because it can causes human losses, but "Such floods can also have severe consequences on the environment - rom the risk of contamination when wastewater treatment plants are affected, to the risk presented by the inundation of installations holding large quantities of toxic chemicals, to the risk of the destruction of bio-

190) "In most Regional States rural water supply services are provided by Woreda Water Resources Development Offices reporting to Regional Water Bureaus, which in turn are accountable to the Regional Executive Committee as well as reporting directly to a department in MoWR. Urban water supply and sanitation services, on the other hand, are mainly provided by municipalities or agencies accountable to Regional Water Bureaus with similar accountability and reporting duties. However, Zonal towns in some Regional States are accountable to the Zone level structure of the Water Bureaus as is the case in the Amhara Regional State (while Zones of the SNNPRS have mandates more comparable to regional powers in other Regional States). Finally, municipal service providers in the two federal city administrations report to MoFAs as well as the MoWUD. Thus, data on the management of water and sanitation services may flow through various channels depending on the specific Regional State, urban-rural profile, location of the urban center, or federal city status. While Zone level structures are essential in the larger regions and inter-regional variations are likely to be unavoidable, the multiplicity of arrangements and lack of uniformity within and across regions create challenges for identification of key actors for participation purposes at the Federal level. The situation in relation to the federal city administrations may particularly be problematic for MoWR since the supervising authorities are Ministries directly accountable to the Council of Ministers and reporting to MoFED". Legal Aspects for Institutionalizing Regular Monitoring of the Whole Water Sector, Final Report, July 2009, p. 78.

191) "There is no flood forecasting and warning mechanism in Ethiopia". Kefyalew Achamyeleh, *Ethiopia: Integrated Flood Management*, Case Study, WMO-GWP, 2003, p. 7.

diversity in wetland areas"[192]. Moreover, in developing countries human losses are still to be feared after floods because of diseases caused by water unsuitable for drinking, stagnant water, etc. This reflection leads to question about the role of The National Disaster Prevention and Preparedness Committee. Indeed, one has criticized this Committee because he was focused only on droughts disasters[193], and that confirms the need for a specific juridical framework for floods.

The water sector framework has been well established in Ethiopia even if some inconsistencies and lacks are still remaining. Nonetheless, the real problem regards implementation of policy and legislative framework, maybe because policies and strategies are "too ambitious to allow immediate implementation"[194]. Indeed, Ethiopia lacks of financial[195] - even if "In

192) Regional Environmental Center for Central and Eastern Europe, *Handbook for Implementation of EU Environmental Legislation*, December 2008, p. 737.

193) The National Disaster Prevention and Preparedness Committee "is invariably unresponsive to other hazards other than drought" such as flood for instance. Mulugeta Abebe, "Emerging trends in disaster management and the Ethiopian experience: genesis, reform and transformation", *Journal of Business and Administrative Studies*, Vol. 1 No. 2, Sept. 2009, p. 83.

194) Jonathan Mckee, *Ethiopia. Country Environmental Profile*, European Commission, 2007, p. 71.

195) Ministry of Water and Energy, Water Sector Development Programme 2002-2016, 2002, p. 100. See also: "The Water Sector Development Programme (WSDP) prepared for 2002-2016 aims to improve the existing situation; however, the investment required for the implementation of this programme cannot be financed by national funds alone. Attracting international donors will therefore likely remain a priority in order to alleviate the heavy burden of disease, poverty and hunger that the country currently faces" (UNESCO, The 2nd UN World Water Development Report: Water, a Shared Responsibility, 2006, p. 479). See also: "Poor cost recovery and lack of fund is the other constraint that may hamper the expected smooth performance of the water and supply sanitation provision" (Teshome A., Performance and Future Prospect of Water Supply and Sanitation in Ethiopia, 2008, Part II, http://www.aigaforum.com/articles/TeshomeAdu.P.II.pdf, p. 8).

Ethiopia the military budget is 10 times the water and sanitation budge t"[196] - and human means[197] - to enhance capacity building, to make people aware and to change their behaviour.

196) UNDP, Human Development Report 2006, *Beyond scarcity: Power, poverty and the global water crisis*, pp. 8-9.

197) "Shortage of skilled manpower is the critical issue facing all institutions". Ministry of Water and Energy, Water Sector Development Programme 2002-2016, 2002, p. 100. See also: "Other important issues relevant to water resources development include lack of skilled manpower". The Nile basin initiative: http://wrpmp.nilebasin.org

Chapter 4- Water in Rwanda

Fact sheet[198]

Capital: Kigali (909.000 , 2009)

Population: 11.370.425 (July 2011 est.)

198 Source: The World Factbook, https://www.cia.gov/library/publications/the-world-factbook/index.html

Density: 431.7 persons per sq km

Urbanization:

- Urban population: 19% of total population (2010)
- Rate of urbanization: 4.4% annual rate of change (2010-2015 est.)

Area:

- Total: 26.338 sq km
- Land: 24.668 sq km
- Water: 1.670 sq km
- Irrigated land: 90 sq km (2003)

Total renewable water resources: 5.2 cu km (2003)

Freshwater withdrawal:

- Total: 0.15 cu km/yr (domestic: 24%; industrial: 8%; agricultural: 68%)
- Per capita: 17 cu m/yr (2000)

GDP (official exchange rate): 5.693 billion $ (2010 est.)

Population below poverty line: 61% (2001 est.)

1) An Overview of the Juridical System Through Water Competence

The current Rwandan system is grounded on the Constitution of June 4th, 2003, adopted by citizens in the referendum of May 26, 2003, after a transition period from 1994 to 2003. Rwanda has recently suffered from a particular and violent history so the Constitution is mainly devoted to protection of human rights. This preliminary work allows understanding the functioning of the regime and therefore the conception of the water framework.

(1) The Horizontal Separation of Powers: A Presidential System

The President of the Republic is the "Head of State" (Article 98). In this regards, the President promulgates "laws within fifteen days from the day on which the laws are delivered by the Cabinet" (Article 108) and signs "Presidential orders approved by the Cabinet" (Article 112). The President shall sign those orders particularly regarding "implementation of laws when it is his or her responsibility" (Article 113(4)), competence which is likely to be connected with water. Furthermore, the President appoints the Prime minister and ministers upon proposal of the former (Article 116). According to the article 117, "the Cabinet implements national policy agreed upon by the President of the Republic and the Cabinet". The Prime minister has the responsibility to coordinate and organise the Cabinetand also to formulate the Government programme (Article 118).

The legislative power devolves upon the Parliament which is bicameral and composed by a Chamber of deputies (Articles 76-81) and a Senate (Articles 82-89). The Constitution does not address water specifically but the article 93 provides that "law is sovereign in all matters".

(2) The Vertical Separation of Powers: A Unitary State

The Constitution does not address explicitly about the vertical separation of power but Rwanda is a unitary State[199] which territory is divided in Provinces, Districts, Cities, Municipalities, Towns, Sectors and Cells. According to the article 3, their number, boundaries, organisation and

[199] http://www.rwandaembassy.org/

functioning are determined by law. Moreover, the article 167 provides that decentralized entities aforementioned have "legal status and administrative and financial autonomy". According to the same article, powers, property and other resources of decentralized entities shall be determined by law. Those constitutional provisions are basis of power and duties of local governments, including water matter.

2) Policy, Juridical, and Institutional Framework of Water

Those three elements represent the pillars of the water framework so they have to be precisely defined.

(1) The Policy Framework of Water

The policy framework of water is rich and many policies have been established by many different actors at a ministerial level. Some of those policies reveal global approaches while some other are more specifically focused on water.

The Rwanda Vision 2020, drawn up by the **Ministry of Finance and Economic Planning**, illustrates the fact that Rwanda found itself at a crossroads, "moving from the humanitarian assistance phase associated with the 1994 genocide into one of sustainable development"[200]. The overall objective was to build "a nation where pressure on natural resources mainly lands, water, biomass, biodiversity will have reasonably been decreased and the pollution process and environmental degradation reversed"[201]. One

[200] Ministry of Finance and Economic Planning, Rwanda Vision 2020, 2000, p. 3.
[201] Fabien Twagiramungu, *Environmental Profile of Rwanda*, European Commission, 2006, p. 32.

of the pillar of this policy concerns infrastructural development of water supply and water management. Firstly, water supply because only 52% of Rwandans had access to clean water in 2000. This policy decided to target an annual increase of 2.5% of this rate[202]. Even if this goal has not been achieved (in 2008 it was about 65%[203]) one can notice an improvement of access to safe drink water. Secondly, water management because of a rapid environmental degradation[204]. The same policy also decided to tackle problems of sanitation which are closely linked with water[205].

The same Ministry has also established the Economic Development and Poverty Reduction Strategy (EDPR) which "provides a medium-term framework for achieving the country's long-term development aspirations as embodied in Vision 2020 and the MDGs"[206].

Then, the **Ministry of Environment and Lands**[207] established successively four policies. The first one, named National Environment Policy, has been written in 2003. It is a general policy which "is in direct relation with

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202 Ministry of Finance and Economic Planning, Rwanda Vision 2020, 2000, p. 3.

203 WHO and UNICEF, Progress on Sanitation and Drinking-water, 2010 update, p. 48.

204 Ministry of Finance and Economic Planning, Rwanda Vision 2020, 2000, pp. 19-20.

205 "Access to drainage and sewage disposal services is 85% of the population, whilst 64% of latrines do not meet the required hygienic standards. Consumption of dirty and unsafe water is at the origin of various water-borne diseases. The unplanned and disorganized construction of towns without a suitable drainage system exacerbates sanitary problems. Sewerage and rainwater can destroy public roads or stagnate, creating ideal breeding grounds for both human and animal diseases. Since most houses are situated on the summit and on the slopes of hills, water sources are in constant danger of pollution by domestic sewerage and other human activities carried by the stream of water. The environmental impact of deficient waste management is barely taken into account by human settlements and industrial installations". Ministry of Finance and Economic Planning, Rwanda Vision 2020, 2000, p. 3.

206 Melissa Thaxton, "Integrating Population, Health, and Environment in Rwanda", Population Reference Bureau, Policy Brief, February 2009, p. 2.

207 See below for evolution of Ministry in charge of water.

other policies in the area, especially policy on agriculture, land, water and sanitation, forests, energy, industry, gender, etc."[208]. This policy "sets out overall and specific objectives as well as fundamental principles for improved management of the environment, both at the central and local level, in accordance with the country's current policy of decentralization and good governance"[209]. At the same time, this policy also initiates institutional and legal reforms.

The second policy called Sectorial Policy on Water and Sanitation is obviously more specific. Written in 2004, this policy improves the former policy in this matter (the sector-based policy project on water in sanitation, 1992, revised in 1997 and 2001) and "also integrates new aspects such as decentralization, participatory approach, privatisation and funding through programme approach"[210]. This policy is supposed to put Rwanda in the international framework drawn up by the Millenium Development Goals.

The third policy, named Five-Year Strategic Plan for the Environment and Natural Resources Sector (2009 - 2013), has been written in June December with the purpose to "ensure that sustainable use of environmental goods and services and rational utilization of natural resources secure benefits to present and future generation"[211].

The fourth policy, more specifically focused on Water Resources Management, has been established in 2011 in order to take in consideration institutional changes and growing challenges that Rwanda faces up.

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208 Fabien Twagiramungu, *Environmental Profile of Rwanda*, European Commission, 2006, p. 29.

209 Ministry of Environment and Lands, National Environment Policy, 2003, p. 3.

210 Ministry of Environment and Lands, Sectorial Policy on Water and Sanitation, October 2004, p. 4.

211 Ministry of Environment and Lands, Five-Year Strategic Plan for the Environment and Natural Resources Sector (2009 - 2013), 2009, p. ii.

In addition, the **Ministry of Health** has established an Environmental Health Policy, in 2008. This policy is closely related to water in many fields: water safety, liquid and solid waste management, control of disease vectors and vermin, control of environmental pollution, and disaster and emergency preparedness.

Finally, the **Ministry of Infrastructure** has also developed its own National Policy and Strategy for Water Supply and Sanitation Services, in 2010. The purpose of this policy is to present "the sector's approach on how to achieve the Vision 2020, MDG and EDPRS objectives and breaks them down into concrete principles, objectives and statement"[212].

Ministry	Policy
Ministry of Finance and Economic Planning	- Rwanda Vision 2020, 2000 - Economic Development and Poverty Reduction Strategy, 2008-2012, September 2007
Ministry of Environment and Lands	- National Environment Policy, 2003 - Sectorial Policy on Water and Sanitation, October 2004 - Five-Year Strategic Plan for the Environment and Natural Resources Sector (2009 - 2013), June 2009 - National Policy for Water Resources Management, April 2011[213]
Ministry of Health	- Environmental Health Policy, July 2008
Ministry of Infrastructure	- National Policy and Strategy for Water Supply and Sanitation Services, February 2010

212 Ministry of Infrastructure, National Policy and Strategy for Water Supply and Sanitation Services, February 2010, p. 5.

213 This policy replaces the former one, written in 2004. Ministry of Environment and Lands, National Policy for Water Resources Management, April 2011, p. v.

(2) The Juridical Framework of Water

The juridical framework is the concrete expression of Government policies. In this regard a good knowledge of the juridical framework allows a better understanding of issues in matter of water.

① Constitutional Provisions

Due to recent history of Rwanda, the Constitution mainly focuses on human civil rights. However, modern human rights such as environmental rights are even when taken in consideration. Indeed, the Constitution declares that “all citizens have the right and duties relating to health” (Article 41). The same article provides that the State must mobilize the population in order to promote good health. Following the same path, the article 49 focuses on environment:

> “Every citizen is entitled to a healthy and satisfying environment.
>
> Every person has the duty to protect, safeguard and promote the environment. The State shall protect the environment.
>
> The law determines the modalities for protecting, safeguarding and promoting the environment”.
>
> Health and environment are easily understood as closely related with water.

② Legal Provisions

Rwanda has recently undertaken a major legislative and regulatory activity in order to improve the juridical framework of water. However, the law specifically focused on water is relatively recent since it has been enacted in 2008.

List of relevant laws and ministerial orders

- Law No. 39/2001 *Establishing an Agency for the Regulation of Certain Public Utilities* - September 13, 2001
- Organic Law No. 04/2005 *Determining the Modalities of Protection, Conservation and Promotion of Environment in Rwanda* - April 04, 2005
- Organic Law No. 08/2005 *Determining the Use and Management of Land in Rwanda* - July 14, 2005
- Law No. 26/2005 *Relating to Investment and Export Promotion and Facilitation* - December 17, 2005
- Law No. 08/2006 *Determining the Organisation and functioning of the District* - February 24, 2006
- Law No. 16/2006 *Determining the Organisation, Functioning and Responsibilities of Rwanda Environment Management Authority* - April 03, 2006
- Ministerial Order No. 003/2008 *Relating to the Requirements and Procedure for Environmental Impact Assessment* - August 15, 2008
- Ministerial Order No. 004/2008 *Establishing the List of Works, Activities and Projects that Have to Undertake an Environment Impact Assessment* - August 15, 2008
- Ministerial Order No. 005/2008 *Establishing Modalities of Inspecting Companies or Activities that Pollute the Environment* - August 15, 2008
- Law No. 62/2008 *Putting in Place the Use, Conservation, Protection and Management of Water Resources Regulations* - September 10, 2008
- Rwanda Utilities Regulatory Agency, *Guidelines on Minimum Required Service Level for Water Service Provision* - June 2009
- Rwanda Utilities Regulatory Agency, *Directives on Minimal Requirement for Liquid Wastes Disposal and Treatment* - November 11, 2009
- Law No. 43/2010 *Establishing Rwanda Energy, Water and Sanitation Authority (EWSA) and Determining its Responsibilities, Organisation and Functioning* - December 07, 2010

- Law No. 53/2010 *Establishing Rwanda Natural Resources Authority (RNRA) and determining its mission, organisation and functioning* - January 25, 2011

The aforementioned laws and regulations are concisely described and summarized below, in chronological order.

i) Law No. 39/2001 *Establishing an Agency for the Regulation of Certain Public Utilities* - September 13, 2001

Chapter One: Definitions to Terms as Used in this Law
Chapter Two: The Establishment, Structure, Responsibilities and Competences of the Regulatory Agency
Section 1: Establishment and Structure
Section 2: Responsibilities
Section 3: Competences
Chapter Three: Organs of the Regulatory Agency
Section 1: Regulatory Board
Section 2: The Managing Director's Office
Section 3: The Supervisory Board
Chapter IV: Assets, Budget and Account
Chapter V: Competition
Chapter VI: Penalties
Chapter VII: Final Provisions

This law has established the Rwanda Utilities Regulatory Agency (RURA) with the purpose to promote effective competition, quality of service and development (Article 5) of certain public utilities including following matters according to article 1(2):

"a) Telecommunications networks and/or telecommunications services;
b) Electricity;
c) Water;
d) The removal of waste products from residential or business premises;
e) The extraction and distribution of gas;
f) Persons and goods transport".

It is useful to precise that regulation hereby means "controlling human or societal behavior by rules or restriction"[214].

In matter of water, RURA mandate is to regulate in a way that promotes fair competition, sustainable and efficient use of water resources and ensure better quality of services to customers at fair prices. Water sub sector has been looking at issues of water accessibility in both rural and urban areas, water quality monitoring and water infrastructure standards. Staff works under two units, water infrastructure standards and water services monitoring and manage the following activities and projects

- To conduct a baseline study on current infrastructures and networks;
- To develop of water quality monitoring tools.

In matter of sanitation, RURA has the mandate of ensuring effective protection of environment by enforcing wastes disposal and byproducts treatment regulations. Targets have been set in Sanitation Sector to be achieved by 2015. Staff works under three units which are Infrastructure standards, wastewater Quality of Standards (QoS) Monitoring, Solid wastes Quality of Standards (QoS) Monitoring and develop the following activities and projects:

214 http://www.rura.gov.rw/

- To conduct a comprehensive survey on sanitation practices in Rwanda;
- To develop guidelines on wastewater disposal and adopt standards on effluent disposal;
- To develop guidelines on solid wastes management in terms of collection, transport, disposal, treatment and recycling;
- To adopt standards on management of dumping sites;
- To conduct an inventory on existing sewer network for wastewater and storm water discharge

Most important, the RURA has the power to impose sanctions in case of violation of regulations governing public utilities mentioned in this law (Article 6(3)).

ii) Organic Law No. 04/2005 *Determining the Modalities of Protection, Conservation and Promotion of Environment in Rwanda* - April 04, 2005

Title One: General Provisions, Definitions of Some Terms Applied, Fundamental Principles and the Scope of this Organic Law

Chapter One: General Provisions

Chapter Two: Definitions of Some Terms Applied in this Organic Law

Chapter Three: Fundamental Principles

Chapter IV: The Scope of this Organic Law

Title Two: Natural Environment and Human Activities

Chapter One: Natural Environment

Section 1: Soil and Subsoil

Section 2: Water Resources

Section 3: Biodiversity

Section 4: The Atmospheric Pressure

General and Specific Purpose of the Law

Although this law regards environment in a general meaning, several provisions are closely connected with water and sanitation. First of all, this law makes constitutional provisions aforementioned a reality. Indeed, its main purpose consists in:

- Conserving the environment;
- Setting up fundamental principles in matter of environment;
- Promoting the social welfare;
- Considering durability of resources (sustainable development)
- Etc.

Water is evidently a part of environment and the law No. 08/2005 defines water in large sense[215] and considers water biodiversity and landscape closely (Article 4(A) (2), (4) and (5)). In addition, this law also considers marine pollution which "may cause disease to human and animals that use it, aquatic life, plants or which may change the beauty of tourist sites, adjacent valleys and swamps" (Article 4(B)(5)(a). The article 8 details situations which may be dangerous for environment, including water.

Water Resources

A section regards water resources in particular and the article 15 provides that rivers, artificial lakes, underground water, springs, natural lakes "are part of the public domain"[216] and "their use is at disposal of every individual in accordance with law". In order to protect human consumption, a protective fence must surround water access points (Article 16), and according to the article 51, this tasks falls into State responsibility.

This section also regards environmental protection and the article 17 forbids water management methods that may lead to natural disaster such as floods and droughts. This is why the same article requires an environmental impact assessment prior to any acts concerned with water resources like watering plants, use of swamps and wetlands, etc. In addition, the article 18 requires treatment of sewage water before release into rivers, streams,

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[215] "Depending on where [water] is and how it forms, it may change its name in the following manner:
a. Stagnant water is that of the oceans, lakes, ponds, pools and swamps;
b. Flowing rain water;
c. Flowing river and stream water;
d. Water that penetrates the soil;
f. Underground water".

[216] See below, Law No. 08/2005, article 12.

lakes or ponds. Furthermore, the article 19 provides that swamps with permanent water shall be protected, particularly in order to preserve biodiversity.

Obligations Falling to Public Authorities

This law establishes concrete obligations to the State. Indeed, the State must establish regulations governing water dams, waste pipe lines, dumping places and treatment plants (Article 50). Moreover, it has to protect and reserve catchment areas around wells from where drinking water is drawn (Article 51). In addition, the State shall identify reserved areas for protection, conservation or rehabilitation of water systems and its quality, of banks and shores, rivers, streams, plains, valleys and swamps (Article 52). Finally, the article 55 requires that State establish concrete measures for the better management of water resources, which considers the quality of its sources, and determines means of raising the volume of water and avoiding its wastage.

As Rwanda is a decentralized State, the law also provides decentralized entities with obligation in matter of water. Indeed, in the framework of conservation and protection of the environment, decentralized entities are particularly responsible for ensuring activities related to better management of land, especially controlling soil erosion and tap rainwater. In the same way, those entities are in charge of efficient management and effective use of rivers, lakes, sources of water, underground water, and swamps (Article 61 (1), (3), and (4)).

Rights and Obligations of the Population

In environmental water, the population has the right to a free access to sufficient information, to express their views, to intervene in the decision-

making process, etc. (Article 63). However, the population also has the obligation to conserve the environment by individual actions or through collective activities (Article 64).

Institutions

Institutions will be developed as a specific issue below. However, one has to mention institutional provisions of this law, even shortly. Indeed, the article 65 (1) establishes the Rwanda Environment Management Authority (REMA) which is the object of the Law No. 16/2006. Furthermore, it also establishes the National Fund for Environment, abbreviated as FONERWA in French, which is responsible for soliciting and managing financial resources (Article 65 (2)).

In addition, the law also requires establishment of committees responsible for conservation and protecting the environment at the Provincial, City of Kigali, District, Town, Municipality, Sector and the Cell levels.

Environmental Impact Assessment

The law also defines the general framework for environmental impact assessment which is detailed by the Ministerial Order No. 004/2008 (see below).

Incentives

Incentives are determined on three different ways in this law (Articles 71 to 73):

- Financial support: the FONERWA may support any activity aiming at controlling soil erosion and drought, at afforestation and forestry, using renewable energy in a sustainable manner, using modern cooking stoves and any other means that can be used to protect forestry. This

Institution may also support public services, associations and individuals in case they invest or put in place campaigns or carry out activities intended to fight against causes of pollution or support existing installations so as to match with the environmental quality standards.

- Reduction of customs duty: Industries that import equipment which assist in eliminating or reduce gases like carbondioxide and chloroflourocarbons which intoxicate the atmosphere and those which manufacture equipment that reduce the pollution of the environment, are subject to reduction of customs duty on the equipment and for a period to be determined depending on the needs.
- Reduction on taxable profit: Individuals and moral persons that undertake activities that promote environment are subject to reduction on taxable profits in accordance with the law concerning taxes and revenues.

Control, Monitoring and Inspection

This law enables competent authorities to investigate and prosecute crimes under professional secrecy (Article 76). The article 74 defines competent authorities which are "the judicial police officers, employees responsible for hunting, fishing, water, forestry, national parks, protected areas, inspectors of work, customs inspectors, employees of Rwanda Environment Management Authority and other concerned employees determined by an order of the Minister having Justice in his or her attributions". These competent authorities have strong powers and duties (Article 75) and they may:

"1° enter residences and industrial or agricultural installations, depots, warehouses, stores and retail outlets;

2° inspect installations, construction, houses, machines, vehicles, devices and products;

3° have the right to inspect records relating to the operations of the enterprise;

4° have a sample, measure, take and conduct a required research;

5° suspend activities that appear to degrade the environment for a period not exceeding (30) days".

However, they may use their powers only when it is necessary for them to fulfill their obligations, so this law tries to prevent abuses of authority (Article 76). In this regard, the article 77 provides that an investigator discovering any infringement must prepare minutes of proceedings, "describing what they saw or seized and indicate where the seized objects were taken".

Finally, this law provides that enterprises or operations that excessively pollute environment are subject to inspection by competent experts and the cost of such inspection is supported by the owner of the enterprise or operation.

Prohibited Actions and Penalties

Any activity damaging the quality of water is prohibited. However, this law enumerates a long list of prohibited actions regarding water and sanitation:

- Dumping or disposal of any solid, liquid waste or hazardous gaseous substances in a stream, river, lake and their surrounding (Article 81(1));
- Defecating or urinating in inappropriate place (Article 81 (5));
- Spitting, discarding mucus and other human waste in any place (Article 81 (6));
- Dumping waste water, except after treatment in accordance with instructions that govern it (Article 82 (1));

- Dumping, making flow, disposing of and storing of any substance in a place where it may cause or facilitate water pollution on the national territory (Article 88 (1));
- Dumping, eliminating, immersing any chemical substance in water and in any other place where it may harm navigation, fishing, and others (Article 89(2)), and/or deteriorate the beauty of a place which is potential for its aquatic tourist interest (Article 89(3))[217];
- Using explosives, drugs, poisonous chemicals and baits in water that may intoxicate or even kill fish (Article 93(1)).

This law provides penalties for such prohibited actions. According to the article 102, any illegal waste dumping is punished by a fine ranging from one million Rwandan francs to five million Rwandan francs and an imprisonment ranging from six months to two years, or one of these two penalties.

The article 103 provides that anyone who pollutes inland water masses by dumping, spilling or depositing chemicals of any nature that may cause or increase water pollution is punished by a fine ranging from two million to five million Rwandan francs and an imprisonment ranging from two months to two years or one of these penalties.

In addition, the offender may be required to rehabilitate the polluted place. In case of negligence, refusal or resistance, competent authorities may proceed to rehabilitate it but at the expense of the offending party. If the offender is a recidivist such a penalty is doubled

[217] This provision sounds interesting because it takes in consideration tourist interest, which is a long term perspective.

iii) Organic Law No. 08/2005 *Determining the Use and Management of Land in Rwanda* - July 14, 2005

Chapter One: General Provisions

Chapter Two: Categorisation of Land
- Section 1: Urban and Rural Land
- Section 2: Individual Ownership of Land
- Section 3: State Land
  - Sub-section 1: Public Domain
  - Sub-section 2: Private State Owned Land
- Section 4: District, Town and Municipality Land
  - Sub-section 1: The District, Town or Municipality and the City of Kigali land that compose the public domain
  - Sub-section 2: The Private District, Town or Municipality and the City of Kigali Owned Land

Chapter Three: Management, Organisation and Exploitation of Land
- Section 1: General Provisions
- Section 2: Cession and Lease of State Land
- Section 3: Allocation and Leasing of State Land
- Section 4: Land Registration
- Section 5: Transfer of Land Rights
- Section 6: Land Lease for Agricultural Production

Chapter Four: Rights and Obligations of Landlords
- Section 1: Rights
- Section 2: Obligations

Chapter Five: Prescription

Chapter Six: Penalties
- Section 1: Administrative Penalties
  - Sub-section 1: Requisition of Degraded and the Unexploited Land

This law mainly concerns land's management and use. However, few provisions are interesting regarding water. Indeed, water is obviously a component of land.

The article 2 (17) defines a servitude as "a right a person is entitled to on a land that is not his or her due to circumstances, such as the right of passage through another person's land so that he or she may reach his or her own land, the right to water resources on another person's land, or the right to channel running water through another person's land below your own".

This law confirms the article of the law No. 04/2005 according to which rivers, artificial lakes, underground water, springs, natural lakes "are part of the public domain". Indeed, the article 13 of the law No. 08/2005 provides that "Lake and river waters and underground water are public domain". The article 12 gives some details and State land which makes up the public domain consists of all the land meant to be used by public or land reserved for organs of state services as well as national land reserved for environmental protection: "1° Land containing lakes and rivers as listed by an order of the Minister having water in his or her attributions; 2° Shores of lakes and rivers up to the length determined by an order of the Minister having environment in his or her attributions starting from the furthest line reached by water depending on successive floods. This is

not concerned with exceptional floods; 3° Land occupied by springs and wells determined in accordance with an order of the Minister having water in his or her attributions".

According to the article 12, the power to use the water is common to all persons, however "no person is allowed to pollute water and no one is allowed to change its course without permission from the competent authorities".

Always regarding water, the article 60 specifies that a landlord cannot block water that is naturally flowing through his/her land from other person's land above his/hers. In addition, he/she cannot refuse other people to draw water from a well found on his/her land unless he/she can prove that such a well has been dug or built by him/her.

iv) Law No. 26/2005 *Relating to Investment and Export Promotion and Facilitation* - December 17, 2005

Chapter One: General Provisions

Chapter Two: Investment Project Registration

Chapter Three: Conditions Related to Certificate of Registration

Chapter Four Revocation of Certificate of Registration

Chapter Five: Change of Operations

Chapter Six: Incentives to Investment

Chapter Seven: Work Permits and Residence Visas

Chapter Eight: Free Economic Zones
- Section 1: Establishment of Free Economic Zones
- Section 2: Organisation and Management of Free Economic Zones
- Section 3: Registration Procedures

Chapter Nine: Requirements for an International Company with Headquarters in

This law has been written in order to promote and facilitate investment and export. The article 2 (12) identifies water to a "natural scarce resource', meaning that resource which may not renew itself or may renew itself over a long period and whose economic exploitation is, by necessity, restricted to a few exploiters. Water is also considered as a priority sector for investment and must be reviewed periodically by the Minister having investment and export in his/her attribution (Article 29 (9)). Finally, few incentives have been established and regarding water an investor is exempted from payment of import duties for solar system for electricity or water production and for water treatment system. Unfortunately, this exemption is only available for tourism and hotel equipment (Annex I (9)).

v) Law No. 08/2006 *Determining the Organisation and functioning of the District* - February 24, 2006

Section 2: The Headquarters of the District
Section 3: Competence and responsibilities

Chapter Two: Administrative Organs of the District
Section 1: District Council's Composition, Responsibilities, Functioning, Dissolution and Committees
Sub-section 1: Composition
Sub-section 2: Responsibilities of the Council
Sub-section 3: Functioning of the District council
Sub-section 4: Dissolution of the District Council
Sub-section 5: Commissions of the District Council
Title A: The Commission on Economic Development
Title B: The Commission on Gender, youth, culture, sports and social affairs
Title C: The Commission on administrative, political and legal affairs
Section 2: The District Executive Committee's composition and responsibilities
Sub-section 1: Composition
Sub-section 2: Responsibilities of the District Executive Committee
Sub-section 3: Responsibilities of the Members of the District Executive Committee
Section 3: The Executive Secretariat
Sub-section 1: The composition of the Executive Secretariat
Sub-section 2: Responsibilities
Sub-section 3: Appointment of members of the Executive Secretariat
Sub-section 4: The functioning of the Executive Secretariat
Section 4: The District Development Committee
Sub-section 1: The composition of the District Development Committee
Sub-section 2: The responsibilities of the District Development Committee
Section 5: The District Security Committee
Sub-section 1: Members of Security Committee
Title Two: The Administration of the District
Chapter One: District Organisational Structure
Section 1: District Organisational Structure and Staff
Section 2: Institutions Operating in the District

Chapter Two: District's Assets

Chapter Three: District Tender Committee

Chapter Four: District's Roads and Works

Title Three: District Finance

Chapter One: General Provisions

Chapter Two: District's Incomes And Finances

Chapter Three: District's Expenditures

Chapter Four: On Preparation, Vote and Approval Of the District Budget
Section 1: Preparation and Vote of the Budget
Section 2: The Management of District Budget
Section 3: Control of the Use of District Funds

Chapter Five: Common Development Fund for the District and the City of Kigali
Title Four: Control of the District's Activities
Title Five: Cooperation Between Districts

Chapter One: District Associations

Chapter Two: Inter-District Council

Chapter Three: Relations Based on Cooperation

Title Six: Miscellaneous, Transitional and Final Provisions

Rwanda is a decentralized State, which means powers and duties of local governments are determined by laws, including water. According to this law, a district is an "autonomous administrative entity with a legal status with administrative and financial autonomy" (Article 2). In general, districts are in charge of health (Article 21 (23), and (28)). In particular, they are responsible for maintaining water system (Article 22 (2)), treating, collecting and transporting town or trading centre waste (Article 22 (6)), and treating water and protecting the environment (Article 22 (7)).

Districts are entitled to allow associations operating within the district or elsewhere to create institutions with the purpose to take care of the population with regard to economic, health, education, clean water, hygiene, markets, transportation of goods and people, burial of the dead and other activities.

Finally, the article 129 establishes mandatory expenses in the district's ordinary budget, notably regarding funds for the maintenance of district's water pipes, liquid waste works, and drainage of swamps.

vi) Law No. 16/2006 *Determining the Organization, Functioning and Responsibilities of Rwanda Environment Management Authority* - April 03, 2006

Chapter One: General Provisions

Chapter Two: Responsibilities and Powers of REMA

Chapter Three: Supervising Authority of REMA

Chapter Four: Organisation and Functioning of REMA
- Section 1: The Board of Directors
- Section 2: Administration and organisational structures of REMA
- Section 3: The National Consultative Committee

Chapter Five: Patrimony and Finance

Chapter Six: Final Provisions

The Rwanda Environment Management Authority (REMA) has been established by the Organic Law No. 04/2005. The present law provides that REMA has legal personality, and administrative and financial autonomy. This Institution is supervised by the Ministry of Environment (Article 6).

The REMA is mainly in charge of supervision, following up and ensuring that issues relating to environment receive attention in all national develop-

ment plans. In particular, the article 3 puts in charge the REMA with the followings responsibilities:

- To implement Government environmental policy and decisions taken by the Board of Directors;
- To advise the Government on policies, strategies and legislations related to environment;
- To prepare a biannual report on the state of natural resources in Rwanda;
- To examine and approve environmental impact assessment reports;
- To undertake research, investigations and studies and to disseminate the findings;
- To ensure adequate monitoring and evaluate development programs of all development projects which are likely to have significant impact on environment;
- To participate in preparation of action plans and strategies for prevention of risks and catastrophes which may degrade the environment, and to propose remedial;
- To render advice and technical support to entities engaged in natural resources management and environmental conservation;
- To prepare publish and disseminate manuals relating to principles and laws regarding environmental management.

In accordance with articles 74 and 75 of the Organic Law No. 04/2005, the present law gives the employees of the REMA the same powers as those of criminal investigators with the power to suspend activities which do not respect legal provisions related to environment protection. In order to achieve this task, REMA has the following powers:

- To request any organ for a report on the situation of environment in its capacity;
- To visit, without any notice, anywhere a project operates from, a construction, an industry or a factory and trade in the framework of conducting supervision on acts that degrade the environment;
- To work hand in hand with other institutions, national and international organisations;
- To receive aid, assistance or grant;
- To award rewards and possible support in order to facilitate research and increase capacity in matters related to environment.

Basically, the REMA comprises three organs: The Board of Directors, which directs REMA (Articles 9 to 16); The Directorate, which daily manage REMA (Articles 17 to 20); And the National Consultative Committee, which provides views and recommendations[218] (Articles 21 to 23).

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218 The National Consultative Committee is an inter-ministry committee, which gathers: 1 ○ the members of the Board of Directors of REMA; 2 ○ the Director of REMA; 3 ○ the Minister in charge of Land, Environment, Forestry, Water and Mines; 4 ○ the Minister in charge of Agriculture and Animal Resources; 5 ○ the Minister in charge of Finance and Economic Planning; 6 ○ the Minister in charge of Infrastructure; 7 ○ the Minister in charge of Industry, Commerce and Tourism; 8 ○ the Minister in charge of Health; 9 ○ the Minister in charge of Justice; 10 ○ the Minister in charge of Local Government; 11 ○ the Minister in charge of Gender and Family Promotion; 12 ○ the Minister in charge of Youth and Culture; 13 ○ the Minister in charge of Education; 14 ○ the Minister in charge of Rwanda Defence Forces; 15 ○ two (2) persons representing Institutions of Research; 16 ○ two (2) persons representing Higher Institutions of Learning; 17 ○ The Representatives of Non Governmental Organisations related to environment; 18 ○ two (2) persons representing the Private Sector; 19 ○ the Governors of Provinces and the Mayor of the City of Kigali; 20 ○ the Commissioner General of the National Police; 21 ○ the Commissioner General of Rwanda Revenue Authority; 22 ○ the Director of Rwanda Bureau of Standards (ORN) ; 23 ○ the Director of Rwanda Investment and Exportation Promotion Agency (RIEPA); 24 ○ the Director of National Agency of Tourism and National Parks (ORTPN) ; 25 ○ the Director of Rwanda Office for Information

vii) Ministerial Order No. 003/2008 *Relating to the Requirements and Procedure for Environmental Impact Assessment* - August 15, 2008

This Ministerial order establishes the process for environmental impact assessment (which is required in matter of water by article 17 of organic Law No. 04/2005, see above). According to this order, the developer has to submit an official application which includes a project brief (Detail of all required information is provided in General Guidelines and Procedure for Environmental Impact Assessment issued by the REMA).

(ORINFOR); 26 ○ one person representing High Council of the Press; 27 ○ the Director of Rwanda Utility Regulatory Agency (RURA); 28 ○ The Chairperson of the National Council of Women; 29 ○ the Chairperson of the National Youth Council; 30 ○ A representative of Rwandese Association of Local Government Authorities (RALGA).

The REMA has to reply within thirty days in order to indicate the terms of reference to the developer. Then the developer chooses experts[219] from the list of experts established by the Ministry in charge of environment even if the developer may submit experts that are not on the aforementioned list. Those experts must not have direct or indirect interest in the project. The REMA must accept or refuse within five days. In the latter hypothesis, the REMA must provide justification.

This process is made in a participatory way involving all stakeholder s[220] and respecting their right to express their opinion. The completed impact study has to be deposited to the REMA by the developer. The developer may ad information not required by the terms of reference.

Upon reception of the impact study, the REMA must accept or request for more information. Furthermore, the REMA may require an additional period of thirty days when a public hearing deems to be done (At REMA's cost). In the framework of public hearing, the REMA must notify the public of the following:

"(a) The day, time and venue where the public hearing shall take place by using at least any of the three of the following means:
(i) Publishing a notice twice in any local newspapers;
(ii) Running four (4) radio announcements;
(iii) Putting up posters at the site of the proposed development.

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219 "Experts refers to Environmental Impact Assessor or any physical or moral person that is technically competent, fulfils the requirements of the Environmental Impact Assessment guidelines and is recognized by the [REMA] to conduct an Environmental Impact Assessment or studies in accordance to this Order", according to the article 1 (5).

220 "Stakeholders refers to individuals, communities, government agencies, private organizations, non-governmental organizations or others having an interest or 'stake' in both the Environmental Impact Assessment (EIA) process and outcomes of the project", according to article 1 (6).

(b) The developer's details include name and address"[221].

The REMA must communicate its decision to the developer in writing. When the REMA refuses a project the developer is entitled to appeal the decision to the Ministry in charge of environment within thirty days following the decision. This appeal has to contain a duly signed petition, a copy of the decision, and all relevant documents. The Ministry, which may use an independent expert at developer's cost, must communicate its decision to the developer in writing.

viii) Ministerial Order No. 004/2008 *Establishing the List of Works, Activities and Projects that Have to Undertake an Environment Impact Assessment* - August 15, 2008

Chapter One: General Provisions
Article One: Scope
Article 2: List of Works, Activities and Projects that Have to Undertake an Environmental Impact Assessment
Article 3: Updating of the List
Article 4: Projects that are not Included on the List

Chapter Two: Final Provisions
Article 5: Repealing of Inconsistent Provisions
Article 6: Commencement

The main purpose of the ministerial order consists in defining activities subject to prior environment impact assessment. However, the REMA is entitled to allow a project without EIA when such a study does not deem necessary. On the other hand, when a project appears to be obviously dangerous for environment, the REMA may order an EIA even if the

[221] Article 9.

targeted project is not on the following list (One has only noticed activities related to water and sanitation):

"I. Infrastructure:

1. Construction and repair of international roads, national roads, district roads and repair of large bridges;
2. Construction of industries, factories and activities carried out in those industries;
3. Construction of hydro- dams and electrical lines;
4. Construction of public dams for water conservation, rain water harvesting for agricultural activities and artificial lakes;
5. Construction of oil pipelines and its products, gases and storage tanks;
6. Construction of terminal ports and airports, railways and car parks;
7. Construction of hotels and large public buildings which house more than a hundred people per day;
8. Water distribution activities and sanitation;
9. Construction of public Land fills;
10. Construction of slaughter houses;
11. Construction of hospitals;
12. Construction of Stadiums and large markets;
13. Initial installation of communication Infrastructures.

II. Agriculture and Animal Husbandry

1. Agricultural and breeding activities which use chemical fertilizers and pesticides in wetlands and large scale monoculture agricultural practices such as tea, coffee, flowers and pyrethrum, etc…
2. Works and Activities that use bio-technology to modify seeds and animals

III. Works in parks and in its buffer zone

IV. Works of extraction of mines"[222].

ix) Ministerial Order No. 005/2008 *Establishing Modalities of Inspecting Companies or Activities that Pollute the Environment* - August 15, 2008

This ministerial order allow a better implementation of the Organic Law No. 04/2005 in its provisions related to control of companies or activities that pollute environment. Officers competent to investigate environmental crimes may enter and carry out a search in any place suspected to be

222 Annex to the Ministerial Order No. 004/2008.

carrying out activities which pollute the environment (Such inspection may also be done when there is no suspicion of pollution). When the inspection may be dangerous for health inspectors (assault for instance), they can request police assistance. And anyone obstructing the inspection is ordered to temporarily stop its activity until he/she cooperates with inspectors. In case of routine inspection[223], the person to be inspected must be informed forty eight hours prior the inspection.

During an inspection the inspectors may take samples of suspected products for laboratory examination. Inspectors are also entitled to temporarily seize products that excessively pollute environment pending the final decision. However, they have to respect laws governing the criminal procedure.

After such inspection and if environmental issues have been underlined, the owner indicates means that can be developed in order to solve problems and protect environment. After receipt of those solutions, the REMA decides within thirty days if proposed means are satisfactory. If the owner wants to contest the REMA's decision, he/she may appeal to the Ministry in charge of environment within fifteen days following its reception. The owner may request another inspection carried out by an independent and competent environmental expert at its own cost. The latter one submits a report to the Ministry (with copy to the REMA) within forty five days following the appeal (when it deems necessary, this period may be extended).

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223 "During routine inspection there needs to be a standard checklist of what needs to be verified and it should be signed by both the competent officer and the owner of the company or activity after the inspection. After the inspection, a report shall be sent to the owner of the company or the activity indicating the details and evidence of the activities or products that are harmful to the environment and the effects of that pollution", according to the article 6.

The Ministry's decision has to be communicated to the owner within thirty days.

x) Law No. 62/2008 *Putting in Place the Use, Conservation, Protection and Management of Water Resources Regulations* - September 10, 2008

Chapter One: General Provisions
- Article 1: Scope of the Law
- Article 2: Definitions
- Article 3: General Principles
- Article 4: Protecting and Using Water Resources
- Article 5: Water Resources Management
- Article 6: Policy Making on Water Resources
- Article 7: Priority in Water Distribution

Chapter Two: Public Water Domain
- Article 8: Public Water Domain of the State
- Article 9: Natural Public Water Domain
- Article 10: Artificial Public Water Domain
- Article 11: Public Water Domains of the Districts
- Article 12: Inviolability of Water Resources
- Article 13: Boundaries of Natural Public Water Domain
- Article 14: Conservation of the Natural Public Water Domains

Chapter Three: Institutions in Charge of Water Domain
- Article 15: General Responsibilities
- Article 16: National Water Consultative Commission
- Article 17: Rwanda Water Authority
- Article 18: Water Interministerial Committee
- Article 19: Boundaries of Hydrographic Basins
- Article 20: District Committees for Hydrographic Basins
- Article 21: The Basin Committee Mission
- Article 22: Basin Committee at the Sector Level

General Provisions

This is the first law addressing directly and exclusively water issue. This law restates once again that water belongs to the public domain and that its use constitutes a recognized right (Article 3). In this regard, the article 4 provides that protecting and appropriately using water, in the natural balance respect, are of general interest and an imperative duty for State, decentralized entities and people. This law (Article 5) integrates several important principles in matter of environment:

- Principle of precaution aiming at preventing serious and irreversible risks for water resources, by the adoption of the efficient measures;

- Principle of prevention with priority to the source;
- Principles user/payer and polluter/payer according to which the user of water and the polluter support a significant part of expenses resulting from measures of prevention, of pollution reduction and restoration of the resource in quality and in quantity;
- Principle of user's association for the administrative management of water;
- Principle according to which users of the public distribution services of drinking water and sanitation should play a major role in financing those services according to their contributory capacity.

The article 6 put the Government in charge of establishing a national policy on protection, planning, use and management of the water resource and the aquatic ecosystems, including humid zones and swamps. And according to the article 7, populations are priority in matter of water supply before animals and hydroelectric energy production.

Public Water Domain

The conception of public domain is predominant in Rwandan law and a whole chapter of the present law is related to the definition of the public water domain that consists of both natural and artificial public water domain (Article 8).

On the one hand, according to the article 9 the natural public water domain comprises:

> "1° Permanent streams, rivers, navigable or not, floatable or not, banks of lakes and ponds, as well as a longitudinal fringe of land of ten meters width from their strands calculated in the conditions determined in the Article 13 below[224];

2° Swamps and humid zones[225];

3° Sources;

4° Aquifers".

On the other hand, according to the article 10 the artificial public water domain comprises:

"1° Works executed to facilitate the restraint or the storage of water;

2° The fluvial and lakeside harbours and their dependences;

3° Navigation channels and their dependences;

4° The hydraulic works intended to the harnessing in view to the adduction of drinking water, those intended for the irrigation and those intended for the waste water transport as well as their dependences".

As mentioned before, Rwanda is a decentralized State and one has seen that districts are in charge of some powers and duties in matter of water. Consequently, this law defines the public water domain of districts in its article 11: collective amenities, equipments or their dependence mentioned at 1° and 4° of the article 10 above, either they have been achieved directly by districts, or their realization has been confided to a master of work delegate, or again that they have been put back by the State to the mentioned communities.

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224 "The natural public water domain shall be delimited as follows: 1° for streams, rivers as well as for lakes and ponds, from the line reached by the highest waters before the overflow, this line constituting the starting point for the delimitation of the fringe longitudinal of land of ten meters width included in the public domain".

225 "The natural public water domain shall be delimited as follows: 2° for swamps and the humid zones by the line reached by the highest waters, noted outside of exceptional meteorological circumstances passing heights of construction of the State civil works for defence against flooding".

The Belgium legacy in matter of law (under influence of French law) is everywhere in Rwandan law and the public water domain is inalienable, imprescriptible and not seizable. Only some temporary use rights can be granted in conditions provided for in this law. In this regard, the article 14 states that no installation, no work of hold or dismissal of water, no work or activity can be done or experienced without declaration, prior authorization or concession, in conditions fixed by this law and without the perception of a royalty for the use of the public domain.

Institutions in Charge of Water

The present law is fairly exhaustive regarding the institutional framework of water (Issue to be more detailed below).

The Ministry in Charge of Water: The Ministry of Environment and Lands

According to the article 15, the Ministry of Environment and Lands defines the national water policy keeping in mind that water is a good belonging to the State public domain and that populations are priority regarding water supply. In addition, this Ministry represents the Government in intergovernmental organizations with international and regional characters specialized in the matters related to water, and it promotes international and regional cooperation.

The National Water Consultative Commission

The article 16 establishes a National Water Consultative Commission which is composed of representatives of Government and representatives of various public and private water users. The Minister of Natural Resources chairs the Commission's meetings. The structure, the functioning and the

composition of the commission are fixed by the order of the Prime Minister (which has not been yet written). The National Water Commission has a consultative role on the following matters:

"1° Planning projects in the water domain elaborated to the national level or the big hydrographic basin level and on the revision of these projects;

2° Projects of water supplying, planning, management and transfer of water from basin to basin, with national character as well as in the big projects of the same category of provincial character;

3° Any water related issue, in case the Minister deems it necessary".

The Rwanda Water Authority

The article 17 has decided the establishment of the Rwanda Water Authority which was supposed to be defined by a special law. However, it is not a specific water authority which has been finally established but a multisectoral activities authority. Indeed, the law No. 43/2010 has recently established the Rwanda Energy, Water and Sanitation Authority (EWSA, see below).

Water Interministerial Committee

A Water Interministerial Committee has been established in the Prime minister's office. It is composed with ministerial department representatives concerned with water issues and it is chaired by the Minister of Natural resources. It has a consultative role on all projects related with water, legislation, regulation, policy, etc. at national, regional or international level.

Hydrographic Basins

The article 19 states that Rwanda is consists of two main hydrographic basins namely Congo basin and Nile basin. Nonetheless, this law refers to another coming law considering boundaries and denomination of basins and under-basins.

District Committees for Hydrographic Basins

The article 20 establishes basin district committees which are composed of: administrations' representatives concerned by water[226]; elected representatives of the local decentralized communities[227]; representatives of the different categories of water users. The Committee may in its work use competent people in the water domain. The basin committee, assisted by an Executive Secretary, holds meetings in the premises of a district or in any other place indicated by the beneficiary entities. The organisation and functioning of the committees shall be determined by Ministerial Order which has not been yet written. However, the article 21 has determined a framework for powers and duties of district committees which have:

"1° To propose the initial version of the master plan and management of the basin waters as provided for in this Law.

2° To propose the delimitation, if necessary, of under-basins and the designation of the aquifer for which an integrated management of the water resource must be done;

3° To formulate orientations and proposals concerning the planning and management of the waters of under-basins or aquifer;

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[226] Refers to devolution: representatives represent State's interest.

[227] Refers to decentralization: representatives represent local government's interest.

4° To formulate propositions of arbitration or solution in case of conflict of water uses;

5° To formulate opinions on all technical or financial questions that is submitted to it by the administration.

6° To value the relevance and the feasibility of basin organisms, to prepare their setting up in the event that it would be judged necessary".

Sector Committees for Hydrographic Basins

The article 22 establishes Sector Committees for the management of small basins or aquifers under the authority of the district to which it is connected. The structure and functioning of this committee is the same as set out for the basin committee at the district level. Sector Committees are entitled with the following powers and duties:

"1° To propose the initial version of the local master plan;

2° To fix management procedures for the under-basin waters or the aquifer, provided for under this Law;

3° To formulate at its level propositions and opinions".

Local Water Associations

According to the article 24, users of water can constitute a local water association having legal entity in view of management, of enhancement of production, and protection of the water resources and fight against flooding. The local water association represents its members in their rights regarding exploitation of rivers, streams and lakes.

In addition, the article 25 provides that districts may delegate management of water and related infrastructure to local water association.

Planning in Matter of Water

The present law establishes a planning which involves many different aspects:

- Measures and data on water (Article 26): A general and permanent organisation of collection, management, treatment and exploitation networks of measures and data on water which focus on the quantitative and qualitative aspects either the surface waters, including swamps and the humid zones, or the underground waters should be established by ministerial order (Which has not been written yet). In addition, those measures and data should be communicated to costly title in condition fixed by ministerial order (Which has not been written yet).

- Water national inventory (Article 27).
- Master plan of water resources and management (Article 28): It is established by Ministry of Environment and Lands after consultation of the Interministerial Water Committee and of the National Water Consultative Commission. This master plan is established for a length of fifteen years revisable every five years unless emergency commands otherwise.
- Management vision (Article 29): The Ministry of Environment and Lands should draw up a ministerial order (Which has not been enacted yet) describing management vision compatible with the master plan aforementioned.
- Hydrographic basin master plan and their management (Article 30): In each hydrographic basin or aquifer a master plan of water management is established and it defines the general objectives of integrated

resources water management and of aquatic ecosystem. The basin committee establishes such a master plan for five years in accordance with the national master plan.

- Management of sub-basins and aquifers (Article 31): A local master plan can be established in same conditions as seen above. It has to be approved by the decentralized administrative authority territorially competent in the district.

Regime of Water use

The regime of water use is protected by quantitative and qualitative procedures. Indeed, according to article 32, "Installations and various activities, relating to the use of the surface or sub ground waters, and achieved to non domestic ends and classified for the environment protection that drags modification of the level or the out-flow fashion of these waters or an attack to their quality as well as an attack to swamps and the humid zones shall be submitted to various authorizations granted by the Minister with regard to declarations, authorizations and concessions"; The difference between those three regimes is very important.

Regime of Declaration

Operations susceptible not to present any serious dangers for health and public security and not to have impacts limited on the outflow of waters, on the resource (on both quantitative and qualitative point of view), as well as on the diversity of the aquatic environment are submitted to the declaration regime. The article 33 means that Ministry of Environment and Lands cannot refuse the exercise of such activity, but it may assort the declaration receipt of all specific prescriptions susceptible to limit or to compensate impact of it (Article 36).

Regime of Authorization

Operations susceptible to present dangers for health and the public security, to be harmful to the waters free outflow, to reduce the water resource, to attack its quality or the aquatic environment diversity are submitted to the regime of authorization (Article 34). Such a request must be assorted with an environmental impact assessment (Article 37) which is deeply analysed by the Ministry of Environment and Lands and completed with a public investigation. The Ministry may grant or deny the authorization.

Regime of Concession

The article 35 provides a thorough list of activities that must be submitted to the regime of concession:

"1° Operations and activities that are susceptible to present serious dangers to health and public security;
2° Activities which may highly interfere with the free water flow;
3° Activities which may reduce both water quality and quantity;
4° Activities which may considerably increase the risk of flooding;
5° Activities which may seriously endanger the aquatic life;
6° Operations of water use presenting a general interest character or approved by relevant authority".

The Ministry of Environment and Lands decides about the concession after getting advice from the Ministry in charge of such activity. The concession request, which must be assorted with an environmental impact assessment, may be granted or refused by a ministerial order (Article 39).

Provisions Ruling Authorization and Concession Regimes

First of all, any authorization/concession is modifiable or revocable (without compensation) except where it is about a project of general interest or where the project has been approved by a competent authority (Article 39). Furthermore, partial or total transfer of authorization/concession must be approved by the Ministry of Environment and Lands, according to the article 40. The present law also gives a solution in case of several requests for an authorization or a concession. The article 41 commands the Ministry of Environment and Lands to decide according to priorities described in this law. However, if no request appears to be priority, the Minister may decide regarding the first submitted request.

According to the article 42, expenses related to site inspection are supported by the claimant. In addition, the authorization/concession can occasion calculated royalties perception according to the quantity of water removed, of the quantity of water used to produce hydroelectricity or the quantity of pollution rejected in the public water domain, from assessment carried out, states the article 44. A royalty is also due in case of drainage or waterproofing of a humid zone or a swamp, calculated on the dried surface either waterproofed. However, a reduction of royalties or a "bonus" can be agreed to all person titular of an authorization or a concession who deploy, in agreement with the competent administration, devices permitting to decrease the quantity of water used and to reduce the quantity of pollution. Those incentives are very important especially in environmental matter.

In any case, the article 43 specifies that authorization/concession must be granted without prejudice to other people's right.

In order to implement the aforementioned provisions, a ministerial order has to be enacted (Which has not been written yet) and it shall provide:

"1° Determination of procedure for declaration, authorization and concession;
2° Domestic utilization of water;
3° Mechanism to ascertain if what is agreed on is complied with;
4° Conditions for determination of an amount to be paid for water consumption or for pollution occasioned".

Sanitation of Water Used for Domestic Purpose and by Animals

The present law addresses the specific issue of sanitation but in vague terms. Two types of sanitation are considered: collective sanitation and special sanitation.

Collective sanitation refers to "collective sanitation network" in order to ensure collection of water used in homes, factories, and rain water for treatment in order to meet public health standard preservation of water resources and the environment, according to the article 57.

Special sanitation refers to domestic, animal and industrial waste waters that "must be routed toward and individual treatment device before their rejection in the nature or being reused", states the article 58. Such a task must be carried out in accordance with legal provisions relating to hygiene and sanitation and the article 59 provides that "sanitation facilities of domestic, animal or industrial waste waters must be constantly preserved and meet requirements set by the Minister after consultation with other institutions concerned". Moreover, every household or establishment has to route waste waters into collective sanitation network within two years from the setting of the collective network (Article 60).

Finally, the article 61 states that delegation of collective and non collective sanitation to a competent private legal person is possible.

Easement

District mayors have to create easement around every source of water (Article 63) in order to ensure qualitative and quantitative protection of water (surface and underground water) produced for human consumption (Article 62). According to the article 64, it is prohibited to:

"1° Implement further works without carrying out an environmental impact assessment;
2° Put a cemetery;
3° Deposit garbage, litters, rubbish, animal cadavers or any products and substances which can tamper with the quality of water;
4° Install a pipeline, reservoir or deposits of hydrocarbons, chemicals or poisonous substances;
5° Deposit manure and rearing in animals;
6° Excavate minerals or sand;
7° Put in place any construction;
8° Cultivate plants especially those that require so much water;
9° Any other activity that may endanger a water resource".

When such a perimeter is built, the owner of the land is entitled to a compensation based on the loss incurred in accordance with the law (Article 65). Constructions works which occur on such a perimeter must be carried out in accordance with the Organic Law No. 04/2005 (See above).

When a pipeline has to be built between a source and a destination, owners of land must give way to the water conducts in order to allow

water resource exploitation, which is of public interest. However, such obligation does not apply to dwellings, courtyards and backyards (Article 67).

According to the article 68, no obstacle can be made in order to prevent natural water outflow. On the other hand, the article 69 gives the right to evacuate water from one place to another. However, an application is required and indemnity must be paid for any damage caused.

Finally, the article 70 provides that any person having the right to appropriate water from a stream, a river, a lake or a pond or to occupy the bank and the strip of it and the longitudinal band mentioned in this law can exercise the following servitude:

"1° Support a barrage across the adjacent land in a stream, a river, a lake or a pond;
2° Storing waters by means of a barrage or any other work of art;
3° Conveying water".

The implementation of this entails indemnity once other people's rights are violated. These servitudes are applied when their issuance is written down itself in a declared operation of public utility.

Public Works Related to Water and Sanitation

The article 71 gives a definition of water works related to water and it consists in supplying people with water, including production, distribution, and treatment of collective or individual waters, domestic or industrial waters, legally connected to the network, and rainwater. Such works have to be carried out by a national water and sanitation body or by other administrative institution which can supervise works or delegate those works to private operators[228]. The present law does not address the national water

and sanitation body but such body has been addressed by Law No. 43/ 2010 establishing the Energy, Water and Sanitation Agency (See below).

A National Water Fund is supposed to be established by a specific law, according to the article 72. However, this law has not been yet enacted and may not be (See policy issue below).

Then the present law addresses two important issues: pricing and quality. Indeed, the article 76 provides principles in matter of pricing:

"1° The access to water public service, be it at the boundary-marks' fountains or the individual connection, must always be payable;
2° Full cost recovery of investment, renewal and exploitation are considered in fixing prices;
3° Competent authorities fix prices and make them public;
4° Underprivileged groups are considered in fixing prices;
5° Tariffs are reviewed periodically taking in account the evolution of investment and exploitation conditions in accordance with the criteria defined by the relevant authority".

In addition, the articles 77 to 79 address to water quality, which is always a big issue in developing countries. The article 77 states that standards of World Health Organization have to be respected by any person providing water for human consumption, by selling it or free of charge. Moreover, the article 78 ads that distributed water have to be regularly

228 The procedure of assignment of the delegation of water public service is performed by way of tender and agreements signed between the administration and the service delegate (Article 73). The delegatee of water management services may only transfer this service to another party after approval by the relevant authority. However, the delegatee of water management services shall respect the conditions that bound his or her predecessor (Article 74). The delegation of water service can be withdrawn if the manager does not abide by the agreement (Article 75).

analysed by providers, at their own cost. However, the law does not address the frequency of controls. In this regard, providers are responsible of damages due to non conformity of water quality with standards (Article 79).

Internal Cooperation on Shared Water

As stated by the article 19 of the present law, Rwanda consists of two main hydrographic basins which boundaries are shared by other countries. Therefore, a provision related to international cooperation is highly necessary. To this end, the article 80 requires that Government encourages international cooperation on shared water in order to allow:

"1° Exchange of information and data;
2° Implementation of joint projects and structures on bilateral or multilateral of shared waters management;
3° Integrated and lasting management of the shared waters".

Penal Provisions

Besides ordinary officers of the judicial police, inspection officials from the Ministry in charge of water have judicial police powers. In exercising their duties, those officers have the right to enter any premises to investigate on water related matters. Their reports have to be submitted to the concerned public prosecutor which decides about the penal sanction.

List of penal sanctions

Provision	Infringement	Sanction[229]
Article 82	Participation in an illegal operation in matter of declaration,	Declaration: Fine from 25,000 to 100,000

	authorization or concession[230]	Authorization: Fine from 50,000 to 150,000
		Concession: Imprisonment from 30 to 60 days and/or fine from 100,000 to 3,000,000
Article 83	Water pollution[231]	Imprisonment from 30 to 90 days and/or fine from 500,000 to 5,000,000
Article 84	Penalty related to easement[232]	Imprisonment from two months to one year and/or fine from 25,000 to 250,000
Article 85	Penalty for non respect for mitigating disasters[233]	Imprisonment from one to two years and/or fine from 250,000 to 2,000,000
Article 86	Penalty for non conformity with sanitation networking[234]	Fine from 25,000 to 100,000
Article 87	Penalty for non conformity with standards[235]	Imprisonment from one to five years and/or fine from 1,000,000 to 5,000,000
Article 88	Penalty for fraudulent use of water[236]	Imprisonment from six months to two years and/or fine from 500,000 to 3,000,000
Article 89	Penalty for abusive utilization of water[237]	Fine from 25,000 to 100,000
Article 89	Omission of information of any malpractice in the water sector	Fine from 25,000 to 100,000

229 Fines are in Rwandan francs.

230 In addition of the penal sanction, the judge can pronounce the suspension of the installation functioning or even its suppression. This suspension or suppression is liable to the infringer.

231 A ministerial order should enumerate punishable activities.

232 Non respect of interdictions, prescriptions and servitudes instituted in a protective perimeter of intended water catchments to the human consumption.

Miscellaneous

A chapter titled "Particular Provisions" addresses different issues in matter of water. First of all, the article 48 states that lawful land owners have to rationally and optimally utilize water resources and comply with integrated resources water management where irrigation is used.

Then, a provision concerns prospectors and miners who are required to respect water resources during geological exploitation (Article 49).

In addition, the article 50 gives powers to decentralized administration to change or remove anything which obstruct water outflow and can cause floods (embankment, cumbersome deposit, fence, plantation, construction, etc.).

Moreover, the article 51 envisages possibility of disaster (drought, pollution, flood, water shortage, etc.) and in such a case power to order measures of limitation, temporary or permanent stoppage of utilization of certain water uses is given to the Ministry of Environment and Lands, without right to compensation. Furthermore, in case of threat on quality or quantity of water the same Ministry is entitled to put in place some strategic back-up zones on the superficial or sub ground water (Article 52). The inventory

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233 Any person who does not respect limitation measures, temporary or definitive, on preventing threats mentioned in article 51 is liable.

234 Defect of connection of domestic wastewater to the collective sanitation network; Defect of maintenance of collective and individual sanitation.

235 Owners of construction or persons who received delegation of water public service who offer water for human consumption that does not conform to the prescribed drinking water standards are concerned.

236 Anyone, who consumes water got directly or indirectly through clandestine or fraudulent adjusting, is liable.

237 Anyone who is caught involved in abusive utilization of water dragging a wasting or an over exploitation, voluntarily or by carelessness or any other purpose, is liable.

of humid zones and reserves (Article 53) should help to prevent such disaster.

Finally, the present law tackles to damages that can be caused to water resources. The article 54 creates a duty and any person being aware of an incident or accident "presenting a danger for public order, the quality, the circulation or the conservation of water resources" must inform as soon as possible the nearest administrative authority that reports to the district mayor. In addition, the article 89 provides penal sanction (See above) against people who omit to make such a declaration. Besides, the articles 55 and 56 states that any person responsible for an incident or accident to water resources must immediately repair damages and pay compensation if necessary.

xi) Rwanda Utilities Regulatory Agency, *Guidelines on Minimum Required Service Level for Water Service Provision* - June 2009

1. Introduction
2. Definitions
3. Objectives
4. Quality of Service Level Indicators
   - 4.1 Drinking Wate
   - 4.2 Water Pressure
   - 4.3 Reliability of Supply
     - a. Notice of planned work
     - b. Unplanned interruptions and emergency lock off
     - c. Restriction to supply (Rationing)
   - 4.4 Access to suppl
   - 4.5 Water Meters
     - a. Meter installation
     - b. Repair or replacement of faulty meter
     - c. Meter readings

4.6 Billing
4.7 Complaints
a. Response to complaints not billing related (faulty meter, low pressure, poor water quality, interruption of supply)
b. Response to complaints related to billing matters
c. Keeping appointment
4.8 Reconnection
5. Proceedings
6. Monitoring Tools for the Assessment of the Minimum Service Level

Appendices 1. Table: Performance Measure (Targets)
Appendices 2: Details on the Service Indicators Recording
1. Coverage of the service area
2. Drinking Water Quality
3. Connection to supply
4. Water Pressure
5. Reliability of Supply
5.1 Service Hours
5.2. Interruption of water supply
5.3. Justified Disconnection
5.4. Unjustified Disconnection
6. Water Meters
7. Billing for Services
8. Client Contacts

The RURA is entitled to regulate water service provision and protect customer's health and interest by Law No. 39/2001. In this regard, the RURA has written the present guidelines which are summarized in the chart below. One is particularly interested in quality and access to water (Those guidelines do not address directly sanitation of water).

The RURA states that Water Service Providers (WSPs) are responsible for water quality so they have to perform permanent analyses of water

samples at both treatment plants and distribution network to ensure about water quality (through a yearly program of test). The WSPs must ensure that samples comply with the WHO standards and/or national standards. According to the guidelines, 95% of samples should at least meet the required standards. In addition, the WSPs also have to comply with the WHO sampling regime, Rwanda Bureau of Standard regime, or establish more robust sampling scheme. Any test results not meeting the requirements set in accordance with standards set by the Rwanda Bureau of Standards and the WHO which have implications to public health shall have to be reported to RURA within 24 hours together with actions taken to deal with the situation.

Furthermore, the RURA also takes in consideration access to water as a "universal and fundamental right of people". In consequence, where water supply system is available, the WSPs are required to connect all new customers within ten days following the request. When WSPs do not respect this period, customers are entitled to compensation. However, it is only when those customers are willing to pay for it.

Chart summarizing the guidelines

No.	Service Indicator Focus	Description	Performance Measure (Targets)
WSI.1.	Water quality	Testing sample for impurities	No. of tests carried out and tests results (bacteriological and chlorine residual) to ensure that water is within required standards as specified by WHO & Rwandan standards. 95% should meet the standards for chlorine and 99% for bacteriological standards.

			However, 100% should meet standards for pathogens.
WSI.2.	Connection to supply or access	Connection to supply	Maximum time of 10 working days; Number of news connections recorded.
WSI.3.	Water pressure	Minimum/ Maximum water pressure	Must maintain a pressure ranging from 0.6 to 5.0 bars.
WSI.4.	Reliability of supply	Interruption of water supply	Average daily water supply at connection in town > 100 000 inhabitants is 24 h. In the reporting time, the % of connected properties subjected to an unannounced supply interruption of: 20-36 hours < 15%; 36-48 hours <8%; and > 48 hours <3%.
		Unjustified disconnecti ons	Maximum of 0,2 % of total connections in a year.
		Notification of interruption - planned interruption	Minimum notification time of 12 hours for short interruptions (less than 4 hours) and 24 hours for longer interruptions (more than 4 hours) in 90% of time.
		Restoration after emergency lock-off	Maximum time of 24 hours to restore supply in urban areas in 90% of time. Alternative supply must be provided to at least 95% of customers affected.

WSI.5.	Water meters	Meter installation	Every connected customer should be equipped with a water meter.
		Changing meters	The WSP must provide consumers with details of the date of the change, meter readings and the serial numbers of the new meter on the same day in 100 % of case.
		Repair or replacement of faulty meters	Maximum time of 2 working days to repair or replace meter after being informed of the defect.
		Meter reading	Every month % of metered connections shall be 100%.
WSI.6.	Billing	Water billing	Minimum of one bill per month for all customers, with minimum of meter read once in 2 months. Maximum period for payment after bill delivery is 2 weeks.
WSI.7.	Client contact	Response to complaints not bill related	Maximum of 2 working days to acknowledge customer complaints, after receipt. Maximum time of 5 working days to complete investigation and respond from the date of receipt of complaint.
		Response to billing complaints	Maximum of 2 working days to acknowledge customer complaints, after receipt. Maximum time of 5 working days to complete investigation and respond, from the date of receipt of complaint.
		Keeping appointment	Waiting time should not exceed 15 minutes.
WSI.8.	Reconnecti on	Reconnecti on after	Maximum of 12 hours to restore supply in urban areas and of 24 hours in town with

		payment of overdue amount	inhabitants < 100 000. This is not applicable in situations where the WSP has removed infrastructure as a consequence of illegal connections.

xii) Rwanda Utilities Regulatory Agency, *Directives on Minimal Requirement for Liquid Wastes Disposal and Treatment* - November 11, 2009

Those Directives have been approved on December 15, 2009[238] and are grounded on the articles 1 and 5 of the Law No. 39/2001. Indeed, according to the Agency, the article 1[239] highlights its mandate to regulate sanitation services while the article 5[240] defines its responsibilities. These Directives

[238] Decision No. 1 7/SA-RURA/2009 on *Minimum Requirements for Liquid Wastes Disposal and Treatment.*

[239] "In this Law, the following words have these definitions:
1. "Minister" means the Minister responsible for each utility sector.
2. "Public utilities" means natural persons, enterprises or organizations (for example: companies) which provide the following services:
a) telecommunications networks and/or telecommunications services;
b) electricity;
c) water;
d) the removal of waste products from residential or business premises;
e) the extraction and distribution of gas;
f) persons and goods transport.
3. "Utility Law" means the law governing each utility".

[240] "The Regulatory Agency has the responsibility to:
1° ensure that certain utilities provide goods and services throughout the country to meet in transparency all reasonable demands and needs of all natural persons and organizations;
2° ensure that all utility suppliers have adequate means to finance their activities;

determine the modalities of providing good quality of services in handling liquid wastes and aiming at:

- Providing guidance in the disposal of liquid wastes;
- Setting up fundamental principles related to provision of good services in liquid waste management (treatment and disposal);
- Guarantee to all Rwandans sustainable development by promoting fair competition;
- Setting up strategies of protecting and reducing negative effects on the environment which are caused by bad services in liquid waste handling.

The Directives are not applied to hazardous wastes and particularly concern: municipal sewage; sludge from septic tank; sludge from wastewater treatment plants/systems; industrial or commercial wastewater discharged to municipal sewers, septic tanks and other sewage disposal systems; liquid waste from garages; any other effluent specified by a regulator (liquid wastes from slaughter houses, liquid waste from car wash, etc.).

License System

The Directives establish a License system providing that any person or organization wishing to develop Liquid Waste Management Services first has to acquire a license or authorization for such activity through a writing application to the Director General of RURA. The operations described in

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3° continually promote the interest of users and potential users of the goods and services provided by utilities so that there is effective competition when competition is introduced in each utility sector and protection of users from abuses of monopoly positions is ensured due to the fact that certain Public utility sectors have a monopoly over the market.

4° facilitate and encourage private sector participation in investments in public utilities;

5° ensure compliance by public utilities with the laws governing their activities".

the written application must be in accordance with the followings requirements provided by the article 5:

- quid sewage collected by a sewage transporter must be disposed off in an approved sewage system subject to conditions required by the owner of the sewage system, including written permission to do so;
- Liquid waste shall not be deposited at solid waste disposal grounds unless otherwise approved by a Competent Authority;
- Vehicles, tanks or tankers employed to transport hazardous waste shall not be employed to transport liquid domestic waste.

Furthermore, the article 6 provides requirements distinguishing between two types of applicants:

- Individual persons or cooperatives: To have good willing and capacity as shown in the application letter requesting for authorization; To show limits of his/her working areas (Umudugudu, Cell, Sector and district); To have registered in RURA; To show the disposal site where will be deposit the waste and show an authorization allowing him/her to deposit in the same disposal site; To have a vehicle to transport the wastes collected (The vehicle can be his or hers or rent it from someone else. If it is a rent vehicle, should show the renting contract for at least one year); To show where his/her office is located; To present a business plan of the project; For a cooperative, to have legal personality.
- Companies: To register to RURA; To have enough vehicles to transport the liquid wastes; To show the limits of its working places (Umudugudu, Cell, Sector and district); To show a trade certificate “certificat d’enregistrement au registre de commerce”; To present a

business plan of the project; To show where the companies' office is located; To show the disposal site where will be deposit the waste and show authorization allowing him/her to deposit in the same disposal site.

Applicants may expect a response within fifteen days following the application date, otherwise explanations must be given by the RURA. An authorization if available during one year and annual fees for any liquid waste service such as collection, transportation, treatment and disposal will be 50,000 Rwandan francs.

General and Specific Obligations for Licensees

Any providers (private institutions, international organisations, NGOs, companies, cooperatives and individual persons) are obliged to provide good quality services without polluting the environment at all possible levels (Water quality is generally good, but there are localized problems from high sediment loads and toxic materials from mining).

In this regard, the treatment of liquid waste is the obligation of all other parties that may perform activities that degrade the environment and those are: industries, commercial buildings, prisons, hospitals, hotels, schools, population, slaughter houses, garages[241] and etc.

In addition, the Directives emphasize that domestic water can be a resources with proper application (fertilizer, source of moisture) instead of being a pollutant, since "Domestic Liquid waste is not usually an extreme environmental hazard unless discharged in a manner where it can impact surface water or shallow groundwater" (Article 13).

[241] According to the article 12, garages must provide treatment system or dispose it elsewhere.

Whether it is about treatment of liquid waste or disposal of domestic liquid waste (Micro-biological pollution from untreated domestic sources is a threat to health[242]), waste water has to respect following tolerance limits.

Tolerance limits of discharged domestic water[243]

Parameter	Limits
TDS mg/l	1,500
TSS mg/l	50
pH	5.0-9.0
Total Nitrogen mg/l	
Nitrite mg/l	
Ammonium mg/l	
Total phosphorus	
Temperature variation of treated water compare to ambient temperature of water	
BOD_5 mg/l	
COD mg/l	
Coli forms number/100 ml	
Oil and grease mg/l	
Chlorine mg/l	
Sulfate mg/l	
Color TCU	50
Turbidity NTU	30

[242] The Nile basin initiative: http://wrpmp.nilebasin.org

[243] Source: WHO (2006): Guidelines for wastewater reuse.

Tolerance limits of discharged industrial wastewater

Physical and Microbiological Requirements[244]

Determinants	Units	Upper limit and range
Temperature increase		3 (variation)
pH		6.0-9.0
Dissolved oxygen (min.)	% sat.	60
BOD_5 (max.)	mg/l at 20	50
COD (max.)	mg/l	250
Oil and grease	mg/l	10
Colour	TCU	50
Turbidity	NTU	30
Total Dissolved Solid (TDS)	mg/l	2,000
Total Suspended Solid (TSS)	mg/l	50
Faecal coliform	Counts/100 ml	1,000
Coliforms	Number/100 ml	400

[244] Source: WHO/UNEP Environmental Program: Technical Report, 1998.

Chemical Requirements - acro Determinants[245]

Determinants in mg/l	Upper limits and ranges
Free and saline ammonia N	50
Ortho phosphate P or soluble phosphate	1.5
Phenol	2.0
Calcium Ca	500
Chloride Cl	600
Chlorine residual	1
Fluoride F	1.5
Potassium K	100
Sodium Na	400
Sulphate SO4	400
Sulphide	1.0
Zinc Zn	5.0

Chemical Requirements - Micro Determinants[246]

Determinants in mg/l, unless otherwise stated	Upper limit and ranges
Arsenic A	0.01
Benzine mg/l	0.00
Boron B	0.5
Cadmium Cd	0.01

[245] Source: EPA Manual: Wastewater Treatment/Disposal for Small Communities, September 1992.

[246] Source: EPA Manual: Wastewater Treatment/Disposal for Small Communities, September 1992.

Chromium total Cr	0.05
Chromium Cr (total)	0.5
Cobalt Co	1
Copper Cu	3
Cyanide CN	0.1
Iron Fe	3.5
Lead Pb	0.1
Manganese Mn	0.1
Mercury Hg (total)	0.002
Nickel Ni	2
Selenium Se	0.02

The industries, the population and all other parties (commercial buildings, prisons, hospitals, hotels, schools, slaughter houses, garages) that may perform activities that degrade the environment by discharging wastewater to sanitary sewers should perform test in compliance with the above standards twice a year (more in case of complaints) and give report to the RURA. The tests are to be done in competent/recognized laboratory.

In addition, any activity that may degrade the environment because of wastewater must be submitted to a program that prevents or mitigates and control the discharge of water. Such a program has to be approved by the REMA.

As preventive provision, following operations are prohibited:

- Dumping or disposal of any liquid waste substances in a stream, river, lake and in their surroundings;
- Damaging the quality of the underground water;

- To dump wastewater in wetlands, except after treatment in accordance with standards and regulations that govern it;
- No one is permitted to dispose liquid waste in an unapproved place, except where it is destroyed from or in a treatment plant and after being approved by competent authorities.

Finally, discharge or deposit of matter of a kind listed below is strictly forbidden:

- Solid or viscous substances in quantities or of such size as to be capable of causing obstruction to the flow in a sewer, including but not limited to ashes, bones, cinders, sand, mud, straw, shavings, metal, glass, rags, feathers, tar, plastics, wood, ungrounded garbage, animal guts or tissues, paunch manure, and whole blood;
- Sewage that may cause an offensive odour to emanate from a sewage works, and without limiting the generality of the foregoing, sewage containing hydrogen sulphide, carbon disulphide, other reduced sulphur compounds, amines or ammonia in such quantity that may cause an offensive odour;
- Water other than storm water that has originated from a source separate from the water distribution system of the municipality;
- Sewage or uncontaminated water at a temperature greater than 65 degrees Celsius;
- Sewage containing dyes or colouring materials which pass through sewage works and discolour the sewage works effluent;
- The following materials or sewage containing any of the following in any amount: Fuels, Ignitable Waste, Pesticides.

Provisions for Liquid Wastes Transporters and Treatment Systems Owners

The Directives state that any activity consisting in transportation of liquid wastes must be allowed by the RURA which is entitled to deliver a permit. The applicant has to provide the company's statute and the business plan. In addition, he has to:

- Have appropriate vehicles[247];
- Sign written contracts with each individual customer/household or/and contracts with local authorities;
- Respect tariff as agreed with RURA;
- Pay to RURA an annual contribution equals to 1% of income as stated in the Ministerial Order no 4/DC/04 of 07/06/2004[248];
- Show the disposal site where to deposit the wastes transported;
- Comply with any law, regulation and or requirement as may be determined by RURA or any other competent organ.

Considering owners of wastewaters treatment systems, the Directives only require a continued functioning and a maintenance plan.

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[247] Article 15: "Any vehicle or device used in liquid waste collection and transportation including septic waste collection shall comply with the following:
- Liquid wastes shall be contained in controlled area such as a portable tank;
- Containment devices must be of structurally sound and leak free;
- Containment devices must be of sufficient quantity or volume to completely contain the liquid wastes generated;
- Containment areas or devices shall not be located where accidental release of contained liquid can threaten health or safety or discharge to water bodies, channels, or storm drains".

[248] Ministerial Order No. 4/DC/04 on Annual Fees Payable by Public Utilities - June 7, 2004.

Inspection and Penalties

In order to facilitate inspections, owners or operators with one or more connections to a sewage works have to install and maintain in good repair in each connection a suitable manhole to allow observation and sampling of the sewage and measurement of the flow of sewage therein. Where installation of a manhole is not possible, an alternative device or facility may be substituted. The penalties have been summarized in the following chart.

Chart of penalties

Infringement	Penalties[249]
Discharge of liquid waste that may have harmful effects on the environment (not in compliance with effluent disposal standards)	Suspension of activity from 3 to 6 months and/or fine from 1,000,000 to 10,000,000
To transport, dump or treat without authorization, any liquid waste that is subject to prior authorization provided for by these Directives	Fine from 500,000 to 2,000,000
To pollute inland water masses by dumping, spilling or depositing chemicals of any nature that may cause or increase water pollution	Fine from 2,000,000 to 5,000,000
To deposit, pour sewage in an unapproved place	Fine from 50,000 to 500,000

xiii) Law No. 43/2010 *Establishing Rwanda Energy, Water and Sanitation Authority (EWSA) and Determining its Responsibilities, Organisation and Functioning* - December 07, 2010

[249] Fine are in Rwandan francs.

The National parastatals charged with water and electricity distribution RWASCO (Law No. 43/2008) and RECO (Law No. 44/2008) have been merged[250] and given the name EWSA that is Energy, Water and Sanitation Authority with Law No. 43/2010. EWSA has legal personality and financial and administrative autonomy (Article 1). The main mission of this Agency is "To implement Government policy for developing energy, water and sanitation sectors through the coordination, conception, development, monitoring and evaluation of the actions and programmes that are within the framework of its mission" (Article 4). The same provision also details more specifically the Agency's responsibilities which are fairly numerous and thorough in matter of water and sanitation:

"1° To coordinate all activities related to programmes aimed at promoting and exploiting energy resources in the country;

2° To conduct studies on analysis of energy and water supplies and demands, evaluation and programming of actions for energy and

250 The evolution is fairly complicated: "As a national utility, the company has been in existence since 1976, as ELECTROGAZ. ELECTROGAZ was founded in 1939 as "REGIDESO" by the colonial masters supplying water, electricity and gas to RWANDA-URUNDI with its Headquarters in Bujumbura. The company was later divided into REGIDESO Rwanda and REGIDESO Burundi in 1963. In 1976, REGIDESO Rwanda became ELECTROGAZ and was granted the monopoly for the production and distribution of water and electricity in the country. After the 1994 genocide, there was an increase in urban settlements, thus increased demand for water and electricity. The installed capacity for water and electricity supply could not sustain the increased demand, which called for further investments. In 1999, a law was passed removing the monopoly on electricity and water supply. This encouraged independent power producers to start their operations. In 2003, ELECTROGAZ was placed under a management contract with Lahmayer International to manage and restructure ELECTROGAZ in collaboration with Hamburg Water Works for 5 years. This lasted for only two years and in March 2006 the management contract was terminated and it reverted to the Government of Rwanda. [⋯] Under law N°43-44/2008 of 09/09/2008, ELECTROGAZ was spilt into RECO (Rwanda Electricity Corporation) and RWASCO (Rwanda Water and Sanitation Corporation)". Source: http://www.ewsa.rw

water harnessing and more specifically any studies in line with mission assigned to the authority;

3° To design and promote pilot projects demonstrating innovative techniques and clear processes in the area of energy, rational use of energy, inexhaustible[251] and substitute energies;

4° to promote capacity building trainings in the area of energy and water and sanitation[252], rational use of energy, water and effective sanitation management, inexhaustible and substitute energies;

5° To organize sensitization campaigns for consumers of energy and water in all its forms and for users of sanitation infrastructure;

6° To contribute to technical and scientific development in the areas of energy, rational use of inexhaustible and substitute energies;

7° To collaborate with relevant national organizations to set up standards of energy and water efficiency to facilitate use of equipment and materials which consume less energy and water as well as other products contributing to energy saving;

8° To sensitize investors on projects with Government incentives to develop energy sector, rational use of energy, inexhaustible and substitute energy;

9° To make proposals to the supervising authority on policy relating to rational use of energy and water and use of inexhaustible and substitute energies;

10° To ensure stability of Kivu Lake and its physical and human surroundings during methane gas extraction processes;

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[251] Which is renewable energies provided from water, sun, wind, thermal water, methane gas, waste and others, according to the article 2 (2).

[252] Which is "solid or liquid waste management procedure. Liquid waste consists of domestic waste, waste from toilets, industries or rain water. Solid waste consists of waste from grass, dirt, bottles, paper and others", according to the article 2 (1).

11° To efficiently manage infrastructure of the electricity, gas, oil, water and sanitation;

12° To ensure safe and sufficient supply of electricity, water and hydrocarbons in the country using, where possible, strategic stock and to ensure its rational management;

13° To process and disseminate data and information on production, processing transport and distribution of energy and water consumption especially through:

a) Designing, identifying and coordinating works relating to the collection of statistical data on production, distribution, processing, and consumption of energy and water;

b) Designing, putting in place and managing the database relating to the energy, water and sanitation;

c) Preparing reports on country's energy and more generally the processing of data and all statistical information related to energy;

d) Publicizing and disseminating statistics relating to energy, water and sanitation;

e) Conducting statistical studies on the energy sector, in collaboration with the organizations in charge of energy, water and sanitation;

f) Collaborating in all instances with institutions and organizations producing, processing, distributing energy and water that are required to react to issues brought by the Authority or any other authorized person and to facilitate him/her in his/her duties;

14° To carry out sensitization and identification of technical and economic studies related to planning and implementation of infrastructure projects in the energy, water and sanitation sectors;

15° To ensure that planning of investment in the energy, water and sanitation sectors meets the energy, water and sanitation policies as adopted by Government;

16° To participate in negotiations with donors to secure necessary support to enable the Authority to better achieve its mission;

17° To make proposals on new works of production and distribution of electricity, gas and water in which private operators may take part;

18° To facilitate the private operators investing in processing and distribution of electricity, gas and water as well as those involved in sanitation works in order to merge them in existing circuits;

19° To take part in fixing prices for electricity, gas, petroleum products, water and sanitation in collaboration with the concerned private operators and local administrative entities;

20° To take part in research and development works in energy, water and sanitation sectors in collaboration with all concerned stakeholders;

21° To participate in designing of national policy related to energy, water and sanitation;

22° To provide and distribute water, gas, and electricity;

23° To sell electricity, water, gas and other related services;

24° To extend, in all possible ways, quality electricity, water, gas and sanitation services to all subscribers;

25° To manage all activities and services related to electrical power, processing water, gas and sanitation and other direct or indirect

matters related to the mission of EWSA;

26° To collaborate and cooperate with other institutions either at national, regional and international levels with similar missions to those of EWSA;

27° To ensure management of activities related to electricity, gas, water and sanitation infrastructure and other related activities whether directly or indirectly;

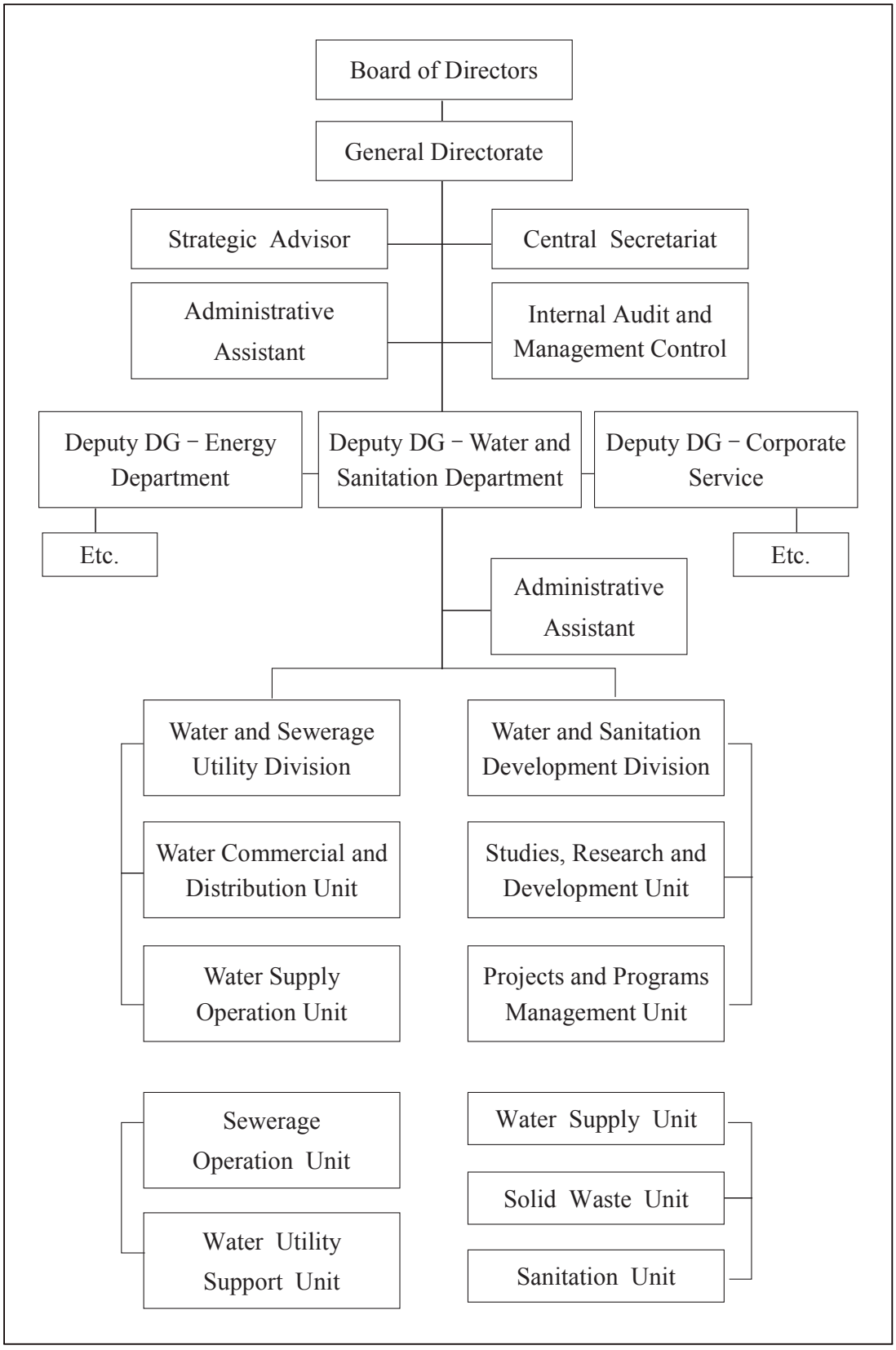
28° To establish ways for tapping rain water at home, both in urban and rural areas;

29° To establish ways of transporting and treating of waste;

30° To ensure efficient system of use, management, and conservation of sanitation infrastructure".

The EWSA is classically managed by a Board of Directors, which is responsible for governing and decision-making, while a General Directorate is in charge of the daily management.

This Law has been implemented by the Prime minister with the Ministerial Order No. 41/03 of May 20, 2011 determining structure and summary of job positions for Rwanda Energy, Water and Sanitation Authority (EWSA). Its annex I details its functioning through an organizational chart. One only interests in Water and Sanitation Department:


Board of Directors
General Directorate
Strategic Advisor
Central Secretariat
Administrative Assistant
Internal Audit and Management Control
Deputy DG – Energy Department
Deputy DG – Water and Sanitation Department
Deputy DG – Corporate Service
Etc.
Etc.
Administrative Assistant
Water and Sewerage Utility Division
Water and Sanitation Development Division
Water Commercial and Distribution Unit
Studies, Research and Development Unit
Water Supply Operation Unit
Projects and Programs Management Unit
Sewerage Operation Unit
Water Supply Unit
Solid Waste Unit
Water Utility Support Unit
Sanitation Unit

Law No. 53/2010 Establishing Rwanda Natural Resources Authority (RNRA) and determining its mission, organisation and functioning - January 25, 2011

Article 17: Transitional Period
Article 18: Former Personnel of Merged Institutions
Article 19: Drafting, Consideration and Adoption of this law
Article 20: Repealing Provision
Article 21: Commencement

The present law establishes the Rwanda Natural Resources Authority (RNRA) as a legal personality with administrative and financial autonomy. The RNRA leads management of natural resources such as land, water, forests, mines and geology. This Authority is entrusted with supervision, monitoring and ensuring the implementation of issues relating to the promotion and protection of natural resources in programs and activities of all national institutions. The article 3 describes concretely mission of RNRA which is responsible for:

"1° Implementing national policies, laws, strategies, regulations and government resolutions in matters relating to the promotion and protection of natural resources;
2° Making a follow up and implementing international conventions Rwanda ratified on matters relating to the conservation of natural resources;
3° Advising the Government on appropriate mechanisms for conservation of natural resources and investments opportunities;
4° Registering land, issuing and keeping land authentic deeds and any other information relating to land of Rwanda;
5° Ensuring proper geological data and their respective maps;
6° Providing technical advice on the proper use of natural resources;

7° Making follow up and supervising activities relating to proper management, promotion and valuation of natural resources;

8° Rehabilitating and conserving where natural resources are damaged in the country;

9° Making a follow up and supervising activities relating to the proper use of natural resources;

10° Promoting activities relating to investment and added value in the activities of use and exploitation of natural resources in Rwanda;

11° Initiating research and study on natural resources and to publish the results;

12° Instituting regulations, guidelines and appropriate mechanisms for management, use and conservation of natural resources and ensuring their implementation;

13° Establishing cooperation and collaboration with other regional and international institutions with an aim of harmonizing the performance and relations on matters relating to management of natural resources".

The RNRA, which has been placed under Ministry of Environment and Lands supervising authority, is managed by a Board of Directors (governance and decision making organ) and a General Directorate (daily management).

(3) The Institutional Framework of Water

The institutional framework of water, from the top to the down, regards both governmental and local levels.

① Governmental Level

The Ministry of Environment and Lands has been charged with water resources management (i) while the Ministry of infrastructure is responsible for water supply and sanitation (ii). However, many other ministries and administration are also responsible for water (iii).

First of all one has to describe shortly the recent evolution of water and sanitation sector in order to understand repartition of roles between Institutions. The following chart represents the evolution:

<table>
<tr><th>Period</th><th colspan="2">Institutions</th><th>Responsibilities</th></tr>
<tr><td>2003 to 2008</td><td colspan="2">MINITERE (Ministry of Lands, Environment, Forestry, Water and Mines)</td><td>Water and sanitation sector</td></tr>
<tr><td>2008 to 2009</td><td colspan="2">MINIRENA (Ministry of Environment and Natural resources)</td><td>Water resources management, allocation, protection and regulation of its use</td></tr>
<tr><td rowspan="3">2009 to present</td><td rowspan="2">MINI RENA</td><td>MINELA (Ministry of Environment and Lands)</td><td>Water resources management</td></tr>
<tr><td>MINIFOM (Ministry of Forestry and Mines)</td><td>-</td></tr>
<tr><td colspan="2">MININFRA (Ministry of Infrastructure)</td><td>Water supply and sanitation</td></tr>
</table>

Then, one has to emphasize that those changes have not yet been taken in account, even at the governmental level and, for instance: some official websites have not been yet updated; some official reports are contra-

dictory about responsibilities. Consequently, general understanding of the framework is fairly complicated.

ⅰ) The Ministry of Environment and Lands: Water Resources Management

This Ministry is in charge of environment matters including land use development policies, development of environmental policies and procedures, natural protection, environmental legislation, biodiversity and other environmental aspects. Moreover, the article 15 of Law No. 62/2008 put this Ministry in charge of defining the national water policy.

Two agencies are under Ministry of Environment and Lands:
- Rwanda Environment Management Authority (Law No. 16/2006);
- Rwanda Natural Resources Authority (Law No. 53/2010).

The second one coordinates and supervises activities of its 3 child agencies, which are: NLC (National Land Centre); OGMR (The national Geology and mines authority); and NAFA (National Forestry Athority).

Roles and Responsibilities of Core Environmental Institutions[253]

	Department/Agency	Issues, roles and responsibilities
1	Ministry of Environment and Lands	Overall policy oversight, monitoring & institutional support. MINELA will also coordinate resource mobilization, allocation & accountability. As the proposed Water Resources Management Agency, is yet to be established, MINELA will also coordinate the implementation of the integrated water resources management program.

253 Ministry of Environment and Lands, Five-Year Strategic Plan for the Environment and Natural Resources Sector (2009 - 2013), 2009, p. viii.

2	REMA		Overseeing the implementation of environmental law and policy through education and sensitization; law enforcement and monitoring, and capacity building support to other institutions. Ensuring that environmental sustainability principles are integrated in policies, plans and budgets in all sectors.
3	RNRA	NLC	Land administration and land tenure security through registration and land use planning both in the urban and rural areas.
		NAFA	Coordinating the forest management and agro-forestry development component.
		OGMR	Coordinating all activities relating to research and mapping of mineral resources; developing and monitoring standards for large scale commercial and artisanal miners; regulating mining activities.

In addition, the aforementioned Ministry also chairs two specific commissions:

- The National Water Consultative Commission: Established by article 16 of Law No. 62/2008 and composed of representatives of the Government and of various public and private water users. This Commission has a consultative role in matters connected with water[254].

[254] "The National Water Commission shall be consulted on the following matters:
1° planning projects in the water domain elaborated to the national level or the big hydrographic basin level and on the revision of these projects;
2° projects of water supplying, planning, management and transfer of water from basin to basin, with national character as well as in the big projects of the same category of provincial character;
3° any water related issue, in case the Minister deems it necessary".

- The Water Interministerial Committee: Established by article 16 of Law No. 62/2008 and composed of ministerial department representatives having water in their domain. This Committee is "consulted on all legislative drafts/Bills regarding planning in the water domain elaborated at the national level, as well as on matters of national, regional or international level".

ii) The Ministry of Infrastructure: Water Supply and Sanitation

The Ministry of Infrastructure is involved in water issues through its policy: National Policy and Strategy for Water Supply and Sanitation Services, February 2010. Concretely, the Ministry hosts a Minister of State in charge of Energy and Water[255] which is responsible with the formulation of national policies, strategies and guidelines for water supply and sanitation sub-sector. The Ministry is further responsible for sector planning, budgeting and resource mobilization to enable service delivery, for the provision of support to local governments (in order to enhance their institutional and human resource capacities), and for monitoring the implementation of government policies and sector performance. It is also responsible for the overall coordination of the WSS sector stakeholders.

In addition, the EWSA (See above) is under supervising authority of the Ministry.

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255 "Energy and Water are critical elements of sustainable economic development. Without access to both, there would be no progress as other sectors including education, health and mining are intertwined and interdependent. […] Access to clean and affordable water is a human right, and Rwanda is on track to meet Millennium Development Goals as well as other targets set out in the National Vision 2020 to provide portable Water and hygienic sanitation services to the 100% of the population". Source: http://www.mininfra.gov.rw/

iii) Other Ministries and Administrations

Ministry of Finance and Economic Planning

This Ministry tackles to water issues through two main policies, which have been developed above: Rwanda Vision 2020, 2000; Economic Development and Poverty Reduction Strategy, 2008-2012, September 2007. In addition, this Ministry uses to lead review of public expenditure in matter of water and sanitation[256].

Ministry of Agriculture and Animal Resources

The Government of Rwanda is seeking to rationally exploit its soil and water resources as a mechanism to transform and modernize agriculture. The irrigation master plan for Rwanda showed that Rwanda has potential to irrigate and modernize agriculture on 587,711 ha land[257] and the revised 7-year government target is 100,000 hectares to be irrigated by 2017/2018.

In 2010, the Government of Rwanda developed a Task Force on Irrigation and Mechanization with a mandate as follows:

1. To oversee, and implement where necessary, all irrigation and marshland development programs in Rwanda. The Task force is responsible for the national improvement in irrigation and therefore for ensuring

[256] For instance: Ministry of Finance and Economic Planning, Leonard Chacha, John Bosco Ruzibuka and Godfrey Birungi, Rwanda Water and Sanitation Sector - Public Expenditure Review 2009, April 2010.

[257] "Including: (i) 219,797 ha of marshland potential; (ii) 153,534 ha of hillside domains; (iii) 179,954 ha of river &lakes pumping domains; (iv) 36,432 ha of groundwater resources". Source: http://www.minagri.gov.rw/

that all irrigation projects implemented by MINAGRI projects and agencies continue to develop rural areas in Rwanda.

2. Through three main channels, the Task Force is to ensure that irrigation is sustainable:
   Develop modern techniques of irrigation
   Develop farmer capacity to manage irrigation systems
   Ensure that the development is sustainable through maintaining and re-organizing towards the correct water use rights and tenure rights for the irrigation systems.
3. To facilitate the implement mechanization in agriculture at the village level;
4. Improve data collection on irrigation activities to ensure that the monitoring and future policy actions can be effective;
5. Ensure capacity building at cooperative and farm level in irrigation and mechanization techniques to ensure sustainability
6. Manage the internal government financing of all irrigation and mechanization projects.

Ministry of Local Government

The Ministry of Local Government, Good Governance, Rural Development and Social Affairs is in charge of accompanying local participatory planning processes, applying the government's Community Development Policy. Actual planning is carried out by Rwanda's 30 districts through District Development Plans which are elaborated using a participatory approach. The districts also own the water infrastructure since the Presidential Order No. 291/11 of May 15, 1987. This Ministry is also involved in the School Sanitation programme (commonly called HAMS - Hygiène et Assainissement en Milieu Scolaire).

Ministry of Health

As a matter of fact, health is strongly connected with water[258]. The Ministry of health has recognized lacks regarding awareness in matter of hygiene and recommends an improvement of hygiene education in schools. Indeed, intensification of environmental health education is recommended as the best means to improve the impact of water and sanitation programs at community and household levels[259]. Key components of environmental health that are critical for improving the environmental health situation in Rwanda were identified and prioritized like environmental health education, food and water safety, personal and domestic hygiene, liquid and solid waste management, etc.

Ministry of Education

As stressed above, in order to increase public awareness of water and sanitation issues people should be sensitized from school. The Ministry of Education is cooperating with MININFRA in the development of the School Sanitation programme (commonly called HAMS - Hygiène et Assainissement en Milieu Scolaire). Large part of funding to hygiene and sanitation in schools is done through large projects such as WASH funded by UNICEF/The Netherlands/Government of Rwanda, but also all other national level projects in rural and urban areas have sanitation and hygiene components for communities and schools[260].

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258 "Over 80% of diseases that afflict Rwandans are waterborne, so access to safe water is a precondition for improving environmental and personal health". Ministry of Finance and Economic Planning, Economic Development and Poverty Reduction Strategy, 2008-2012 - September 2007, p. 20.

259 Ministry of Health, Environmental Health Policy, July 2008, p. 8.

Rwanda Utility Regulatory Agency

The RURA has the mission to regulate certain public Utilities particularly water and removal of waste products from residential or business premises. Through these competences, RURA is an important institution in matter of water and sanitation. The RURA is supervised by a Board composed with three persons appointed by the President of the Republic.

② Local Level

Basically, the water sector is classified into urban and rural water supply: the urban water supply belongs to the EWSA (See above) while the rural one relies on districts[261].

With the recent administrative reforms, districts have been entrusted with new powers in terms of environment management, and this will certainly have a positive impact on environment and natural resources management in Rwanda. Therefore, the new organic framework within districts provides a post of a professional in charge of environment and natural resources at each level with duties regarding water: promotion of rational use of water; setting up development program for swamps and conservation.

District local governments are responsible for ensuring that there is access to basic services in their jurisdictions. In this context they prepare consolidated development plans in line with community priorities, implement government policies, and monitor the progress of implementation.

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260 Ministry of Finance and Economic Planning, Leonard Chacha, John Bosco Ruzibuka and Godfrey Birungi, Rwanda Water and Sanitation Sector - Public Expenditure Review 2009, April 2010, p. 15.

261 Rwanda Utilities Regulatory Agency, Report January 2009 to June 2010, pp. 69-70.

In principle, all water and sanitation projects take place at district level irrespective of the source of funding. Rural districts own the water infrastructure and are fully in charge of the project cycle of water supply and sanitation projects, from identification to evaluation, and for the management of their water supply systems. Its management is usually delegated to authorized water user associations or professional private operators. These associations are supposed to ensure maintenance and sustainability of the infrastructures in their areas. Maintenance funds is expected to be self generated by selling water and in cases of inadequacy, the central government subsidizes the associations. In situations where a water supply line covers more than one district, management structures in the form of inter-municipal bodies have been set up.

Districts are accountable both in front of their elected Council and Executive Committee and in front of central government for the use of transfers from national treasury, most of which is block grant. The districts are responsible for: preparing their budget; keeping track of expenditures and preparing financial statements; preparing budget execution reports; respecting sound principles of financial management; providing feedback on earmarked transfers; and respecting the conditions attached to each earmarked transfers (reporting requirements, etc.). All major water development projects are financed directly through MININFRA[262].

As stated above the districts hold the formal supervisory responsibility for rural water supply and sanitation services. However, the beneficiary communities are to be involved in project identification, planning and

[262] Ministry of Finance and Economic Planning, Leonard Chacha, John Bosco Ruzibuka and Godfrey Birungi, Rwanda Water and Sanitation Sector - Public Expenditure Review 2009, April 2010, pp. 15-16.

commissioning. They form local water associations or water user committees to represent their consumer interests. For small water supply projects ubudehe[263] procedures are applicable, where the community acts as the implementing entity (project owner) using community labour as their dependable workforce.

Chart summarizing local levels, institutions and responsibilities according to the Law No. 62/2008

Levels	Institutions	Responsibilities
Districts	Basin District Committees Composition: 1° administrations' representatives concerned by water; 2° elected representatives of the local decentralized communities; 3° representatives of the different categories of water users.	- To draft the master plan of management of the basin waters; - Delimitation of under-basins when necessary and planning and management of such waters; - Arbitration of conflicts; - To provide advices related to technical and financial matters to the administration; - To evaluate the need for basin organisms.
Sectors	Basin Sector Committees The structure and functioning of this committee shall be the same as	- To draft the local master plan; - To define management procedure for under-basin waters or aquifers;

[263] This process is "named ubudehe with reference to the Rwandan culture of mutual assistance and conviviality whereby people would come together to address problems facing them so as to work for their development. In a remote past, Rwandan people resorted to ubudehe mainly in agricultural and house building activities as the latter were the main activities of the time. Nowadays, Rwandans are faced with various problems (construction of roads, ensuring child education, health facilities, security…) which require combined efforts to address them as was the case in the past when people resorted to ubudehe". Source: http://www.rwanda-gac.org

	set out for the basin committee at the district level.	- To formulate propositions and opinions at their level.
Local	Local Water Associations The management of local water association is composed of representatives who have a role in the exploitation of rivers, streams and lakes.	Users of water can constitute a local association of water having legal entity in view of management, of enhancement of production, and protection of the water resources and fight against flooding.

③ River Basin Management

The situation of Rwanda is quite simple regarding basins. Indeed, the country is divided into two major drainage basins: the Nile to the east covering 67% and delivering 90% of the national waters and the Congo to the west which covers 33% and drains the remaining 10%[264]. However, there is no institution responsible for those two drainage basins. The law No. 62/2008 vaguely provides that those two basins have under-basins which have to be defined by law (Article 19) and only states that basin committees have to be established in districts and sectors (Articles 20 and 22).

3) Rwandan Issues and Recommendations

The Rwandan framework of water and sanitation is fairly complete and it has undergone many recent changes. The Ministry of Finance and

[264] Rwanda Environment Management Authority, Rwanda State of Environment and Outlook Report, 2009, Chapter 7: Water and Wetlands Resources, p. 1.

Economic Planning has stated a clear analysis of the situation and for instance recognizes that "The number of people with access to safe water increased between 2000 and 2005, but there was no change in the proportion of households having access to safe water"[265]. One may even say that this proportion has decreased, according to WHO/UNICEF's figures. It is further noted that only 40% of the Rwandan rural population has access to safe water compared to 60% of the urban population[266]. However the situation has evolved between 2008 and 2010, as shown by following figures.

Use of sanitation facilities and of drinking-water sources[267]

Year	Population (thousand)	Percentage urban population	**Use of sanitation facilities** (percentage of population)												Number of people who gained access to improved sanitation 1990-2008 (thousand)
			Urban				Rural				Total				
			Improved	Unimproved			Improved	Unimproved			Improved	Unimproved			
				Shared	Unimproved facilities	Open defecation		Shared	Unimproved facilities	Open defecation		Shared	Unimproved facilities	Open defecation	
1990	7.150	5	35	12	50	3	22	2	69	7	23	3	67	7	
2000	7.958	14	43	15	40	2	40	4	51	5	40	6	49	5	3.605
2008	9.721	18	50	18	31	1	55	6	36	3	**54**	**8**	**35**	**3**	

265 Ministry of Finance and Economic Planning, Economic Development and Poverty Reduction Strategy, 2008-2012 - September 2007, p. 20.

266 Ministry of Health, Environmental Health Policy, July 2008, p. 8.

267 Source: WHO and UNICEF, Progress on Sanitation and Drinking-water, 2010 update, p. 48.

Use of drinking-water sources (percentage of population)												Number of people who gained access to improved sources of drinking-water sources 1990-2008 (thousand)
Urban				Rural				Total				
Improved			Unimproved	Improved			Unimproved	Improved			Unimproved	
Total improved	Piped on Premises	Other improved		Total improved	Piped on Premises	Other improved		Total improved	Piped on Premises	Other improved		
96	32	64	4	66	0	66	34	68	2	66	32	1.456
85	22	63	15	64	0	64	36	67	3	64	33	
77	15	62	23	62	1	61	38	**65**	**4**	**61**	**35**	

The Ministry of Environment and Lands early stated (in 2004) that "non-availability of drinking water has two main negative impacts on the community such as: (i) the time spent in fetching water which is lost in income - generating activities and particularly the schooling of girls and (ii) the diseases caused by use of improper water with various consequences on health and social conditions of the population"[268]. In 2011, the same Ministry keeps in mind that "Over 80% of the diseases that afflict Rwandans are waterborne; so access to safe water is a precondition for improving environmental and personal health"[269]. But sometimes figures may be deceptive. For instance, 80% of the country's population has access to latrines, however only 8% of these meet hygienic standards[270].

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[268] Ministry of Environment and Lands, Sectorial Policy on Water and Sanitation, October 2004, p. 8.

[269] Ministry of Environment and Lands, National Policy for Water Resources Management, April 2011, p. 17.

[270] Umuhoza Mbateye F.A., Nhapi I., Wali U.G. and Banadda N., "Assessment of Wastewater Management Practices in Kigali City, Rwanda", *The Open Environmental and Biological Monitoring Journal,* 2010, vol. 3, p. 21. However, another source states

And the Government is aware of such a situation because the Ministry of Infrastructure stated that a "safe, well regulated and affordable off-site sanitation services for densely populated areas"[271] must be established. Consequently, many problems remain to be solved and issues are still pending in various fields.

(1) Policy Issues

The first issue that should be addressed by policy regards liability and availability of data. Indeed, knowledge of the quantity and quality of the resource is inadequate, and data are often unreliable. Resources available for collecting and processing the basic data on hydrology and hydrogeology are insufficient. There is a lack of well-trained staff, research efforts and dissemination of existing information[272]. And because of poor data system, the Rwanda's water supply and sanitation sector monitoring and evaluation remains weak[273]. Indeed, only 22 out of an existing 69 hydrological stations have been in operation since 2008. These stations should be functional in order to ensure an efficient monitoring[274]. Therefore, monitoring and evaluation system should be strengthened[275].

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that 92% of the population have access to latrines where only 38% of those latrines meet acceptable hygiene standards (Melissa Thaxton, "Integrating Population, Health, and Environment in Rwanda", Population Reference Bureau, Policy Brief, February 2009, p. 5).

271 Ministry of Infrastructure, WATSAN Sector Performance Report for the Joint Water Supply and Sanitation Sector Review, 2009/10, p. 6.

272 The Nile basin initiative: http://wrpmp.nilebasin.org

273 USAID, Rwanda, Water and Sanitation Profile, p. 3.

274 Rwanda Environment Management Authority, Rwanda State of Environment and Outlook Report, 2009, Chapter 7: Water and Wetlands Resources, p. 17.

275 Leonard Chacha, John Bosco Ruzibuka and Godfrey Birungi, Rwanda Water and Sanitation Sector-Public Expenditure Review 2009, April 2010, p. 17.

Furthermore, data are also unreliable in matter of provided services, whether it is about water or sanitation. For instance, in the latter case, according to one source, 80% of the country's population has access to latrines, however only 8% of these meet hygienic standards[276], while according to another source, 92% of the country's population has access to latrines, however only 38% of these meet hygienic standards[277]. This problem has been clearly emphasized[278].

In addition to reviewing the Public Hygiene related laws/regulations and formalizing the inspection system, the regulatory framework should be backed by a national monitoring and surveillance program. In order to address and manage food and water safety, it is imperative to have knowledge on the current situation and trends with regard to the occurrence and spread of pathogens in the food production chain. This knowledge needs to be updated regularly so that appropriate responses can be prepare d[279].

Therefore, liability and availability of data appear to be a cornerstone of water and sanitation management which must be taken in consideration in the water and sanitation framework.

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276 Umuhoza Mbateye F.A., Nhapi I., Wali U.G. and Banadda N., "Assessment of Wastewater Management Practices in Kigali City, Rwanda", *The Open Environmental and Biological Monitoring Journal*, 2010, vol. 3, p. 21.

277 Melissa Thaxton, "Integrating Population, Health, and Environment in Rwanda", Population Reference Bureau, Policy Brief, February 2009, p. 5.

278 "An in-depth review of the water supply (73%) and sanitation coverage rates (45 %) in 2008 should be conducted, with the aim to validate the access rates currently estimated. In this regard, it is pertinent to observe that the access rates reported might be too high when compared to those reported during the first 2 rounds of the population living survey, which have indicated a lower growth in the water and sanitation sector". Leonard Chacha, John Bosco Ruzibuka and Godfrey Birungi, Rwanda Water and Sanitation Sector - Public Expenditure Review 2009, April 2010, p. 18.

279 Ministry of Health, Environmental Health Policy, July 2008, p. 23.

The water supply policy is also questionable. Indeed, until recently, policies tried to improve public standpipe. However, two problems occurred. On the one hand, cases of vandalism of storage tanks were found. On the other hand, it appeared that private connections are preferable because prices are not respected at standpipes: "the water tariff set at 10 RwF /jerrycan is not respected; a higher tariff is now applied (starting at 20 RwF/jerrycan) at public standpipes"[280].

Therefore private connections would be preferable. However, connection is always payable (Law No. 62/2008, article 76 (1)), and low income households often suffer of absence of connection to a water supply network[281] because they cannot always afford such a cost. One thinks that a policy based on incentives[282] or any "innovative credit mechanism s"[283] should be established in order to improve that situation. That would be more efficient above all that would respect the statement according to which "Water, and water facilities and services must be affordable for all. The direct and indirect costs and charges associated with securing water must be affordable and must not compromise or threaten the realization of other Covenant rights"[284].

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280 *The Regulator*, Quarterly Magazine of Rwanda Utilities Regulatory Agency, Vol. No. 2, June 2011, p. 27. See also: "In some urban areas the rising cost of water, which is often delivered by tanker trucks, is becoming prohibitive for many urban poor". Melissa Thaxton, "Integrating Population, Health, and Environment in Rwanda", Population Reference Bureau, Policy Brief, February 2009, p. 5.

281 Umuhoza Mbateye F.A., Nhapi I., Wali U.G. and Banadda N., "Assessment of Wastewater Management Practices in Kigali City, Rwanda", *The Open Environmental and Biological Monitoring Journal*, 2010, vol. 3, p. 24.

282 For instance, incentives could consist in reduction of water tariff in order to compensate the connection cost.

283 UNEP, Water Supply & Sanitation Collaborative Council, and World Health Organization, *Water Pollution Control - A Guide to the Use of Water Quality Management Principles*, 1997, p. 199.

In the same way, households could be found guilty for non conformity with sanitation networking law, which consists in defect of connection of domestic wastewater to the collective sanitation network or defect of maintenance of collective and individual sanitation (For such infringement, they may have to pay a fine ranging from 25,000 to 100,000 Rwandan francs). One thinks that this system should also be subject to incentives because that would be more efficient than repression.

In addition, one would stress that high water production cost results from destruction of water sources "due to soil erosion, landslides causing siltation, floods and pollution"[285]. Therefore, policy in matter of forest and agriculture should be strongly connected with policy in matter of water and sanitation[286]. Moreover, the REMA has underlined the absence of wetlands policy[287] which is a big issue considering that wetlands are 10.60% of the country surface area.

The Poverty-Environment Initiative (PEI)[288] has criticized the multiplicity of source of financing in environmental matter, stating that "there is wide spread earmarking of funds e.g. National Water Fund, National

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284 United Nations Committee on Economic, Social and Cultural Rights, General Comment No. 15: The right to water (Twenty-ninth session, 2002), U.N. Doc. E/C.12 /2002/11 (2003), para. 12(c)(ii), *in* COHRE, AAAS, SDC and UN-HABITAT, Manual on the Right to Water and Sanitation, 2007, p. 134.

285 Ministry of Infrastructure, WATSAN Sector Performance Report for the Joint Water Supply and Sanitation Sector Review, 2009/10, p. 6.

286 Partnerships should be developed between health, water and sanitation and agriculture ministries. Ministry of Health, Environmental Health Policy, July 2008, p. 21.

287 Rwanda Environment Management Authority, Rwanda State of Environment and Outlook Report, 2009, Chapter 7: Water and Wetlands Resources, p. 16.

288 "The Poverty-Environment Initiative (PEI) of the United Nations Development Programme (UNDP) and the United Nations Environment Programme (UNEP) is a global UN-led programme that supports country-led efforts to mainstream poverty-environment linkages into national development planning". Source: http://www.unpei.org/

Forestry Fund, and of recent, there is talk of Climate Change Adaptation Fund"[289] to which one can add the National Fund for Environment, abbreviated as FONERWA in French, provided by the Organic Law No 04/2005 determining the modalities of protection, conservation and promotion of environment in Rwanda. Consequently, the PEI has made a proposal to merge the several similar funds.

Rwanda also faces an increasing birthrate and rate of urbanization[290], and City of Kigali has difficulties to provide water and sanitation[291]. For instance, in Kigali, only 15% of sewage is managed by municipal authorities, and about 55% of urban household have not access to solid waste facilities[292]. Moreover, the rate of access to safe drinking water is decreasing everywhere in Rwanda, but particularly in urban areas (1990: 96%; 2000: 85%; 2008: 77%)[293].

Moreover, there is a lack of water specialists[294] (especially engineer s[295]), and about 60 percent of them had left the country because of the

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289 UN-PEI, A Review of Existing and Potential Environmental Fiscal Reforms and Other Economic Instruments in Rwanda, pp. 4-5.

290 The proportion of those living in towns and cities will increase from 10% in 2000 to 30% in 2020 (from 5% in 1995). Ministry of Finance and Economic Planning, Rwanda Vision 2020, 2000, p. 15.

291 Umuhoza Mbateye F.A., Nhapi I., Wali U.G. and Banadda N., "Assessment of Wastewater Management Practices in Kigali City, Rwanda", *The Open Environmental and Biological Monitoring Journal*, 2010, vol. 3, p. 26.

292 Melissa Thaxton, "Integrating Population, Health, and Environment in Rwanda", Population Reference Bureau, Policy Brief, February 2009, p. 5.

293 Source: WHO and UNICEF, Progress on Sanitation and Drinking-water, 2010 update, p. 48.

294 "The development of professionals and practitioners in wastewater management by government and educational institutions would stimulate the adoption of appropriate wastewater management practices". Umuhoza Mbateye F.A., Nhapi I., Wali U.G. and Banadda N., "Assessment of Wastewater Management Practices in Kigali City, Rwanda", *The Open Environmental and Biological Monitoring Journal*, 2010, vol. 3, p. 28.

295 Leonard Chacha, John Bosco Ruzibuka and Godfrey Birungi, Rwanda Water and

war[296]. This is particularly the case for government personnel where there is very few young, well-trained staff. This is also the case in specialized institutions such as REMA, RURA or Rwandan Bureau of Standards[297]. Therefore, capacity building has to be enhanced.

Finally, education and communication should be fully integrated in water and sanitation action plan. Indeed, there is a lack of public awareness of the value of water and the link of health issues and sanitation, and the inefficient use of water in agriculture[298].

(2) Institutional Issues

The Ministry of Health has stated that partnerships should be developed between health, water and sanitation and agriculture ministries[299]. As a matter of fact, the article 18 of the Law No. 62/2008 has established a Water Interministerial Committee which is composed of ministerial department representatives concerned with water in their domain and whose supervision shall be by a Director in the Ministry of Environment and Lands, and which has to be consulted on all legislative drafts/Bills regarding planning in the water domain elaborated at the national level,

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Sanitation Sector - Public Expenditure Review 2009, April 2010, p. 17.

296 "Understaffed and lack of qualified human resources in Decentralized entities (Districts), Utility, private operators under PPP, as well at Central level (ministry) to handle complex WSS infrastructure development and management. Ongoing sector restructuring should carefully recruit and train staff and give them incentive in order to attain value for money for implemented projects and quality". Ministry of Infrastructure, WATSAN Sector Performance Report for the Joint Water Supply and Sanitation Sector Review, 2009/10, p. 6.

297 Rwanda Environment Management Authority, Rwanda State of Environment and Outlook Report, 2009, Chapter 7: Water and Wetlands Resources, p. 18.

298 The Nile basin initiative: http://wrpmp.nilebasin.org

299 Ministry of Health, Environmental Health Policy, July 2008, p. 21.

as well as on matters of national, regional or international level. However, nothing has been concretely done. And the National Policy for Water Resources Management[300], three years later, addresses this issue stating that "the Government will [⋯] establish and operationalize a water inter-ministerial coordination committee to co-ordinate water resources management across all sectors of government". Therefore one may legitimately wonder if this issue will really be solved in the next future.

The same interrogation is applicable to decentralization. Indeed, even if the Law No. 08/2006 regarding districts has established its organisation and functioning, water and sanitation have been almost ignored. Yet, powers and duties of local government have to be provided by law in unitary State such as Rwanda. Otherwise, local government cannot act. Thus, according to the USAID program, promotion of community participation has "failed in the absence of strong commitment to decentralization"[301]. And as a matter of fact, district capacities are very weak[302], as one demonstrated above (See Law No. 08/2006). However, the Government is aware of this weakness and has recently stated that public/private partnership should be promoted in order to extend water and sanitation services, particularly in rural areas where such services miss. In this regard, attractiveness of water services business and capacity building have to be developed in order to improve their operating cost recovery and reduce technical losses[303].

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300 Ministry of Environment and Lands, National Policy for Water Resources Management, April 2011, p. 19.

301 USAID, Rwanda, Water and Sanitation Profile, p. 3.

302 Leonard Chacha, John Bosco Ruzibuka and Godfrey Birungi, Rwanda Water and Sanitation Sector - Public Expenditure Review 2009, April 2010, p. 17.

303 Ministry of Infrastructure, WATSAN Sector Performance Report for the Joint Water Supply and Sanitation Sector Review, 2009/10, p. 6.

Another big issue is related to management of wastewater for which "There is no institutional framework [⋯] no standards and regulations, and therefore no enforcement"[304]. For instance, only 15% of sewage is managed by the City of Kigali[305].

Finally, one has to underline the lack of basin institution for the two main basins. This lack is prejudicial because a basin institution allows an integrated management of water resources. And this type of water management has been globally recognized as the most efficient one.

(3) Juridical Issues

First of all, one would like to emphasize the fact that the general framework is fairly good but hardly practicable because of a lack of holistic approach. Indeed, some laws need to be updated (laws on forestry and agriculture[306], on mines, on urbanism, etc.) while some other laws need to be implemented by orders and regulations. In addition, many international conventions ratified by Rwanda are in the latter case[307]. Consequently, the implementation of the framework has to be speeded up.

Concretely, there is a lack of standards in matter of effluent discharg e[308]. The REMA brings this need to call and also adds that polluter/

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304 Umuhoza Mbateye F.A., Nhapi I., Wali U.G. and Banadda N., "Assessment of Wastewater Management Practices in Kigali City, Rwanda", *The Open Environmental and Biological Monitoring Journal*, 2010, vol. 3, p. 26.

305 Melissa Thaxton, "Integrating Population, Health, and Environment in Rwanda", Population Reference Bureau, Policy Brief, February 2009, p. 5.

306 In order to avoid expanding agricultural activity, soil erosion (reforestation is needed in the semi-arid zones to help prevent drought and desertification), water runoff, etc. The Nile basin initiative: http://wrpmp.nilebasin.org

307 Fabien Twagiramungu, *Environmental Profile of Rwanda*, European Commission, 2006, p. 34.

payer principle is preferable[309] even if this principle has already been stated by Law No. 62/2008, article 5 (3). There is also a lack of guidelines. But The RURA progressively tries to make it better. For instance, a consultative workshop on guidelines for cleaning and decentralized sewage treatment systems has been organized on June 30, 2011[310]. This lack also concerns guidelines for control and monitoring of water quality: "In most cases, the main sources of drinking water are springs and generally supplied to consumers without treatment or quality checks. Sound recommendations were given to rural operators and major recommendations consisted of performing water quality checks and monitor deterioration of the quality within the distribution network, adequate catchment and intake protection required to prevent source contamination"[311].

Furthermore, authorities should monitor the respect of the juridical framework of water. Indeed, Law No. 62/2008 and Directives on Minimal Requirement for Liquid Wastes Disposal and Treatment are not respected and, "for example, the effluent from the Central Prison, consisting of black and grey water, is discharged every day during the night for around six hours (from 5:30 pm to 11:30 pm) and it passes just near households before reaching into the Nyabugogo River. That river is used by people

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308 "There are no effluent discharge regulations in Rwanda" (Umuhoza Mbateye F.A., Nhapi I., Wali U.G. and Banadda N., "Assessment of Wastewater Management Practices in Kigali City, Rwanda", *The Open Environmental and Biological Monitoring Journal*, 2010, vol. 3, p. 22). See also: "It is necessary to set up norms regarding the disposal of solid, liquid and gaseous wastes in Rwanda" (Fabien Twagiramungu, *Environmental Profile of Rwanda*, European Commission, 2006, p. 34).

309 Rwanda Environment Management Authority, Rwanda State of Environment and Outlook Report, 2009, Chapter 7: Water and Wetlands Resources, p. 18.

310 *The Regulator, Quarterly* Magazine of Rwanda Utilities Regulatory Agency, Vol. No. 2, June 2011, pp. 24-25.

311 Rwanda Utilities Regulatory Agency, Report January 2009 to June 2010, p. 74.

who stay on its surroundings for some domestic uses such as washing and cleaning"[312].

Finally, one would like to say a word about *Directives on Minimum Requirements for Liquid Wastes Disposal and Treatment*. Those directives have been approved on December 15, 2009[313] and are grounded on the articles 1 and 5 of the Law No. 39/2001. Indeed, according to the Agency, the article 1[314] highlights its mandate to regulate sanitation services while the article 5[315] defines its responsibilities. This situation is less than satisfa-

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[312] Umuhoza Mbateye F.A., Nhapi I., Wali U.G. and Banadda N., "Assessment of Wastewater Management Practices in Kigali City, Rwanda", *The Open Environmental and Biological Monitoring Journal*, 2010, vol. 3, p. 26.

[313] Decision No. 17/SA-RURA/2009 on *Minimum Requirements for Liquid Wastes Disposal and Treatment.*

[314] "In this Law, the following words have these definitions:
1. "Minister" means the Minister responsible for each utility sector.
2. "Public utilities" means natural persons, enterprises or organizations (for example: companies) which provide the following services:
   a) telecommunications networks and/or telecommunications services;
   b) electricity;
   c) water;
   d) the removal of waste products from residential or business premises;
   e) the extraction and distribution of gas;
   f) persons and goods transport.
3. "Utility Law" means the law governing each utility".

[315] "The Regulatory Agency has the responsibility to:
1° ensure that certain utilities provide goods and services throughout the country to meet in transparency all reasonable demands and needs of all natural persons and organizations;
2° ensure that all utility suppliers have adequate means to finance their activities;
3° continually promote the interest of users and potential users of the goods and services provided by utilities so that there is effective competition when competition is introduced in each utility sector and protection of users from abuses of monopoly positions is ensured due to the fact that certain Public utility sectors have a monopoly over the market.
4° facilitate and encourage private sector participation in investments in public utilities;
5° ensure compliance by public utilities with the laws governing their activities".

ctory because nothing in these articles refers expressis verbis to mission related to sanitation services. First of all, the aforementioned article 5, entitled "Responsibilities", and the Chapter 5 (articles 40-49), give to the RURA the main mission to ensure about good practices in matter of competition. Besides, these Directives should have been grounded on the article 13 No. 4 according to which "The Regulatory Board is required to [⋯] have due regard to the preservation and protection of the environment, the conservation of natural resources and the health and safety users". Such a ground would have been more relevant.

Even if the RURA's action in this matter is positive, the aforementioned Directives are questionable. Indeed, the Directives seem to be ill-founded. Furthermore, management of liquid wastes certainly deserves a better protection in the legal system, at a higher level, because of possible consequences on human health and environment. In the mean time, one might question about the opportunity for an Agency mainly in charge of competition to draw up regulation in matter of sanitation. Lastly, these Directives only concern certain liquid wastes[316] ("There is no effective legal framework regulating industrial water use"[317]).and certain services because the RURA is only competent for Public utilities. Yet, good standards should be applied

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316 "These Directives are not applied to hazardous wastes; they are particularly concerned with services provided for the management of:
- Municipal sewage;
- Sludge from septic tank;
- Sludge from wastewater treatment plants/systems;
- Industrial or commercial wastewater discharged to municipal sewers, septic tanks and other sewage disposal systems;
- Liquid waste from garages and
- Any other effluent specified by a Regulator ie liquid wastes from slaughter houses, liquid waste from the car wash, etc.".

317 The Nile basin initiative: http://wrpmp.nilebasin.org

to all liquid wastes and all services. Nonetheless, one can consider that these Directives are at least a good start.

In conclusion, the water framework is fairly good but "there is a long way to go before [policies and laws] can be implemented"[318]. Furthermore, the water sector is the responsibility of several different institutions and there is a lack of coordination of activities and approach to plannin g[319]. In addition, Rwandan water sector suffers from insufficient financial means[320] due to two different reasons: lack of means for good management and insufficient investment.

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318 Fabien Twagiramungu, *Environmental Profile of Rwanda*, European Commission, 2006, p. 34.

319 The Nile basin initiative: http://wrpmp.nilebasin.org

320 For instance, the WATSAN Sector Performance Report for the Joint Water Supply and Sanitation Sector Review states that additional budget lines for sanitation and storm water management in high density areas have been accepted but due to financial constraints, there is no money allocated for their implementation. Ministry of Infrastructure, WATSAN Sector Performance Report for the Joint Water Supply and Sanitation Sector Review, 2009/10, p. 6.

Chapter 5: Conclusion

The present study has tried to have a close look at water issues in Ethiopia and Rwanda. This process has suffered of a problem mentioned above and reminded below: lack and unreliability of data. However, examination of water sector in these two countries has revealed many common issues that should be tackled and which are summarized below. These issues can be gathered into three categories: policy (1), institutional (2), and juridical (3) issues.

1) Policy Issues

First of all, unavailability and unreliability of data must be underlined. Indeed, such data are very important for different purposes: monitoring quality of water, assessing access to safe drinking water and sanitation, determining emergency for fund raising, etc.[321] In this regard, Ethiopia has recently launched the Ethiopian Global Initiative for Rationalizing Water Information and Monitoring Systems. However, one has to wait for concrete result. In addition, such data should also be available and reliable because "users have a fundamental right to information on the safety of the water supplied to them for domestic purposes, and to information on environmental health"[322].

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321 "Governments and donors are increasingly called to put in place a uniform and consistent system to monitor the impacts of water-related initiatives. Moreover, the decision and policy-making bodies need to expand, and other time to focus, the sources from which to draw information on the results of the water strategies. Overall figures are also required for advocacy and awareness purpose and to fine tune upcoming strategies and policies". UN Water, *Water Monitoring, Mapping Existing Global Systems & Initiatives*, Background Document, August 2006, p. 7.

Allocation of funds is another issue in developing countries. Indeed, management and transparency of their use may be difficult to control: donors want to be sure of efficient and legitimate[323] use of their donation.

The lack of human skills is often a big deal in developing countries, and the need for capacity building is very strong. This is particularly the case of Rwanda where the civil war has led to a migration and brain drain since 1994 (of course, this phenomenon is not only limited to water sector). Therefore, Government should support capacity building in matter of water in various fields and occupations: management, decision-maker (in local governments, public bodies, etc.), technician, engineer, etc.

In another field of education, efforts should be made about awareness regarding water. That means public authorities should organize education and communications in order to sensitize population on value of water, which is a finite resource. At the same time, population should be informed about required behaviours in matter of hygiene, in order to improve the sanitary situation.

Furthermore, frequent policy changes make the framework hard to understand. On the one hand, in a relative short notice, there are numerous changes. On the other hand, as a cross-cutting issue, water is treated by various different policies from different institutions without actual coordination (See below in institutional issues).

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322 COHRE, AAAS, SDC and UN-HABITAT, Manual on the Right to Water and Sanitation, 2007, p. 77. See also: Stephen Hodgson, *Modern water rights. Theory and practice*, FAO, Legislative Study, No. 92, 2006, p. 96.

323 This problem has been underlined in Ethiopia where the Government uses "donor-supported programs, salaries, and training opportunities as political weapons to control the population, punish dissent, and undermine political opponents". Human Rights Watch, *Development without Freedom, How Aid Underwrites Repression in Ethiopia*, October 2010, http://www.hrw.org/sites/default/files/reports/ethiopia1010webwcover.pdf, p. 4.

Finally, the need for a renewal of policy has to be stressed. In this regard, one would like to underline two options that have to be considered. On the one side, a new policy developing the motto "less penalties, more incentives" should be thought. This new vision of regulation is defended by Chan-Ho Park in matter of green growth[324]. However, this new conception of policy should likely be extended to other matters, where a "greenin g"[325] of water approach has been developed. Indeed, to use "stick-and-carrot" tactics where sticks are penalties and carrots incentives could be a good alternative, even in water sector. On the other side, conditional cash transfers have to be taken in consideration and could efficiently complete classical policies (see issues and recommendation for Ethiopia).

2) Institutional Issues

Frequent changes in institutional framework cause problem of transparency and visibility. For instance, some ministerial Internet websites are not updated according to: 1/ the name of ministries; 2/ powers and duties of ministries; 3/ field of competence of ministries. That does not allow a good understanding of the institutional framework.

In addition, those complex institutional arrangements are made worst by poor coordination and experience sharing. Indeed, the poor coordination

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[324] Chan-Ho Park, *Simple Regulatory Framework and Voluntary Participation in Green Growth*, International Conference on Better Regulation for Green Growth, Seoul, Sejong Hotel, November 4-5, 2010.

[325] For instance, it is possible to offer "financial incentives for land owners or managers to carry out or refrain from certain activities which ultimately reverberate on the quality and dependability of freshwater systems". Stefano Burchi, "Balancing Development and Environmental Conservation and Protection of the Water Resource Base - The 'greening' of Water Laws", FAO, *Legal Paper Online*, No. 66, June 2007.

leads to cross financing and responsibilities that lead to attenuation of responsibilities (meaning that no one is responsible when something goes wrong) and lack of transparency. Furthermore, experience sharing is very poor, whether in horizontal (between ministries) or vertical (from local stakeholders to Government) sharing.

The integrated water resources management is far from being established. This could be done through river basin organisation[326] but such a frame-work is weekly implemented in Ethiopia while it is non-existent in Rwanda while "there is an increasing trend for water management to be undertaken on a drainage basin approach"[327]. Consequently, a strong effort has to be made in this direction[328].

Finally, decentralization is unclear. Yet, local governments are essential stakeholders since they are close from citizens and are able to understand their needs. Therefore, an effort should be made in order to define clearly powers and duties of local governments in matter of water. In this regard, decentralization appears to be a cross-cutting issue: one needs a political will implemented through a juridical framework in order to fix an institutional issue.

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326 See GWP and INBO, *A Handbook for Integrated Water Resources Management in Basins*, 2009.

327 Stephen Hodgson, *Modern water rights. Theory and practice*, FAO, Legislative Study, No. 92, 2006, p. 39.

328 "Policies must consider not only the specific water body but rather all water bodies that share a common watershed or basin. Indeed, the lens should be broader still, approaching the issue of water quality in the context of IWRM, considering water as both a natural resource and a social and economic good". Jessica Vapnek, Bruce Aylward, Christie Popp and Jamie Bartram, Law for Water Management: A Guide to Concepts and Effective Approaches, FAO, Legislative Study, No. 101, 2009, p. 206.

3) Juridical Issues

First of all, one would like to emphasize inertia of legislative and regulatory powers, which content themselves with general framework. Indeed, laws and regulations need to be implemented by regulations[329] or directives or whatever administrative acts, which are usually enacted a long time after in the better case, or never in the worst case. Because of this lack of will in matter of policy and law, sections of the water framework cannot be implemented concretely.

Moreover, developing countries usually suffer from a lack of standards and directives. When such standards exit, there are frequently inspired by international recognized standards[330] in matter of quality of water, for instance. However, they are questionable. Firstly, they habitually consist in a "copy and paste", without regard for national specificities in terms of finance and human skills[331]. Secondly, they are limited to very few

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329 "If there is a Water Act that authorizes the Minister to regulate water rights but that provides no details, regulations will have to be prepared in order to put the scheme into place". Jessica Vapnek, "Establishing a Water Abstraction Scheme: Issues and Options", FAO, *Legal Paper Online*, No. 9, June 2000, p. 2.

330 "While the WHO Quality Guidelines set out reasonable minimum requirements of safe practise to protect health, they are not mandatory limits, and governments can adapt them to local or national environmental, social, economic and cultural conditions, evaluating the risks and benefits of each standard for the national or regional conditions". COHRE, AAAS, SDC and UN-HABITAT, Manual on the Right to Water and Sanitation, 2007, p. 99.

331 "The waste water effluent quality standards should be set at a level appropriate to the country's conditions" (Jessica Vapnek, "Establishing a Water Abstraction Scheme: Issues and Options", FAO, *Legal Paper Online*, No. 9, June 2000, p. 2). See also: "Application of the guidelines should be based on national circumstances including local environmental, social, economic and cultural conditions. This includes consideration of existing levels of access to improved sources of drinking water and available resources [...] Standards for drinking water should be supportive and protective of

sectors: drinking water, wastewater disposal, minimum service requirement for water providers, for instance. However, an efficient water framework needs systematic standardization, and above all for biggest polluter: industries. Yet standards in matter of effluent discharge are non-existent in Ethiopia and Rwanda.

Finally, one would like to stress the lacks in matter of protection of water. Such a protection needs to be completed in developing countries in many different aspects. In this regard, the *Handbook for Implementation of EU Environmental Legislation*[332] provides a good idea[333] of what should be done in order to establish a complete and efficient protection of water. Indeed, the Handbook gathers relevant European directives[334] that contribute

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human health but the targets should not be so restrictive that they represent a barrier to improvement. This would particularly disadvantage the poor, who are disproportionately represented among those without access to improved drinking water sources (Jessica Vapnek, Bruce Aylward, Christie Popp and Jamie Bartram, Law for Water Management: A Guide to Concepts and Effective Approaches, FAO, Legislative Study, No. 101, 2009, pp. 238-239).

332 Regional Environmental Center for Central and Eastern Europe, *Handbook for Implementation of EU Environmental Legislation*, December 2008, 1098 p.

333 "There are a large number of potential legal and regulatory instruments which are available for pollution prevention and control, and examples of which can be found in operation in many industrialised countries. Developing countries need to examine these in the context of their capability to deliver the end result without over-stretching their resources". UNEP, Water Supply & Sanitation Collaborative Council, and World Health Organization, Water Pollution Control - A Guide to the Use of Water Quality Management Principles, 1997, p. 154.

334 Council Directive 91/271/EEC concerning urban waste water treatment; Council Directive 91/676/EEC on the protection of waters against pollution caused by nitrates from agricultural sources; Council Directive 80/68/EEC on the protection of groundwater against pollution caused by certain dangerous substances; Directive 2006/118/EC of the European Parliament and of the Council of 12 December 2006 on the protection of groundwater against pollution and deterioration; Council Directive 98/83/EC on the quality of water intended for human consumption; Council Directive 2006/7/EEC concerning the quality of bathing water (repealing Council Directive 76/160/EEC with effect from 31 December 2014); Directive 2006/11/EC of the European Parliament

to water protection and both Ethiopia and Rwanda need to establish a similar framework for the following elements (which is not a thorough list):

- Protection of urban water through urban wastewater treatment[335];
- Protection of rural water through regulation of fertilizers;
- Protection of groundwater[336];
- Protection of drinking water;
- Protection of bathing water;
- Protection of freshwater to support aquatic life (fish, shellfish etc.).

In conclusion, the fairly good general framework[337] suffers a fairly bad implementation. The main reason for such a situation is the lack of finan-

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and of the Council of 15 February 2006 on pollution caused by certain dangerous substances discharged into the aquatic environment of the Community (codified version); Directive 2006/44/EC of the European Parliament and of the Council of 6 September 2006 on the quality of freshwaters needing protection or improvement in order to support fish life (codified version); Directive 2006/113/EC of the European Parliament and of the Council of 12 December 2006 on the quality required of shellfish waters (codified version repealing Directive 79/923/EEC). Regional Environmental Center for Central and Eastern Europe, Handbook for Implementation of EU Environmental Legislation, December 2008, pp. 615-616.

335 "There is a growing recognition that the production of wastewater will increase as an outcome of continued urbanization and that wastewater needs to be better incorporated into the overall management of water resources". WHO, *Guidelines for the safe use of wastewater, excreta and greywater*, Vol 1, Policy and Regulatory Aspects, p. 6.

336 "The sustainable management and use of groundwater resources as a source of drinking water supplies, for irrigation and for other consumptive uses as well as a supplementary source of surface river flows and of wetlands and wildlife habitats calls for increasing attention to two major and interdependent sources of concern, namely, depletion and pollution". Stefano Burchi, "National Regulations for Groundwater: Options, Issues and Best Practices", FAO, *Legal Papers Online*, No. 5, August 1999.

337 Because developing countries have understood "the need for primary legislation" usually "introduced through the enactment of new legislation in the form of a water or water resources 'act', 'law' or 'code'". Stephen Hodgson, *Modern water rights. Theory and practice*, FAO, Legislative Study, No. 92, 2006, p. 36.

cial and human means. Indeed, it is relatively easy to draw up a general framework because it is not really expensive, contrarily to a systematic and concrete implementation. But developing countries know what is at stake and they continue to improve water framework with help of developed countries and International Community through International Organisations. This mobilisation might be the first clue demonstrating that water is close to be considered as a world heritage[338].

[338] "Given the poor state of freshwater resources in the world, new approaches are needed. Water legislation should strive to implement integrated water resources management and set the parameters for improve governance across the water cycle. Regulatory frameworks should promote sustainable water use, foster better land management practices and encourage water quality improvements. Institutions and rules should enable water users and land managers to continuously enhance the productivity of water use for human development and ecosystem protection". Jessica Vapnek, Bruce Aylward, Christie Popp and Jamie Bartram, Law for Water Management: A Guide to Concepts and Effective Approaches, FAO, Legislative Study, No. 101, 2009, p. 321.

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