

Addis Ababa University

Faculty of Business and Economics



An Assessment of Ethiopian Water Resources Management
Policy and its Implementation

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An Assessment of Ethiopian Water Resources Management
Policy and its Implementation

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School of Graduate Studies

Addis Ababa University

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Declaration

I, Atakilti Tesfay, declare that this work entitled “**An Assessment of Ethiopian Water Resources Management Policy and its Implementation**” is outcome of my own effort and study and that all sources of materials used for the study have been duly acknowledged. I have produced it independently except for the guidance and suggestion of the Research Advisor.

This study has not been submitted for any degree in this University or any other University. It is offered for the partial fulfillment of the degree of masters of public administration (MPA)

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ABSTRACT

The water policy that has been issued by the government of Ethiopia in 1999 is both comprehensive and sound. Following the water policy, the water sector strategy has been developed and issued in 2001 to put the water policy into action. Based on water strategy, the water sector development program has been drawn up for a period of 2002-2016. It is now about eleven years since the water policy has been issued. The extent of its impact on water resources development and management has not been clear so far due to absence of policy implementation plans with appropriate monitoring system and feedback mechanisms. There is no means assessing the merits and drawbacks of the policy. This paper tries to assess Ethiopian Water Resources Management Policy and its implementation. Data were obtained via a questionnaire and interview from 38 participants from Ministry of Water Resource, three agencies, two public enterprises, four regional bureaus, three water related private companies and one NGO. An interview was also conducted with six key experts from water sector particularly with policy implementations issues. Both primary and secondary data were used. The writer uses Questionnaire and interview to collect the necessary data. The data gathered has been analyzed using the various statistical methods like tables, graphs, percentages. Based on the data obtained from the respondents the study-identified lack of institutional arrangement, absence of policy implementation plan, absence of public awareness and community participation are critical for the implementation of the policy. Therefore based on the major problems recommendations are suggested.

ABBREVIATIONS

ABA	Awash Basin Authority
BM3	Billion Cubic Meter
CSA	Central Statistical Authority
EEPC	Ethiopian Electric Power Corporation
ENSAP	Eastern Nile Subsidiary Action Program
EPA	Environmental Protection Authority
EWRMP	Ethiopian Water Resources Management Policy
FPMU	Federal Program Management Unit
FDRE	Federal Democratic Republic of Ethiopia
GoE	Government of Ethiopia
GWh	Giga Watt per Hour
Ha	Hectare
HDP	Hydropower Development Program
ICWE	International Conference on Water and Environment
IDP	Irrigation Development Program
ILC	International Law Commission
IRBMPS	Integrated River Basin Master Plan Studies
Kwh	Kilo Watt per Hour
MoFED	Ministry of Finance and Economic Development
MME	Ministry of Mines and Energy
MoARD	Ministry of Agriculture and Rural Development
MoWR	Ministry of Water Resources
MW	Mega Watt
NBI	Nile Basin Initiative
NGO	Non-Government Organization
NMSA	National Metrological Services Agency
NSC	National Steering Council
NWRC	National Water Resource Commission

PASDEP	Plan for Accelerated and Sustained development to End Poverty
RPMU	Regional Program Management Unit
SAP	Subsidiary Action Program
SVP	Shared Vision Program
TWH	Teara Watt-hour
USD	United States Dollar
WRDA	Water Resources Development Authority
WRDP	Water Resources Development Program
WRMP	Water Resources Management Policy
WSDP	Water Sector Development Program
WSSDP	Water Supply and Sanitation Development Program
WSS	Water Supply and sanitation
WWCE	Water Works Construction Enterprise
WWCDSE	Water Works Design and Supervision Enterprise
WWDE	Water Well Drilling Enterprise

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CHAPTER ONE

INTRODUCTION

1.1 INTRODUCTION

Water is basic natural resources, which sustains life and satisfies various social and economic needs. Until 1956, there was no Water Sector Institution in Ethiopia. The first Institution was established during Emperor Hileselese regime in 1956 as a separate unit under the title “Water Resources Department” under the Ministry of Public Works. The establishment of the department was initiated with the project known as USA-Ethiopia Cooperative Program for the study of the Blue Nile Basin, which was undertaken by the governments of Ethiopia and United States of America. Due to the growing need for water in many parts of Ethiopia, a National Water Resources Commission (NWRC) was established in 1971 under the Ministry of Public Works and Water Resources. To accept a national authority over water resources development and management again the Ethiopian Water Resources Authority (EWRA) was established in 1975 under the Ministry of Mines, Energy and Water Resources.

During *Derge* regime further re-organization took place in the water sector when a new National Water Resources Commission (NWRC) was established in 1981. It was dissolved and raised to ministry level in 1996 namely the Ministry of Water Resources established by Federal Government of Ethiopia with aim to the development and management of Water Resources.

The federal government of Ethiopia issued and implemented a number of social and economic development policies strategies and programs. The Federal Water Resources Management Policy (WRMP) has been prepared by Ministry of Water Resources (MoWR) and approved by the council of ministers in 1999. The Water Policy of the country is based on the countries’ macro economic and social policies and strategies. Ethiopia is endowed with one of the largest fresh surface water resources in sub Sahara Africa. However only 2% of this potential is annually utilized. A review of master plan studies and related river basin surveys shows that

the aggregate annual runoff from the ten river basins amounts to 122 billion cubic meters. With regard to ground water resources, the true potential of the country is not known. The country is also endowed with vast energy resources including hydropower. Beside to this Ethiopian has estimated arable land resources potential of 55 million Hectares of which only 16.6 million hectors of land are under cropping (Teshome Workie, 2005). The coverage of improved water supply and sanitation facilities in the country is also low. In the last ten years, integrated development master plan studies were carried out on seven river basins. The master plan studies have identified several multi purpose, irrigation, power and other projects for Short-term, Medium-term and Long-term developments.

Ethiopia has twelve water resources generating major river basins out of these rivers six of these rivers flow across the Ethiopian border to neighboring countries.

- Blue Nile, Tekezie and Baro-Akobo flow on the Nile River to Sudan and Egypt.
- Wabi Shebelie and Genale – Dawa are the two south following trans-boundary rivers flowing into Somalia.
- Omo Gibie River into Kenya boundary.

These rivers account for about 90% of the total water resources of the country (Toshome Workie, 2005) The water resources of these trans-boundary rivers are to be shared with neighboring countries. Where joint development projects will bring about tangible benefits and this is not an easy task that may be resolved amicably to achieve sustainable socio economic development through the equitable utilization.

Therefore, this study is an attempt to assess the implementation of the Water Resources Management Policy of Ethiopia in general.

1.2 STATEMENT OF THE PROBLEM

Although the Federal Water Resources Management Policy (WRMP) has been prepared by Ministry of Water Resources (MoWR) and approved by the council of ministers in 1999, with the goal to enhance and promote the efficient, equitable and optimum utilization of the

available water resources of Ethiopia for significant socio-economic development on sustainable bases. The Ministry of Water Resources is mandated to do policy implementation operation and regulatory work. To affect its powers and discharge its responsibilities the ministry was organized with a minister and state minister and assisted by different professionals composed of nine technical departments ten supportive services with three agencies, and two Enterprises.

However, from current observation and consultation with some resourceful persons, there is no much capacity currently to carry out implementation of the water policy at almost all levels. Experiences of the last 10 years of the ministry's life indicate that the organizational setup lacks some degree of completeness, flexibility or efficiency required to carry out the responsibilities as defined in the Water Resources Management Policy.

More specifically, the recent study conducted by Teshome Workie in (2005): indicate that there are critical problems related to coordination, institutional, legal, qualified human resources, areas of the responsibilities among different governmental institutions, and participation of the concerned stakeholders participation and consultation with regions, privates, NGOs and other communities in the implementation phases of the policy.

The Water Policy in relation to trans-boundary water has put forward different policy directives formulated with the belief that appropriate water resources management for the sector will enhance the development of the countries Water resource to make optimum contribution to accelerated socio economic growth. However, the achievements do not meet its objectives due to weak institutional arrangement, poor coordination weak monitoring and evaluation and other constraints (Ibid: 46) Until now the policy and its impact on water resources development and management has not been clear so far due to absence of policy implementation plan. There is no means of assessing the merits and drawbacks of the policy. This research therefore analyzes the achievement, challenges and gaps on implementation of the Federal Water Resources Management Policy

1.3 OBJECTIVES OF THE STUDY

The general objectives of this study are to critically evaluate the process on implementation of Water Resources Management Policy. With the above general objective, the studies have the following specific objectives.

- To outline the institutional and legal framework of the Water Sector in Ethiopia its rules, regulation, proclamation, standards and norms.
- To identify the achievements of Water Resources Management Policy.
- To identify the major challenges and problems that effects the implementation of Water Resources Management Policy.
- To identify the gaps of the Water Resources Management Policy.
- Based on the findings to forward recommendation for effective implementation of WRMP.

1.4 RESEARCH QUESTIONS

Based on the above critical problematic issues of WRMP the researcher tries to address the following basic research questions:

- What are the existing institutional set-up and legal framework of the Water Sector in Ethiopia?
- What are the achievements of Ethiopian Water Resources Management Policy?
- What are the challenges and problems faced and impede the implementation of Water Resources Management Policy?
- What are the gaps to implement the Policy?
- What will be done in future for a better implementation of the WRMP of Ethiopia?

1.5 JUSTIFICATION AND SIGNIFICANCE OF THE STUDY

The Federal Government published the Ethiopian Water Resources Management Policy in 1999 as an essential national policy document to steer the development and management of

the country's water resources. This research is important for a number of reasons. It also initiates the concerned organization to re-assess its existing practices and put or renewed emphasis to curve the problems existed in the policy implementation. Secondly, it gives the researcher the opportunity to gain deep knowledge in the implementation of the policy. Thirdly, this research paper proposes important recommendation and suggestions for applying appropriate methods.

1.6 SCOPE AND LIMITATION OF THE STUDY

As stated before, this research deals with implementation of Water Resource Management policy. The policy is a very vast area that covers three broad categories, which is policy on General Water Resources Management policy, on cross cutting issues and policy on sectoral issues. However, considering the available time and finance constraints it is not possible to include every thing in this study. Thus, considering available time and budget also to make the research more manageable and controllable only the research will deal with policy on sectorial issues

1.7 STRUCTURE OF THE THESIS

The thesis consists of five chapters:- Chapter one deals with important introductory issues which provide background of the study, Statement of the problem, Basic research, questions, Objectives of the study, justification and significance of the study, Scope and limitation of the study, and overall structure of the thesis. Chapter two focuses on literature review related to Water Resources Management Policy and its implementation. Chapter three focuses on methodology of the study. Chapter four deals with analysis of data in connection with the actual practice of policy implementation. Chapter five concentrates on conclusion and recommendation on the over all study of the topic for further research is also suggested.

CHAPTER TWO

2 LITERATURE REVIEW

2.1 INTRODUCTION

The government of Ethiopia has been issuing implementing and introducing a number of Socio Economic Development Policies, strategies and programs in various sectors. One of these is the Natural Water Resources, which sustains life and satisfies various social and economic needs. In view of this situation, this review examines the content of Ethiopian Water Resources Management Policy strategy and programs are reviewed.

This chapter contains conceptual, theoretical and practical experience of Water Resources and trans-boundary water issues. This chapter includes; the introductory remarks, definitions and concepts of Water Resources, Trans-boundary rivers and policy implementation, background of Water Sector in Ethiopia, legal framework issues in Ethiopia, institutional framework of Water Resource management on Ethiopia, National Water Policy, Strategies and Programs focus on trans boundary river and lastly the experiences of different other countries in managing trans-boundary rivers.

2.2 DEFINITION AND CONCEPTS OF WATER RESOURCES, TRANS-BOUNDARY RIVERS AND POLICY IMPLEMENTATION

2.2.1 WATER RESOURCES

Water is one of the most important resources, which sustains life and satisfies various social and economic needs. Water is a chemical substance that is composed of hydrogen and oxygen vital source of all life be it human, animal and plant on earth it is a premenstrual resource and a precious national asset. Water as a resource is one indivisible rainfall; river waters, surface ponds lakes, and ground water are all part of one system. Water is part of larger ecological

system. Realizing the importance and scarcity attached to the fresh water it has to be treated as on essential environment for sustaining all life forms (National Water Policy of India, 1990)

Water is a scarce and precious national resource is to be planned, developed conserved and managed in view of scion-economic aspects and needs of all states. In our world, the distribution of water is greatly varied where many locations have plenty while others have very little. Water exists on earth as solid (ice) liquid or gas (water vapor) in oceans, rivers, clouds and rain all of which are in a frequent state of change. However, the total amount of the earth's water does not change. Water resources available for human consumption and the ecosystem are contained in Lakes and Rivers (Chow etial, 1988). Planning and implementation of water resources project involve a number of socio-economic aspects and issues such as environmental sustainability, appropriate resettlement and rehabilitation of affected people and livestock, public health concerns of safety water etc. In general, planning, development and management of water resources need to be governed by national perspectives.

According to Jacqueline Medley and Jason A. Hubbart (2001), water resources are used in various ways direct consumption, agricultural irrigation, fisheries, hydropower, industrial production, recreation, navigation, environmental protection, disposal and treatment of sewage and industrial effluents. To build up on the above they also added that water has sources and supplies economic, social and political characteristics which make it unique and challenging natural resources to manage. Furthermore, Jacqueline and Jason A. Hubbart give the following clarification for water resources related concepts:

SOURCES AND SUPPLIES

Water resources refer to the supply of groundwater and surface water in a given area. Water resources may also reference the current of potential value of the resource to the community and the environment. Approximately 30 percent of the world's fresh water is in liquid form and therefore potentially accessible for human use and management at only given time. The rest is locked up either in polar or glacial ice or water vapor. The fresh water in liquid form, almost all is held in groundwater.

PHYSICAL CHARACTERISTICS

Water is made available by the natural hydraulic cycle of the atmospheric oceanic-terrestrial system. In most forms, water is a renewable resource since its continued flows are not affected by with draws or use. However, not all natural waters are renewable and renewable waters can become non-renewable by human actions.

ECONOMIC CHARACTERISTICS

The international development community clearly expressed the need for applying economic tools and principals to water. The international conference on Water and Environment held in Dublin , Ireland in January 1992, concluded among other things that “Water has an economic value in all its competing uses and should be recognized as an economic good” (ICWE,1992). Moreover it is argued that water is basic human right introduces further social complications in terms of equitable distribution. The value of water to people will differ across cultures and further complicates the characteristics of the resource.

POLITICAL CHARACTERISTICS

Water is not evenly distributed throughout the world and there are great variations in natural abundance. Agreements were common among nations that shared a watershed. Rising conflict is expected as populations expand, economic grow and the competition for limited water supplies intensifies competition over are not new, although the mismatch between expected supplies and expected demand is historically unprecedented. The decisions about water concern many interested parties or stakeholders. The decision to use more water in agriculture, for power generation, for industrial, fishing, navigation and recreation could have national political implications regarding water management are also a characteristic of choosing among competing water uses.

2.2.2 TRANS-BOUNDARY RIVERS

Water resources surface as well as groundwater that cross borders of countries or constitute borders between countries is known as Transboundary Rivers.

A river is a body of fresh water flowing from an upland source to a lake, wetland or to the groundwater springs and tributary streams. The components of a river include a channel floodplain, which can be flow. Sediment (material transported by the river such as sand and silt) is transported through the channel on to a lake or the sea. A river starts on hillsides as small channels or rills. A river forms in a watershed known as catchments. If a river flows all year round, the river is called a perennial and if it flows only during part of the year, the river is called an Ephemeral River. (<http://ellwww.euwfd.com/html/rivers.html>).

A river is always a physical and hydrological unit, which creates socio-political and hydrological realities. Some rivers lie entirely within the territory of the state; on the other hand, there are rivers which run to the territory of two or more states. These international rivers and their water can be used as watercourses for navigation, fisheries, sports, water supply for population, cooling, generation of electrical energy, industrial, irrigation uses, etc.

Unlike most other surface water bodies, rivers can flow across national or international boundaries. The European Rivers Network website lists and illustrates all river basins across Europe. The Danube River is an example of a major trans-boundary water resource. It is the second longest river; it starts from Germany, crosses Austria, then flows through Slovakia, provides water to Belgrade, and then enters Romania and Bulgaria. Another example of trans-boundary is the Nile River found in eastern and northeastern Africa, the longest river in the world, it is about 4,132 miles (6650 km) long from its remotest head stream (which flows into Lake Victoria) to the Mediterranean Sea. After reaching the lake, it flows north through Uganda, Sudan and Egypt (<http://encyclopedia2.thefreedictionary.com/Nile+River>).

The international practice showed the importance of the cooperation between the riparian states. So many treaties had been concluded between the riparian states of an international river in view of achieving cooperation between them and to set up an institutional and legal framework in this regard.

2.2.3 POLICY IMPLEMENTATION

To identifying the characteristics of policy implementation IGNOU (2006) suggested that problem in public policy implementation are due to conceptual, political, administration problems and lack of public involvement. This time no policy response is likely to be effective with out a clear definition.

PA Brynord (2006) cited the definition of policy implementation is regarded as the accomplishment of policy objectives through the planning and programming it is the realization on application or execution of a plan, idea and design. In general, implementation is the act of providing a practical means for accomplishing something carrying into effect.

According to Hogwood and Gunm (1984), for success full implementation a ten-step model of policy implementation can be considered.

- 1 Policies must face insurmountable external constraints.
- 2 In implementing the policy, there must be an adequate period and resources.
- 3 The implementation agency must have adequate staff and resources.
- 4 The premises of policy and theory must be compatible.
- 5 Cause and effect relationships in the policy must be direct and uncluttered.
- 6 Depending relationships should be kept to a minimum.
- 7 The basic objectives of the policy need to be agreed upon and understood.
- 8 Tasks must be specified in an appropriate sequence. Implementation is a process with connected steps from conception to the end. If the steps are not carried out in the correct sequence, the policy may fail.
- 9 Communication and coordination need to be in accord communicating well with each other's.
- 10 There must be compliance. Those agencies unvalued in implementation the policy must work towards that compliance.

The effectiveness of the policy need to be assessed after a certain period of time and steps must be taken to ensure that there are resources and means to maintain a successful policy.

2.3. BACKGROUND OF WATER SECTOR IN ETHIOPIA

Before 1956, there was no water sector institution in Ethiopia. In the year, 1956 a Water Resources Department was established under the Ministry of Public Works and communications to handle a multi purpose investigation of Blue Nile (Abbay) Basin. The reason that necessitated the establishment of the department was the project known as “USA ETHIOPIA COOPERATIVE PROGRAMME” for the study of the BLUE NILE BASIN, which was undertaken by the government of United States of America and Ethiopia. The main objective of the department was to give Ethiopian Engineers and Technicians could be trained while working on this project, and enabling them to carry out similar investigation on other river basins studies and water well drilling programs. In addition, it provides the country with expertise in hydraulic works.

The Rural Water Well Drilling Agency with very few numbers of drilling machines was carrying out water well drilling operations in the rural areas of the country while the Hydrology section was conducting river basin studies by dividing into groups these two were the pioneers of the water sector. In 1975, the agency was reorganized under a new name “Ethiopian Water Resources Authority” in connection with the previous two units was reorganized to carry out broadcasts.

The Rural Water Well Drilling Agency was given a new name “Rural Water Supply Agency” and it was given an overall task to studying, designing, construction and maintaining of the rural water supply works and the country was divided in to 8 regions. The Hydrology section was named “Land and Water Studies Agency” and was given an added responsibility of studying and designing of dams and irrigation structures along with the hydrological studies.

As time passed due to the growing need for water in many parts of Ethiopia much stronger and organized water sector was given serious consideration. In 1971, a National Water Resources Commission (NWRC) was established under the Ministry of Public Works and Water Resources. The commission’s purposes and objectives covered the full range of responsibilities related to water resources management and use in the country. As a result, the Ethiopian Water Resources Authority (EWRA) was established in 1975 under the ministry of

Mines Energy and Water Resources, the three agencies namely,

- Land and Water Studies Agency
- Rural Water Development Agency
- Urban Water and Sewerage Agency:

The above three agencies were established under the umbrella of the Authority. In 1979, the sector underwent major transformation “National Water Resources Commission” which was later named “Water Resources Commission” was reestablished. Under this commission, the following Authorities were formed:

- Water Resources Development Authority (WRDA) - This was responsible for the study and design of dams, irrigation structures and drainage system.
- Water Supply and Sewerage Authority (WSSA) – This was responsible for the design operation and maintenance of Urban and Rural Water Supply Sanitation and Sewerage works.
- Ethiopian Water Works Construction Authority (EWWCA) – responsible for the construction of all water related structures and systems.
- National Meteorological Services (NMS) - responsible for meteorological activities of the nation.
- Water Well Drilling Agency (WWDA) – responsible for Rural and Urban water well drilling.

In 1993, National Water Resources commission was dissolved and it was accountable to the Ministry of National Resources and Environmental protection (MNREP). Under the new policy of regionalization and decentralization of Government Structure and Development operations, a new institutional setup emerged. The sector is raised to ministry level in 1996 namely the “Ministry of Water Resources” (MOWR) combining the Former Water Resources Development Authority (WRDS) the Water Supply and Sewerage Authority (WSSA), the Water Well Drilling Agency, (WWDA), Water Works Construction Enterprise (WWCE) and National Metrological Agency (NMA).

When the Federal Government of Ethiopia established the Ministry of Water Resources (MOWR) as a federal institution for the water sector by proclamation No. 4/95 the powers and duties of the ministry are authorized in proclamation No. 4/95 and regulation No. 471/2005 include:

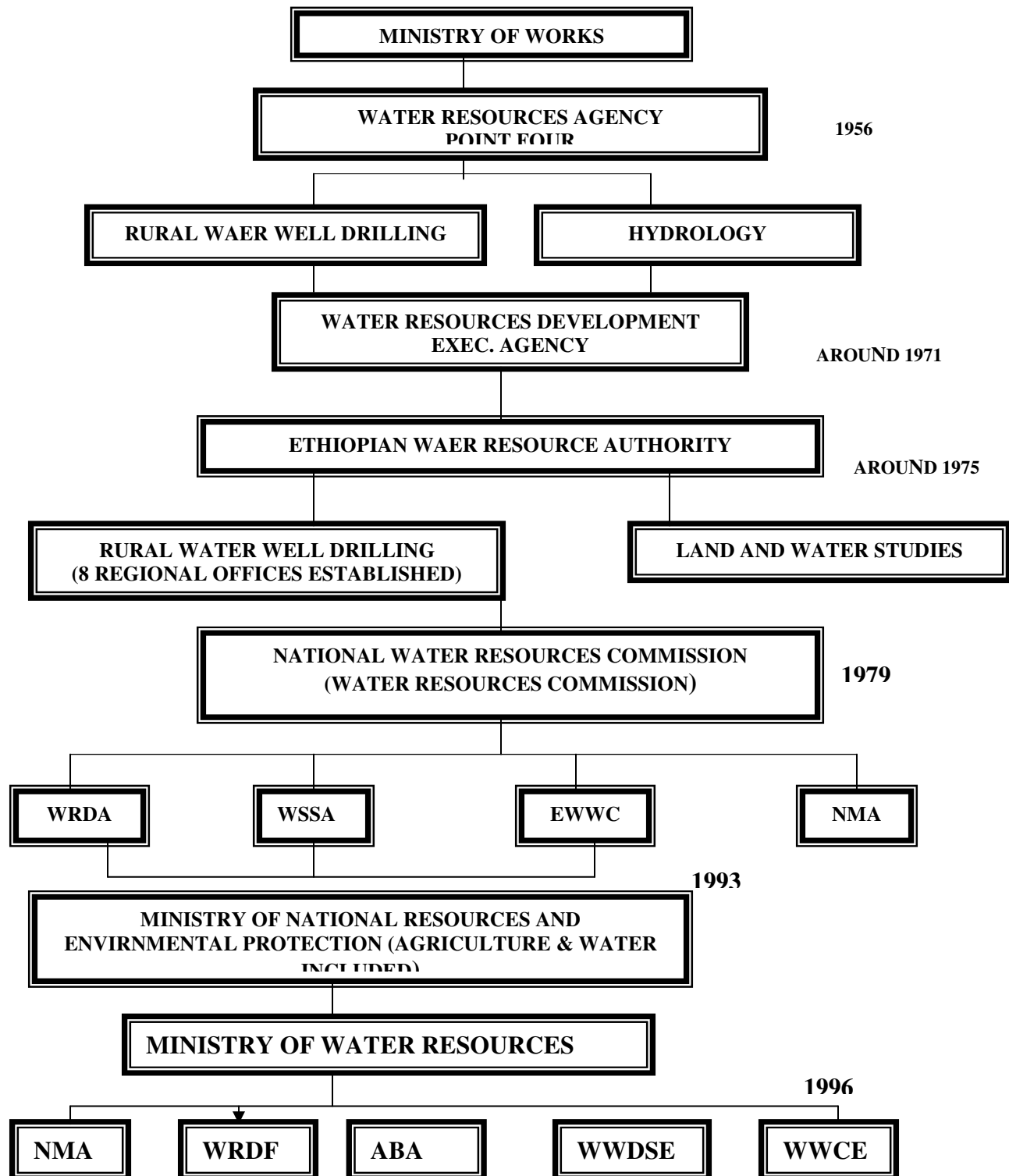
- Carry out basin studies and determine grounds surface water resource of the country.
- Determine conditions and methods required for the optimum and equitable allocation and utilization of water bodies that flow across or lie between more than one regional state among various uses.
- Undertake studies and negotiation of treaties pertaining to the utilization of boundary and trans-boundary water bodies and follow up the implementation of same,
- Carry out the study, design and construction works to promote the expansion of medium and large-scale irrigation dams.
- Issue permits and regulate the construction and operation of water works relating to water bodies.
- Administer dams and hydraulic structures constructed with federal budget unless they are entrusted to the Authority of other relevant bodies.
- Ensure the provision of meteorological services.

In general, the Ministry of Water Resources is mandated to do policy implementation operation and regulatory work. Currently, there are other institutions closely connected to MoWR,

- Awash Basin Water Resources Management Agency
- Water Works Design and Supervision Enterprise and
- Water Resources Development Fund

Figure 2.1 Historical Background of Water Sector

The water sector has under gone a number of transformations to reach its present level



SOURCE: Taye Assefa Digest of Ethiopia's National Policies, Strategies and Programs 2009

2.3.1 ETHIOPIAN WATER RESOURCES POTENTIALS

Ethiopia is endowed with one of the largest surface fresh water resources in sub Saharan Africa. Ethiopia is known as the water tower of North East Africa. A review of master-plan studies and related river basin surveys shows that the aggregate annual runoff from the ten river basins amounts to 122 billion cubic meters. With regard to ground water resources, the true potential of the country is not known. However, it is widely reported that Ethiopia possesses a considerable groundwater's resources potential of approximately 2.6 billion m³ (Toshome Workie, 2005).

The gross hydropower generation potential of the country is estimated to be 650 TWH (Terawatt hour) per year of which 25% can be exploited for power. Ethiopia has an estimated arable land resources potential of 5.5 million hectares of approximately 50 percent of its landmass. Despite the huge arable land resources potential, only 16.6 million hectares of land is under cropping which is just 30 percent of the area between potential. The coverage of improved water supply and sanitation facilities in the country is generally Low. (Water Sector Development Program Main Report, 2002)

2.3.2 RIVERS AND CATCHMENTS

The surface Water Studies of Ethiopia started around the mid 1950s. The surface water in Ethiopia flows in 12 major river basins. Nine of them are perennial rivers while the remaining three are dry river basins. The Wabishebele River has the largest catchments area. While the river Abbay, which contributes 70 percent of total, ranks first in terms of annual discharge. It is estimated that 122.9 billion m³ of water is discharged from these river basins. (Ministry of Water Resources Development Main Report, 2002).

Table 2.1 Catchments Area and Average Annual Discharge

Catchments	Area in km³	Average Amount Annual Runoff (B m³)
Abbay	199,812	52.62
Awash	112,700	4.6
Baro Akobo	74,102	23.6
Gneale Dawa	171,050	5.88
Tekeze	90,000	7.63
Waishabelli	200,214	3.13
Omo Ghibe	78,200	17.96
Mereb	5,900	0.26
Rift valley Lakes	52,740	5.64
Danakil	74,002	0.86
Ogaden	77,100	-
Aysha	2,200	-
TOTAL	1,138,016	122.19

Source: Ministry of Water Resources Development main report, 2002

Lakes

Table 2.2 Ethiopian Lakes and their characteristics

Lake Characteristics	Lake Name
Fresh Water Lakes (11)	Abaya, Abiyata, Alemaya, Ashenge, Awassa, Chamo, Langano, Shalla, Tana, Zeway, Yardi, Esphai, Artede
Saline Lakes (9)	Abe, Afabbo, Mdlla, Aseli Beseka Chew bahr, Gargorl and Turkana
Crater Lakes	Hora, Bishoftu, Zequala and Wonchi

Source: Ministry of Water Resources Development Main Report, 2002

2.4 ETHIOPIA WATER SECTOR LEGAL FRAMEWORK ISSUES

The government of The Federal Democratic Republic of Ethiopia has issued a set of policies and Laws during the last decade based on the federal constitution. Given these recent changes particularly the case in the water sector this legal framework is still under significant evolution with many legal challenges a waiting further development and decisions on specific proclamation or regulations to become enforceable.

2.4.1 THE ETHIOPIAN CONSTITUTION

Power is given by the constitution to the Federal Government with particular mandate to enact Laws for water management, the Federal law is entrusted with those water linking two or more regional state and those with an outlet the national territory (Art 51 / 11).

In Ethiopia, all Regional State have the power of administering and managing water resources within their boundaries, and may issue laws, provided they are consistent with federal laws.

2.4.2 WATER RESOURCES MANAGEMENT LAWS

2.4.2.1 ETHIOPIAN WATER RESOURCE MANAGEMENT PROCLAMATION (PRO NO 197/2000)

The proclamation (197/2000) came into force on March 9, 2000. The basic thrust of these fundamental principles is that water resources management and administration in the country should be based on the National Water Policy. The Integrated River Basin Master Plan Studies (IRBMPS) and the Water Resources Laws of the country, it may be argued, therefore, that this proclamation has given a legal recognition of the IRBMPS in that it provides in Law that any water resources activity should be consistent with their content. However, there is no precise provision in the proclamation regarding completion schedule, content and structure, role, scope and duration of life of Integrated River Basin Master Plan Studies.

It is provided that the water resources are the common property of the Ethiopian people and the state. The supervising body in charge of enforcing the provision of the proclamation is clearly identified as the ministry of water resources (MoWR) it is also stated that the MOWR can delegate powers and duties to appropriate bodies for efficient execution.

- **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 recourses is carried out properly.
- **Public ownership of water resources:** - All water resources of the country are the common property of the Ethiopian people and the state.
- **Power and Duties of the supervising body (MoWR)**
 - Responsible for the planning, management, utilization and protection of water resources
 - Issue permits and certificates of professional competence
 - Determine the allocation and manner of use of water resources among various uses and users.
 - Submission of plans and proposals from any person who apply for a permit to undertake any kind of water works and approve, reject or amend such plans and proposals.
 - Establish quality standards for surveys, design and specification of water works as well as standards. For the construction of water works
 - Prepare directives, regarding water use restrictions in situation of water shortage emergency and supervise the implementation of it.
 - the supervising body may, where necessary, delegate its powers and duties to the appropriate body for efficient execution of its duties (source EWRM proclamation No 197/2000)

2.4.2.2 THE ETHIOPIAN WATER RESOURCES ANAGEMENT REGULATIONS (REGULATION NO.115/2005)

Water Resources Management Regulation (NO.115/2005) have been prepared by the Ministry of Water Resources and approved by the Council of Ministers on 29 March 2005. Specific directives need to be prepared and issued by the MoWR for actual enforcement. This regulation further elaborates on the processes and procedures as well as the respective duties and rights. This regulation is divided in to ten parts

1. General,; dealing with Short Title and Definition of terms,
2. Water resource utilization, dealing with water use permits and related regulation, processes and procedures,
3. Water Works Permit: dealing with water works construction permits and procedures;
4. Water Quality Control: dealing with waste discharge permits and related requirements, processes and procedures;
5. Certification of professional competence,
6. Certificate of competence for consultancy service;
7. The conditions under which waters cooperatives societies may be established as well as their, registration when this cooperative society is under take irrigation works
8. Fees and charges: specifying amounts of fees to be paid for various services
9. Dispute settlement
10. Miscellaneous provisions: which include provisions regarding the requirement of furnishing information and power of entity (monitoring and control) inspection and taking samples with respect to water quality?

The Regulation do not delegate the Regions to issue any water use /waste water discharge permits within their own respective regions The Ministry of Water Resources retains the mandate to issue permits for a large bulk of water resources of the country and can delegate it

further to any relevant body. This situation can arise several questions by Regional States in the future time and needs to be reviewed.

2.4.2.3 REGIONAL WATER RESOURCES MANAGEMENT POLICIES AND LAWS

Some Regional States such as Oromia has issued a regional water policy and regulation for the management of water resources both are the same and similar in their content to those issued by the Federal Government. It is clear that framework Laws such as proclamation and policies are clearly the mandate of the Federal Government, However it is also necessary that the different administrative and political levels develop policy-making activities such as specific regulations applicable to their territory level as long as they bring value added and abide by the Federal Laws and Policies. There are pieces of legislation dealing with urban water supply and sewerage services, water works construction etc.

2.4.2.4 ENVIRONMENTAL LAWS

Two important laws the Environmental impact Assessment proclamation No 299/2002 and the Environmental pollution control proclamation 300/2002 related to water resources issues and environmental issues are given more and more emphasis in Ethiopia. The Ethiopian Environmental Protection Authority (EPA) has two major laws regarding Environmental pollution control, Environmental impact Assessment and Establishment of Environmental Protection Organs. The water pollution is the responsibilities of these environmental agencies. There are already possible overlapping of responsibilities between EPA and Regional Environmental Bureaus in the field of pollution control and on the other hand, the Integrated Water Resources Management (IWRM) framework that promoted integration of all aspects of water resources.

Generally, MOWR and EPA are both concerned about water related in lakes and rivers. Problems could arise if these two organization work separately which would lead to a clear duplication of effort and waste of resources.

2.4.2.5 RIVER BASIN COUNCILS AND AUTHORITY PROCLAMATION (534/2007)

The proclamation No. 534/2007 has been enacted recently by the federal parliament and issued in the Negarit Gazette on July 23, 2007. It proceeds to the establishment of river basin organizations for Ethiopian river basins. The councils are accountable to the ministry of water resources development. The objective of establishing the high council and Authorities is to promote and monitor the integrated water resources management process in the river basins. The process and duties of the council and Basin Authority are listed on the proclamation.

2.4.2.6 ABBAY BASIN HIGH COUNCIL AND AUTHORITY (REGULATION NO 151/2008)

The last and recent regulation No (151/2008) dated 12th may 2008 dealing with the establish of Abbay Basin High council and Authority. The objective of this authority is to promote and monitor the implementation of integrated water resources management process in an equable and participatory manner in the Abbay basin. The authority head office will be in Bahirdar town and may have sub-basin branch offices in the basin. The high council will be accountable to the Council of Ministers. Powers and duties of the Authority are clearly listed on the regulation No151/2008

Table 2.3 Legislation Governing the Water Sectors

No	Title	Proclamation No.
1	Constitution of the Federal Democratic Republic of Ethiopia	Proc. 1 /1995
2	Ethiopian Water Resources Management Proclamation	Proc197/2000
3	Ethiopian Water Resources Management Regulation	Reg 115/2005
4	River Basin Councils and Authority Proclamation	Proc 534/2007
5	Abbay Basin Authority	Reg No 151/2008

Source: (Negarit Gazette, 1995, 2000.2005 and 2008)

Table 2.4 Legislation Relating to the Organizations and Functioning of Relevant institutions. (Federal level)

No	Institutions	Establishment Law
1	Water Works Construction Enterprise(WWCG)	Proc 196/1994
2	Water Works Design and Supervision Enterprise (WWDSE)	Reg42/1998
3	Awash Basin Water Resources Administration Agency(ABWRAA)	Proc129/1998
4	Water Resources Development Fund(WRDF)	Proc 268/2002
5	National Meteorological Services Agency (NMSA)	
Other Related Organization		
6	Environmental Protection Authority (EPA)	Proc295/2002
7	Ministry of Agriculture and Rural Development	Proc 300/2004
8	Ethiopian Electric power Corporation	Reg. 18/1997
9	The Ethiopian Electricity Agency	Proc 86/1997
10	Ministry of Health	Proc 256/2001

Source: Collected from Negarit Gazetta, 1994, 97, 98.2001, 02, 04)

From the above proclamations and about setting up a river basin organization, several stakes or issues, which should be tackled in subsequent set of Laws regulation or new proclamation, should be emphasized.

2.5 INTERNATIONAL WATER LAWS

Water Law is dealing with the ownership, control and use of water as a resource. It is most closely related to property law, but has also become influenced by international law. Because water is vital to living things and to a variety of economic activities, Laws attempting to govern it have far-reaching effects. Water has unique feature that make it difficult to regulate using Laws designed mainly for land. Water is mobile, its supply varies by year and season as well as Location, and money users (<http://en.wikipedia.org/wiki/water-law>) can use it simultaneously.

These are several types of conflict likely to arise, absolute shortage in a particular time place, diversions of waters that reduce the flow valuable to others and pollutants or other changes until for others. Moreover, to resolve the conflict it requires designing water regulations. In fact, water Law is still regulated mainly by individual countries; there are international sets of proposed rules such as the Helsinki (Rules of the International Low Association 1971). Rules on the uses of the water of international rivers. Ethiopia should respect International water Laws such legal frame works help to tackle Tran boundary problems and to structure common activates it contributes to mutual trust, joint assessment and joint policy making with riparian countries.

2.6 INSTITUTIONAL FRAMEWORK OF ETHIOPIAN WATER RESOURCES MANAGEMENT

The Ethiopian constitution set out a 4- tier structure of federal state divided into regions, zones, and *woredas*. The country is divided in to 9 regions, 66 Zones and 556 *woredas* Each of the Ethiopia state has the some structure legislative body, a court system, a number of specific sector administrative institutions..

2.6.1 FEDERAL INSTITUTION RELATED TO WATER SECTOR

2.6.1.1 THE MINISTRY OF WATER RESOURCES (MoWR)

The ministry of water Resources is mandated to do policy implementation operation and regulatory work. To effect its power and discharged its responsibility.

ORGANIZATIONAL STRUCTURE OF THE MINISTRY

The ministry was organized with a minister and one state (vice) ministers. A chief Engineer and Chief Economist assist the minister. The Ministry is composed of nine technical (core

process) departments and ten supportive units /services. The ministry has three autonomous agencies

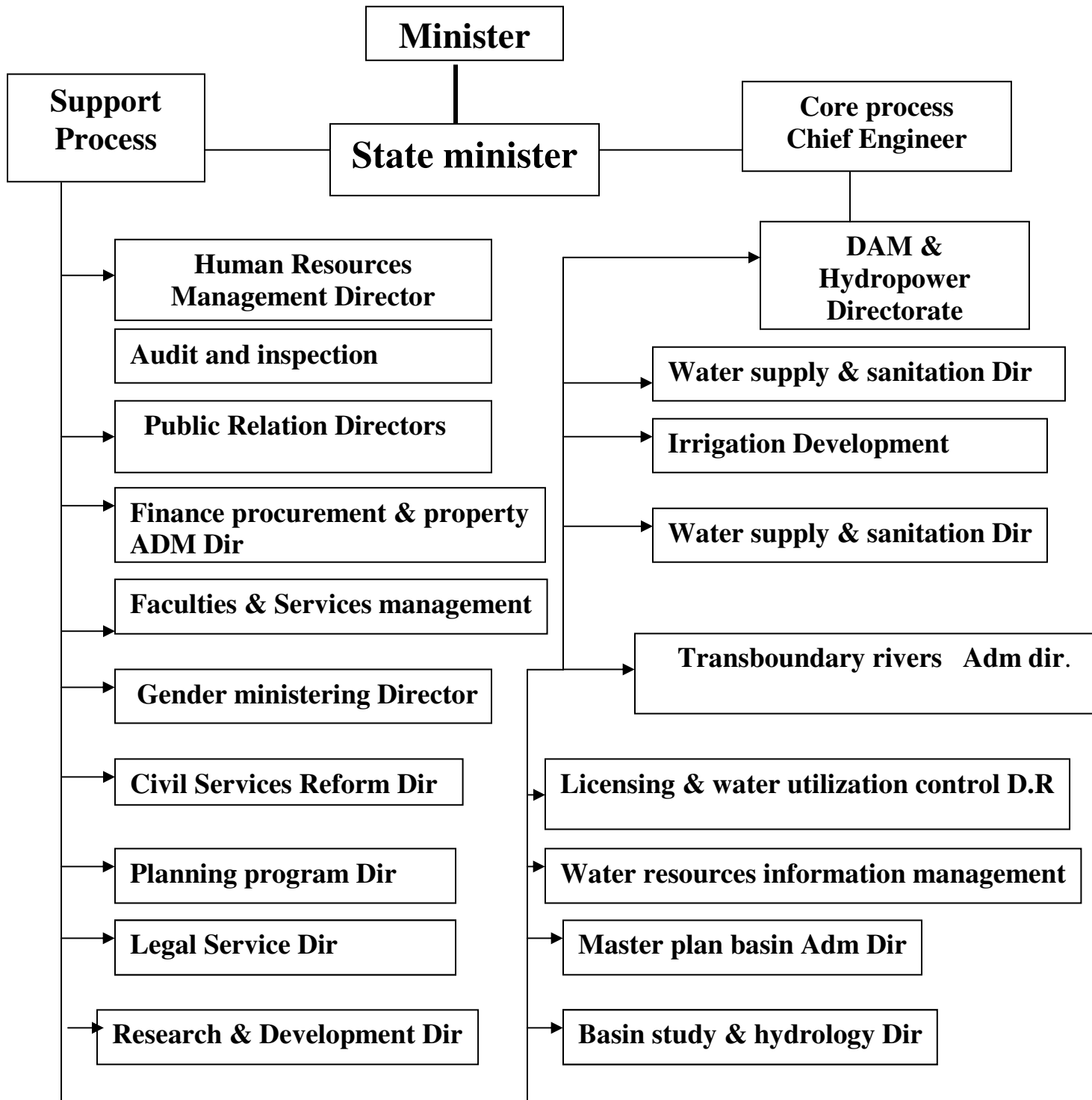
- National Metrological Services Agency (NMSA)
- Water Resource Development Fund (WRDF)
- Awash Basin Agency (ABA)

In addition, have two autonomous enterprises

- Water Works Construction Enterprise (WWCE)
- Water Works Design and Supervision Enterprise (WWDSE)

In addition to this, a number of projects are being carried out with the federal budget and foreign funding:

Figure 2.2 Ministry of Water Resources Current Organizational Structures



Sources: Ministry of Water Resources, 2010

Human resource status of the ministry

The ministry of water Resources has 915 employees of whom 209 are professional staffs and 193 are technicians: both groups are involved in the use of natural resources data, particularly concerning water resources. The remaining 500 staffs are support personnel, 630 are male and 285 are female (HRM department of MoWR 2010)

Technical department's status of the ministry

Almost all technical departments are engaged in data generation, analysis, retrieval and dissemination of information. The leading departments in data generation in the MOWR are the Basin study and hydrology departments. The rest department has there own duties and responsibilities..

Trans boundary Rivers study Department

This department is responsible for all Transboundary water issue of the country. It provides policy advice on strategies and legal matters pertaining to negotiation with riparian states. It coordinates the conduct of negotiations and riparian states. It facilities the in country coordination of the Nile Basin Initiative (NBI)

The main functions of the department

- Provide a form for coordination of NBI activities at the national level.
- Support the members of the Nile Technical Advisory committee
- Liaise with the Nile secretariat
- Liaise with the relevant national ministers and institution
- Facilitate coordination of subsidiary action program (SAP) project implementation of national level
- Assist with identification of representatives to serve on various committees and works
- Assist with logistical along elements for incoming missions (<http://geoinfo/ethiopia/mowr.html>).

Financial Status of the ministry

Finance is reflected through budget. Budget is a plan of government finance submitted for the opercula of the legislature. The budget reflects what the government intends to do. Budgets this day has become the powerful instrument for fulfilling the basic objective of government.

The total estimated cost of the Ethiopian water sector Development programs was \$ US 7,444.8 million over a 15 years period (2002-2017) covering all aspects of water resources development and among management and extended to all possible uses, This turns out to be a little less than \$ US 500 million per year (see table)

Table 2.5 Summary of investment plan (\$US millions)

Sub sector	Short term	Medium term	Long term	Total
1. Water supply and sewerage	876	1,057.9	1,001.7	2,935.8
2. Irrigation	307.9	459.9	918.3	1,683.1
3. Hydro power	649.1	525.9	777.7	1,951.7
4. General water resource	183.9	231.9	240.5	656.3
5. Institution	92.9	63.3	61.7	217.9
Total	2,110.0	2,335.9	2,998.9	7,444.8

Source: Water Sector Development Program, 2002-2016 Main Report, 2002

Ministry of water resources prepares recurrent and capital budget for level of budget year. The MoWR follows the top down approach to budget process and uses the budget implementation manual. Budget expenditure for the last five years, the budget utilization of the ministry offices is presented in the table below.

Table 2.6 Water Resources Budget Expenditures at Ministry Level
(In million Birr)

Year	Government		External	
	Recurrent	Capital	Loan	Grant
1997	18.84	483.293	91.761	66.119
Expenditure	16.66	478.66	65.06	41.23
1998				
Expenditure	23.31	556.453	92.47	93.51
	19.51	533.85	331.633	67.788
1999				
Expenditure	23.754	612.177	331.633	67.788
	20.811	594.545	131.947	39.603
2000				
Expenditure	29.123	833.430	211.605	160.259
	27.845	813.344	141.456	73.535
2001				
Expenditure	31.141	1017.351	280.85	101.373
	28.151	754.04	152.19	32.45

Source:: MoWR Planning and Project Department, 2010

2.7 Ethiopia Water Resources Management Policy

The Federal Democratic Republic of Ethiopia take systematic measures towards a more functional utilization of the countries water resources. The Federal Water Resources Management Policy (WRMP) has been prepared by Ministry of Water Resources (MoWR) and approved by the council of ministers in 1999 as a essential national policy document to steer the development and management of the country's water resources

2.7.1 PROBLEM IDENTIFICATION STAGE OF THE POLICY

Before the design of the water resources management policy, at least four major problems were considered as determinates of the policy formulation (WRMP document, 1999: V11-V111).

- The first was related to water runoffs. Much of the water flows across the borders being carried away by the Trans Boundary Rivers to the neighboring countries as some preliminary studies showed Ethiopia lost approximately to 122 billion cubic meters, of water per annum excluding ground water in their room of surface runoff.
- The second problem was the prevalence of uneven spatial water distribution in the country. The policy document indicates that 80-90% of Ethiopia water resources were found in the west and southwestern part where the population size is no more than 30 to 40%. On the other hand, 10 to 20% of the water resources were found in the East and central river basins where more than 60% of Ethiopian populations live.
- The third problem mentioned in the document is that the temporal occurrence of water particularly the rainfall disruption. Even though Ethiopia gets plenty of annual rainfall on the aggregate the required amount is not available at the right time, which would not be conducive for the countries development activities mainly in the agricultural sector.
- The fourth critical problem that necessitated for a priority setting was low-level performance related to development activities carried out in the water sector. Under performance of development activities is illustrated by the following facts in the policy document
 - Only 17% of Ethiopia population had access to clean and safe water supply which was a very low supply and coverage level even by sub-Saharan African Standards
 - There was extremely low utilization of water resources for irrigation. During policy formulation time, only 3% of the potentially irrigable land of 3.7 million

hectares was utilized. This would obviously affect to ensure food security in the country.

- Even though Ethiopia stands second in hydropower's potential next to Congo in the Africa, the WRMP was prepared at a time when only a fraction of its potential, which is an estimate of 161,000 GWH/ year, has been harnessed for any meaningful contribution to the socio- economic development of the country. On the other hand, if this resource is developed and utilized, the hydropower potential would satisfy the national energy demand and would serve as foreign exchange generation mechanism by exporting, surplus electric power to neighboring countries.

Generally, the above evaluation of the problem identification stage of the WRMP shows that the prevalence of mentioned problems led to formulation of the policy. Many scholars confirm this. For instance, authorities on public policy such as Theodulou and Kofins (2004) and Cochran and Malone (1999) indicate that initial identification of a potential problem represents the instigating element that helps initiate the agenda setting stage and ultimately policy formation.

Thus, the policy on water resources management was formulated with the belief that appropriate water resources management policy would significantly contribute to the overall socio- economic development of the country.

2.7.2 Goals, Objectives and Principles of the Water Policy of Ethiopia

2.7.2.1 Water Policy Goal

The Water policy goal is to enhance and promote the efficient, equitable and optimum utilization of the available water resources for significant socio economic development on sustainable basis

2.7.2.2 Water Policy Objectives

The policy objectives, which are a reflection of the policy goal, among other things include:

- Recognized water as a source and virtual socio economic resources that should be managed on strategic planning basis with long-term visions and sustainable objectives.
- Enhance the integrated and compressive management of water resources that avoids fragmented approach.
- Equitable and sustainable development of the water resources of the country for socio-economic benefit of the people
- Ensure that water resources management is compatible and integrated with other natural resources as well as river basin development plans and with the goals of other sectarian developments in health mines, energy, agriculture etc,
- Recognize and adapt the hydrologic boundary or basin as the fundamental planning unit and water resources management domain
- Promote and enhance traditional and localized water harvesting techniques in view of the advantage provided by the schemes dependence on Local resources and indigenous skills
- Promote the appropriate linkage mechanism for the coordination of water resources management activities between the federal and regional government
- Establish phase -by- phase Basin Authorities for efficient, successful and sustainable Joint management of the water resources of the basin through concreted efforts of relevant stakeholders
- Promote the involvement and meaningful participation of the private sector in the management of water resource
- Promote the full involvement of women in the planning, implementation, decision making and training as well as empowers them to play a leading rate in self-reliance activities

2.7.2.3 Fundamental Principles of the Ethiopian WRMP

Water as natural resources is the common good of the Ethiopian people

- Every Ethiopian has a right of access to water of sufficient quantity and quality to satisfy basic human needs
- Water should be recognized as an economic and social good
- Water resources development shall be rural centered, decentralized, participatory and integrated in approach
- Water resources shall be managed according to the norms of social equity, system reliability, economic efficiency and sustainability
- Participation of stakeholder, especially women, shall be promoted in water resource development.

The document of WRMP has been prepared in a comprehensive and integrated approach the policy can be further divided into three categories.

- Policy on Generally water resources management
- Policy on Cross- cutting issues
- Policy on sectoral issues

Each of the above divisions has its own sub divisions

The WRMP document is indeed compressive covering nearly every issue and every sub-sector under the water resources sector. The effectiveness of the policy needs to be assessed after a certain period of time and steps must be taken to ensure that there are resources and means to maintain a successful policy. The problems in public policy implementation are due to conceptual problems, political problems, administration problems and lack of public involvement. PAB Rynord (2006) cited the definition of policy implementation is regarded as the accomplishment of policy objectives through the planning and programming it is the realization on application of a plan, idea and design. In general, implementation is the act of providing and a practical means for accomplishing something carrying into effect.

2.7.3 DETAILED WATER POLICY OF SOME SELECTED SUB SECTORS

2.7.3.1 POLICY ON WATER SECTOR ISSUE

This part has three sub-sectors issues namely, waters supply and sanitation policy, irrigation and hydropower development.

2.7.3.1.1 WATER SUPPLY AND SANITATION POLICY

This policy includes water supply for human as well as animal consumption, industrial development and availing water for fisheries, tourism and transport and other uses.

2.7.3.1.2 IRRIGATION POLICY

This policy incorporates issues related to development and provision of adequate water for food crop production and pasture for livestock.

2.7.3.1.3 HYDROPOWER POLICY

The third one is hydropower policy the overall objective of hydropower development as being to enhance efficient and sustainable development of the water resources and meet the national energy demand as well as for external make to earn foreign exchange

2.7.4 POLICY ON CROSSCUTTING ISSUES

Under water policy on cross cutting issues there are a number of topics to be discussed however the researcher emphasis area is policy on sector issues.

2.8 THE WATER STRATEGY OF ETHIOPIA

To translate the WRMP into action a water strategy has to be developed. This document was completed and finalized in 2001. The national water strategy aims at providing a road map in terms of way and means to attain the water policy objectives with due recognition to the

principles around which those objectives have been developed. The water strategy provides a road map to contribute towards:

- Promoting the principles of Integrated Water Resources Management
- Realizing food self- sufficiency and food- security in the country
- Improving the living standard and general socio-economic well- being of the Ethiopia people.
- Enhancing the contribution of water regenerate in attaining national development priorities
- Generating more hydropower energy.

The water strategy follows the same guiding principles adapted for formulating the water policy. The water strategy is categorized under:

- General water resources strategy
- Water supply and sanitation strategy
- Hydropower development strategy
- Irrigation development strategy

2.9 WATER SECTOR DEVELOPMENT PROGRAM (WSDP)

In order to realize the Ethiopian water Resources Management policy, water sectoral development programs have been developed immediately after the issuance of water resources Management strategies in 2002. The WSDP has been developed for 15 years life span ranging from 2002-2016.

The water sector Development programs is further divided into

- Short-term (2002-2006)
- Medium term (2007-2011)
- Long- term (2012-2016)

Water sector Development program has been institutionalized under the following three sub-sectors:

2.9.1 WATER SUPPLY AND SANITATION PROGRAM

Consists of urban and rural people, and livestock water supplies as well as urban sewerage projects.

2.9.2 IRRIGATION DEVELOPMENT PROGRAM

As part of WSDP, irrigation and drainage sub- sectoral program has set a number of projects to be accomplished with in the programs period. This will be realized by small scale, medium scale and large-scale projects

- 1568 small-scale irrigation schemes with size ranging between 70 to 90 hectares. These schemes would develop 127, 138 hector which in turn is expected to benefit up to 508,000 households.
- Medium scale ranging between 100-300 hectare irrigation schemes.
- Large-scale 26 irrigation schemes these are planned to develop 147.470 hectars to benefit 300, 00 households or provide employment for up to 30.00 permanent and 300.000 seasonal workers.

2.9.3 Hydropower Development Program

The third pillar in WSDP is hydropower development within the WSDP life span, a total of:

- Six medium Hydropower plans with an aggregate installed capacity of 950 MW will be constituted.
- On the other hand, the PASDAP document reveals that EEPCO plans to increase power supply from the existing 791 MW to about 2,210 MW by 2009/10 (PASDAP: 137).
- In addition to this, it has planned to under take the feasibility studies for 15 medium and 37 small hydropower sites. The successful implementation of this program would make the per capital generation of electricity to grow from 27 Kwh/year to 52 kwh/year.(Water Sector Development Program document)

**Table 2.7 National Targets of WSS, IDP and HDP in water sector Development program
(WSDP)**

Description	The situation in 2002	End of short term 2006	End of Medium term 2011	End of long term 2016
WSSP coverage	30%	45%	60%	76%
IDP in ha	197,259	250,163	330,662	471,882
HOP in GWh	1314	2003	2840	4040

Source: WSDP Document, 2002

Investment Requirement for WSDP

Total estimated cost of the WSDP is \$US 7,444.8 million over a 15 year period (2002-2016), covering all aspects of water resources development and management and extending to all possible uses.

Table 2.8 Investment Requirement Plan.2002

Short term	2002-2006	\$US 2,110 million
Medium term	2007-2011	\$US 2,335.4 million
Long term	2011-2016	\$ US 2,998.9 million
Total	-	\$US 7, 444.8 million

Source: WSDP Document, 2002

The above proposed investment are like to generate thousands of jobs, as most of the WSDP investment areas are heavily based in favor of labor intensive process.

2.10 TRANS BOUNDARY WATER ISSUE AND THE WATER POLICY OF ETHIOPIA

Ethiopia has 12 river basins out of those six of them flow across the Ethiopian border to the neighboring countries.

- Blue Nile : flow on the Nile river to Sudan and Egypt
- Tekezie : flow on the Nile river to Sudan and Egypt
- Baro and Akobo : flow on the Nile river to Sudan and Egypt
- Wabi Shebelie : flow to Somalia
- Genale- Dawa : flow to Somalia
- Omo- Gibe : flow to Kenyan border

These rivers account for about 90% of the total water resources of the country. The water resources of these trans- boundary rivers are to be shared with neighboring countries. Source: WRDP report, 2002.

The Water Resources management Policy of Ethiopia has given special emphasis to the use of water resources of the Transboundary Rivers. The policy addresses issues related to Transboundary waters the following policy directives.

- Study on sustainable basis Ethiopian stake and national development interests in the allocation and utilization of trans boundary water
- Promote the establishment of an integrated framework for joint utilization and equitable cooperation and agreement on Transboundary waters.
- Ascertain and promote Ethiopia's entitlement and use of Trans boundary waters based on those accepted international norms and conventions endorsed by Ethiopia.
- Foster meaningful and mutually fair regional cooperation and agreement on the joint and efficient use of Transboundary waters with Riparian countries based on 'equitable and reasonable' use principles.
- Comply with those international conventions adapted by Ethiopia and manage Transboundary waters accordingly..

2.10.1 WATER STRATEGY RELATING TO TRANSBOUNDARY WATERS

The main objective of the water strategy is to translate the National water Resource Management policy into action. The strategy directs to develop progress on. Transboundary

waters that are in the best interest of Ethiopia and are consistent with international conventions adapted by the Nile Basin member states..

- Develop and implement projects that can be undertaken unilaterally.
- Develop and implement project that fall within the framework of Eastern Nile subsidiary Action and National levels.
- Participate in basin-wide development initiative along with other basin countries
- Assess and update every 3 years the status of water affairs of Transboundary rivers.
 - Install automatic records and measuring facilities at the stream angling stations
 - Carry out stream flow and measurement
 - Take water samples during flow measurement for water quality analysis
 - Determine the availability of water and sediment volume of each Transboundary river on regular basis
- Assess and update every 5 years the demand for water of development projects in each Transboundary river with particular emphasis on high priority project to
 - Estimate water supply-demand balanced for each rivers
 - If demand is, in excess of available water resources undertake inter-basin transfers and implement demand management measures to bridge the demand gap.
- Identify common development project that can be developed jointly with others riparian countries on equitable basis, paying special attention to Ethiopian's interest. Towards, this aim gives priority to multi-purpose projects such as irrigation and hydropower.
- Develop and enhance capacity in Transboundary water negotiations and conflict resolutions.
 - Actively participate in the Nile initiative
 - Assess and identify Transboundary issues that require cooperation and develop strategies to address these issues
 - Establish a National consultative group on Transboundary water issues
 - Raise public awareness about Transboundary rivers issues.

Source: WSDP main report (2002) and Teshome Workie, study of Ethiopian Water Resources final report (2005)

2.10.2 INSTITUTIONAL AND CAPACITY BUILDING PROGRAM

In order to implement the WSDP and to secure long term basis for substantial development of water resources, 4 types of new institutions should form the foundation for action and become integral parts of the MOWR they are

- Basin development authorities
- Water resources information center
- Water resource research center
- Water resource training institute

According to the program, decentralized management requires basin level organizations. The present program proposes the establishment of the following seven basin development authorities.

- Blue Nile basin authority
- Omo Gibe basin authority
- Baro Akobo basin authority
- Northern basin authority
- Eastern basin authority
- Southern basin authority
- Awash basin authority

Source WRDP Report 2002 page 103

2.10.3 NILE BASIN WATER RESOURCES

Most of the rivers of Ethiopia originate within the country and flow across the borders to neighboring countries these become Transboundary Rivers. Sharing the water resources of

these Transboundary Rivers are very challenging, particularly the Nile tributaries (Abbay, Tekeze and Baro-Akobo) with the riparian countries Sudan and Egypt.

According to Mr. Girma Amare (1997), up to now there is no basin wide agreements have either a natural or historical basis, Neither of which have validity according to Ethiopia.. This is particularly so with respect to the 1929 and 1959 agreement signed between Sudan and Egypt on the rights to the Nile waters. Such treaties require proper evaluation and validation. Apart from natural and historical agreements there have been attempts of the development of basis principle (for example, the 1966 Helsinki, Rules of the international Law Association and article 5,6 and 7 from the 1971 recommendation) to govern the equitable utilization of waters of the Nile. These principles promote sustainable right and equitable utilization of Transboundary Rivers among riparian countries. The principle advises changing old habits and the application of new thinking, and could form the basis of an acceptable agreement for the development of the upper Blue Nile for common use. The Nile is one of African greatest natural resources. It is the worlds longest river following majestically from its sources in Eastern and central Africa through a vast portion of the Africa continent and draining into Mediterranean sea in the north it is a resource that is of great pride and inestimable value to the peoples of its vast basin area.

2.10.3.1 NILE BASIN INITIATIVE (NBI) A NEW PARTNERSHIP FOR PROGRESS

Recently, under an international law supporting the equitable utilization of the water. The riparian countries of NIL decided to form common Water Development Programs. Based on this Nile Basin initiative (NB1) was launched in Darussalam in February 1999.

The NBI is a regional partnership within which countries of the Nile basin have united in Common pursuit of the suitable development and management of Nile waters. For the first time in history, all Nile basin countries have expressed a serious concern about the need far cooperation. They have agreed to pursue this under a transitional arrangement (NB1) until permanent legal framework is in place. Member countries are, Burundi, Democratic Republic of Congo, Egypt, Ethiopia, Kenya, Rwanda, Sudan, Tanzania and Uganda.

It is suggested that a Nile basin commission be established by all Nile basin states in accordance with an agreement to be concluded by all states concerned. It was proposed that this commission be called the Nile basin commission having the following main objectives.

- Assisting the member states of the Nile basin to cooperate in the national planning
- Of conservation, allocation and development of the water resources of the whole Nile basin
- Conducting hydrological and hydro metrological of the river Nile catchments
- Establishing data banks and arranging for systematic collection processing and analysis.
- Assessment of surface water, resources and forecasting of floods and drought
- Agreeing on the working arrangement of the dams, barrages and control works constructed in the basin
- Advising the riparian countries on the appropriate arrangement
- Exchange of technical information and experience in the field of water resources development
- Recommending drought and flood control measures in the Nile basin
- Promoting research in the field of water resource development
- Studying of environmental impact of water resource project
- Establishing of a water resources institute with in the basin
- To advise the government of the member states
- To submit request to and sign agreements and assume obligation with regional and international organization and other governments for technical assistance and finance
- To approve the budgets and work programs and to control the financial management of the commission.

The legal framework should be based on the basic principles and rules of the general international law and the recognition by the riparian states of the legitimate rights on the Nile waters. Concerning the institutional framework a Nile basin commission is to be established.
Source: Nile Basin for cooperation, 1997 page 335

2.10.3.2 A SHARED VISION OF NBI

The NBI member states have embraced a shared vision “ to achieve sustainable socio economic development through the equitable utilization of and benefit from the economy Nile Basin water resources shared vision thus puts economic development of its centre. The NBI enhance Participatory approach from the ground up and encourage decision making from the lowest possible levels. Action on the ground therefore will take place at local, national and sub basin levels find integrate upwards with in a basin – wide framework. Possible development projects under consideration includes

- Hydropower development
- Environmental Management
- River reputation
- Drought and flood control
- Water use efficiency improvement

2.10.3.3 ORGANIZATIONAL STRUCTURE OF NBI

The Nile Basin Initiative is governed by a council of ministers, its highest decision – making organ. The council is made up of water affairs ministers of the Nile basin states leadership of the council is rotated annually. Supporting the council is the Nile Technical Advisory committee, which is made up of senior officials from the various countries. The technical Advisory committee consists of one member from each country and an alternate. The NBI maintains a secretariat located in Entebbe, Uganda. The secretariat started operations in June 1999 and was officially launched on September 3, 1999.

The first Nile conference was held in Aswan, Egypt (February 1993), the second conference were held in Khartoum Sudan (January 1994) third and the forth conference in Arusha Tanzania (February 1995) and Kampala Uganda (February 1996, respectively).

2.10.3.4 RECENT STATUS OF NBI

Recently, under an international law supporting the equitable utilization of the water resources, positive progress has been observed, now riparian countries are deciding on common water development program. The Nile Basin initiative has been created and a strategic Action program prepared which consists of two sub programs:

- The shared vision program (SVP) is to help create and enabling environment for action on the through trust and skill
- The subsidiary Action program (SAP) is aimed at the delivery of actual development project involving two or more countries.

Project are selected by individual riparian countries for implementation and submitted to the council of ministers of the Nile Basin initiative for approval the council has already accepted four hydropower and four irrigation development projects proposed by Ethiopia: www.loeirth.com

The lessons of the past clearly indicate that the utilization of the Nile Water has unilaterally been in favor of the two co-basin countries Sudan and Egypt. Constant attempts have been made to protect the statues quo existing within the Nile Basin. It has to be recognized that the countries of the Nile Basin need to produce more food to meet the demands of the rapidly increasing population. Presently in the field of international water courses clearer substantive and procedural rules and principles were developed that have found wide acceptance by the international community. International Law commission (ILC) has adapted a set of 33 articles as a framework containing general principles and rules that would serve as guidelines for negotiating specific agreements, particularly on international watercourses.

The two core substantive legal principles provided in articles 5 and 7 of the ILC are the principle of equitable utilization and the obligation not to cause significant harm to other watercourse states. This is the duty of countries to negotiate and cooperate in the management of international watercourses. When we come to the Nile Basin, the primary issue that requires

preliminary agreement among the watercourses states is the recognition of each co-basin states equitable entitlement to the use of the Nile waters.

In the Nile Basin only the two downstream riparian countries are exclusively utilizing the Nile waters while the upstream countries although they have their own demands on the water resources have not been able to secure their equitable rights. Therefore, the current legal regional has to give way to a new one where there is agreement to cooperate based on the principle of equitable utilization. This is also supported by the currently accepted principle and rules of international law .Sources: comprehensive water Resources development of the Nile Basin Basis for cooperation, 2002 page 40-41.

Multilateral cooperation in the Nile Basin had been adopted by the riparian states by the beginning of 1990s. Conditions on Ethiopia participation led in 1997 to the riparian negotiations for the establishment of a cooperative Framework Agreement called the D3 project at the time (Arsano and Tamrat 2005). These high-level political negotiations (1997-2007) have run in parallel with the activities of the Nile basin initiative. The final goal of this negotiation was to achieve multilateral legal framework, which will be the foundation of a permanent river basin organization- the Nile Basin commission. The creation of the commission is to receive massive international funds for water projects in the Basin.

The NBI of a cooperative framework draft agreement has been signed by Ethiopia, Kenya, Uganda, Tanzania and Rwanda and Burundi and Congo will sign very soon, but Egypt and Sudan refused to sign the agreement until now. Anyhow, the cooperative framework agreement will be open for signature up to march 2011. (Reporter News paper No 38/1060 page 2, June 28 2010)

2.11 EXPERIENCES OF OTHER COUNTRIES

It is becoming very clear that water is likely to be the pressing environmental concern of the next century. Difficulties in river basin management are only exacerbated when the resources crosses international boundaries. Water, which cross-political boundaries have additional

complexities brought on by strains in riparian relations and institutional limitations. Recent studies have focused on the conflict potential of these international waters. Some stress the dangers of violence over international water.

One critical aid in the assessment of international water has been register of international Rivers, which lists 214 international waterways, covering 47% of the earth's continental land –surface (compiled by the Department of Economic and Social Affairs of the United Nations). The 1978 Register listed 214 international basins covering 47% the worlds land surface (excluding Antarctica) they update lists 261 international basins. (<http://www.transboundarywatersorst.Edu>).

Table 2.9 Number of International Basins

Continent	1999 update	1978 Register
Africa	60	57
Asia	53	40
Europe	71	48
North America	39	33
South America	38	36
Total	261	214

Source: publications- International river basin of the world 1999

2.11.1 TRANS BOUNDARY COOPERATION IN SHARED RIVER BASIN EXPERIENCES

2.11.1.1 RIVER RHINE AND MEUSE

The Rhine is a relatively small river, with a basin of 170.000 Km². In Europe the Rhine basin ranks third in size. The length of the river is 1300km, of which 880 km is navigable the river basin lies in seven countries Switzerland, Austria Germany, France, Luxembourg, Belgium and the Netherlands the population in the basin is 60 million.

The Meuse River has a catchments area of 33,000 km³ and is 870 km long. Rhine was and still is one of the most important traffic chains in Europe. The Rhine was also the most disputed border between the Roman and Germanic people in North west Europe from the first centuries AD.(Pieter Hulsman et al/Water policy 2 (2000) 83-97).

Based on experiences about international cooperation's in the Rhine and Meuse basin and the North Sea area a number of lessons have been learned. According to Pieter Hulsman the cited from history and practice the following seven statements.

1. Only voluntary decisions of riparian states create the appropriate conditions for sustained international cooperation
2. Beneficial Trans boundary cooperation require mutual trust: concerted measures may confirm common intentions this process takes time.
3. One – side promotion of individual or sectoral interests negatively affects other interests.
4. Disaster with international impact is excellent occasions to improve Trans boundary cooperation.
5. Harmonization of measures must not be limited to river basins but should also include the recipient sea.
6. Legal frame works help to tackle Transboundary problem and to structure common activities.
7. Common monitoring infrastructure contributes to mutual trust, Joint assessment and policymaking.

History and experiences of the international cooperation in the Rhine basin and North sea area can help to recognize and analyze the situation in other Trans boundary river basins and seas. From the Rhine, Meuse and North sea case according to Pieter Hulsman the following conclusions can help to manage Trans boundary rivers.

- Only voluntary decisions by riparian states create the basis for sustainable cooperation on international level.
- A void unilateral promotion of individual and sectoral interests one-sided promotion of interests negatively affects others interests.

- Mutual confidence is the only basis for successful cooperation
- Disasters with international impact Can lead to a break through they can help to improve Transboundary cooperation.
- Periodical updating of plans gives the opportunity to adopt objectives and measures to the changing conditions and opinions in society.

2.11.1.2 WATER RESOURCES MANAGEMENT IN BRAZIL

Water resource management is a key element of Brazil strategy to promote sustainable growth and a more equitable inclusive society. Brazil achievement over the past 70 years have been closely linked to the development of hydraulic infrastructure for hydroelectric power generation and to the development of irrigation infrastructure especially in the north east region.

Water resources management in Brazil has historically relied open heavy investment on hydraulic infrastructure after several modification introduced to the first 1907 draft the water code was approved. In addition, this was the first legislation for water resources management in Brazil and was applied for more than 60 years.

Brazil has signed numerous international legal framework treaties with neighboring countries, aimed at promoting sustainable use of shared water resource. The treaty of the Rio de la plato entered into force in 1977 and is working as a political interconnection among the countries of the southern zone (Argentina, Brazil, Bolivia, Paraguay and Uruguay). Its main objectives are the sustainable use of water resources, regional development integration and promotion of greater knowledge of the basin, its resource and potential.

The Amazon cooperation Treaty was signed in 1978 by Brazil, Colombia, Ecuador, Guyana, Peru, Surinam and Venezuela and intered into force for Brazil 1980. The basic scope of the treaty is to promote the harmonious development of the Amazon in order to allow an equitable distribution of the benefits to improve the quality of life of its peoples.

The Brazil water resource management system is a combination of organized public organizations, private entities and civil society representatives, which make the implementation of the water resource management instrument in accordance with the principle established in the law.

The institutions framework consists of the following

- National council on water resource
- National water authority
- River Basin committees
- River basin water agencies
- Water resource civil organization

The civic organization can be any of the following

- Inter municipal consortia
- River basin associations
- Regional local or sectoral association of water users
- Technician academic and research organizations and
- Non-governmental organizations (NGOs) Source: (<http://en.wikipedia.org/wiki/>)

The dissection in the chapter clearly indicates that there are many countries of the world share common river waters. For the better utilization of Transboundary, water cooperation and agreement should be there. Otherwise, this can create conflict between the nations, which makes the situation disasters.

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CHAPTER THREE

METHODOLOGY OF THE STUDY

3.1 INTRODUCTION

Methods and technique are very important part of research. Where as, method refers to the way one applies the theoretical perspective to explain facts or data collected and techniques is an apparatus, verbal or mechanical used for eliciting information from the respondent.

Methodology refers to the total sum of techniques of data collection, tool and the methods of analyzing data and theoretical perspective or orientation that govern research. A methodology involves presenting rules of procedure about matters such as the collection data and their analysis. The rules are impersonal in that they are meant to apply equally to all researchers.

It is very important that the methodology is being careful consideration at the outset of the research; so that the most suitable approaches and research methods are adapted, for any type of research methodology makes clear how the topic should be approached. In the study, this chapter contains the introductory remarks, research design, data type, sampling method, data collective instrument, data analysis techniques and conclusion.

3.2 RESEARCH DESIGN

This is to identify and analyze all the elements of phenomenon, process or system such as identification and recording will be done from a particular perspective and often for a specified purpose, However it should always be done as objectively and accurately. In this study, descriptive method will be used. Which aims at the describing the existing achievements, challenges and gaps on the EWRMP. Descriptive research describes a social institution, events, systems, structures etc .Its purposes is to describe the state of affairs as it is .It give answers to questions like who, what, when and where the problem occurred . The main characteristic of this research is that researchers have no control over variables, can describe only what has happened or is happening.

Commonly, this research will be carried out to enable the subject matter categorized. This will also give means to conduct and manage fact finding enquires from high-level government officials, regional water resource bureaus. Federal agency, enterprises directors, managers' department heads, expert's private investors, NBI experts and other related organizations. Identification and recording has been done from a particular perspective for a specified purpose.

3.3 DATA TYPE AND SOURCES

The research has follow both the qualitative and quantitative approaches. This has enable the research to develop a level of detail about the individual or place and to be highly involved in actual experience of the participants. This is why the researchers look for an assessment of the Ethiopian water resources management policy and its implementation.

3.3.1 DATA SOURCES

In order to assess and evaluate the implementation of water resources management policy data has been collected from primary and secondary sources.

3.3.1.1. PRIMARY DATA

Primary data is collected from first hand sources. The first target group has been high-level governmental officials, agency directors, enterprise managers and bureau heads by whom all policy procedures and directives are articulated. The second target groups have been department heads, experts and lower level employees who are directly involving in the implementation process. The last target group has been the private investors and Nile basin initiative (NBI) experts who received services from the ministry of water resources.

3.3.1.2 SECONDARY DATA

Secondary data is Collected from written reports and publications from MoWR, MME, MoARD, MoFED, CSA, NBI, project reports and documents, articles, journals, books internet sources, research papers, World Bank, other donors report and related sources that are available for the study.

3.3.2 SAMPLING TECHNIQUES

In order to assess and evaluate the implementation of the policy, key Federal Government Authorities, Regional Water Resources Bureaus, Regional Irrigation Development Authorities, NGOs, Private Sector, Donor Institutions and others are approached and the respondents were selected both by purposive sampling technique. In this study qualitative and quantitative type of data has been used The basic justification to use purposive sampling is based on expertise and key stockholder driven approach which is to mean the researcher is looking for individuals and institution that have experience and experts in the review process in order to achieve the objective of the study .The objective of sampling is to provide a particular means of enabling the data collection and processing components of research to carry out. Sample provides a good presentation of the population.

The following table summarizes the size sample (from each category) considered in this study together primary data.

Table 3.1 Key respondents and sample size

No	Major categories (key respondents)	Sample size
1.	Federal level	-
1.1	National Steering Committee of WRMPC	-
	Minister of Water Resource	1
	Minister of Agriculture and Rural Development	1
	President of Amhara and Tigray region	2
	Director General of Ethiopian Environmental Protection Authority	1
1.2	Agencies and enterprises	-
	Agencies and enterprises directors and general managers (NMSA,WFDA,WWCE,WWDSE)	4
	From each agencies and enterprises three department heads	9
1.3	From MOWR head office	-
	Chief engineer	1
	Directors	-
	Department heads	6
	Support service heads	3
2.	Regional level	-
	Regional water bureaus heads(Tigray,Amhara,Oromia and Gambela)	4
	Technical department heads from each regional water bureaus	4
3.	Private sector	-
	Private investors	3
	NBI experts	2
	Total	41

3.4 DATA COLLECTION INSTRUMENTS

In this study both qualitative and quantitative data is used to get comprehensive information. These instruments include questionnaire, interview, group discussion and examination of relevant documents.

Questioners both open-ended and closed-ended, structured interview is used to gather information from respondents. In addition to this in depth, interviews or focus group discussion is employed with senior experts from ministry of water resources and NBI to collect first hand information. The other important data collection tool is through examination of secondary documents.

3.5 DATA ANALYSIS METHOD

It has been noted that the choice of data collection should be determined by the outputs required from the research. The data should be examined, categorized and tabulated in logical manner. Thus, the research has organize the data into a set of relevant and key themes of the research indicated under the main research questions. The data is organized in the form of:

- The statistical package for social science (SPSS) software is used for data clearing, data entry and all the data tabulating and data processing with some high-level statistical analysis of the study
- Descriptive statistical tools and used percentage have been used to facilitate the analysis chapter.
- Qualitative information collected from the interview, group discussion, observation and documents have been described by using qualitative analysis.

3.6 CONCLUSION

This chapter helps to outline the process of the research and has introduced some main concepts of research methodology. It is vital that the methodology is given careful consideration and has addressed a variety of issues concerning research design, data type, sampling methods, data collection instruments and data analysis technique.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND DISCUSSION

This chapter deals with presentation analysis of the study discussion and interpretations of the data to answer the main research questions of the study. The data were gathered through questionnaires, interviews, group discussion and document review. All data are systematically analyzed presented and discussed under each topic of the main basic research questions.

Senior experts and officials from ministry of water resources and from Nile basin initiative staffs are interviewed. Questionnaires were distributed to higher officials, directors, general managers, regional water bureau heads and experts from minister of water resources. A total of 41 questionnaires were distributed out of those 38 of them have responded, interview and relevant documents have been also reviewed..

4.1 PROFILE OF THE RESPONDENTS

In this particular study, most of the respondents are directly or indirectly engaged in water resource sector. Even though the target sampling frames are engaged in water, resources sectors, it is important to look at the respondents in terms of sex education, position, work experience and their organization.

The researcher distributed the questionnaire to 41 target population of which 38 responded and returned the questionnaire where as the rest of them due to different reasons they do not respond the questionnaires. Therefore, the response rate is 92 percent and this figure is considered as 100 percent sample of data obtained through questioners.

Table 4.1.Respondent's Profile in terms of Sex

Sex	Frequency	Percent
Female	8	21.1
Male	30	78.9
Total	38	100.0

Source: Field Survey, 2010

The above table shows the majority of the respondents are male than female. When this is converted to percentage male, dominate the percentage. This shows the high gap between male and female respondents. This study believes that women are deprived of getting such employment opportunity in water sector. The reason for such gap could be traditional, cultural and regional influences.

Table 4.2 Respondents educational level and work experience status in water sector

Education			Experience		
level	Frequency	Percent	Respondents experience	Frequency	Percent
Diploma	1	2.6	5-10 years	5	13.2
First degree	11	28.9	10-20 years	14	36.8
2 nd degree and above	26	68.4	>20 years	19	50.00
Total	38	100.0	Total	38	100.0

Source: Field Survey, 2010

Table 4.2 shows that educational and work experience status of the respondents. As we observe from the table majority of the respondents 26 of them (68.4 percent) have second degree.11 of them (28.9 percent) have first degree and one of the respondent (2.6 percent) have diploma. Concerning the respondents work experience majority of them (50 percent) of the respondents served more than 20 years in water sector. This figure indicates that the experience of the respondents enabled the researcher to get adequate information related to the topic.

In addition to this, selected senior experts from ministry of water resources and Nile basin initiative, three persons from ministry of water resources two person from Nile basin initiative were approached through interview techniques. The responses and comments were incorporated under each section of the chapter.

Table 4.3 Respondents in their respective organization and positional status

Respondents organization	Freq	Perc	Respondents positional status		
Ministry of water resources	11	28.9	Position	Freq	Per
National metrological service agency	3	7.9	Higher officials	2	5.3
Water fund development agency	2	5.3	Regional water bureau heads	5	13.2
Water works construction enterprise	3	7.9	Directors and general managers	8	21.1
Water works, design supervision and enterprise	2	5.3	Department heads	6	15.8
Private water related companies	3	7.9	Experts	17	44.7
Oromia regional water bureau	3	7.9	Total	38	100
Tigray regional water bureau	4	10.5			
Amhara regional water bureau	1	2.6			
Nile basin initiative	4	10.5			
Federal environmental protection agency	1	2.6			
Gambela regional water bureau	1	2.6			
Total	38	100			

Source: Field survey, 2010

The above table shows that the respondents organization and their positional status. These organizations which have been approached are one ministry, three agencies two public enterprises, four water resources regional bureaus, one NGO and three private water related companies. Most of the organizations stated above have been participated during the policy formulation and majority of them are main actors in implementing the Ethiopian water resources management policy. When we look at these organizations some of them are engaged

in water design and supervision, in water works construction, in fund generating, environmental protection, metrological, basin studies and other related water sector activities. On the other hand, when we see at the respondent's position majority of them are strategic managers the rest are operational managers and expertise level in the water sector. These positional statuses have been helping the researcher to get adequate information in implementing the Ethiopian water resources management policy.

4.2 THE EXTENT TO WHICH THE WATER RESOURCES MANAGEMENT POLICY HAS MANAGED IN ADDRESSING SOCIAL DIMENSION.

Table 4.4 The extent to which the water resources management policy (WRMP) has managed in addressing social dimensions:

Social Dimensions	Responses									
	Nil		Low		Moderate		High		Very High	
	No	%	No	%	No.	%	No.	%	No.	%
1. equitable use of water resources	0	0	12	31.6	18	47.4	5	13.2	3	7.9
2. allocation and distribution of water resources	0	0	12	31.6	17	44.7	5	13.2	4	10.5
3. positive impacts on livelihood opportunities	0	0	11	28.9	19	50.0	6	15.8	2	5.3
4. transportation, tourism and recreation service	5	13.2	17	44.7	9	23.7	6	15.8	1	2.6

Source: Field survey, 2010

The table indicated above attempt to show allocation, distribution equitable use of water resources and in providing inland water transportation, tourism and recreation service and it's

positive impacts on improving livelihood opportunities in the whole country. To assess, the social dimension respondents were asked to show their level ranging from very high to nil. According to the table for question 1,2 and 3 in average nil 0% low is 30.7% moderate is 43.3% high is 14.06 very high is 7.9%. thus the result shows that majority of the respondents (47%) have reasonable answer in addressing social dimension . Regarding transportation, tourism and recreation service is concerned the respondents rated low (44.7%). So the result shows majority of the respondents are dissatisfied with the development of tourism and recreation resources associated with water in water resources management.

4.3 THE EXTENT TO WHICH THE WATER RESOURCE MANAGEMENT POLICY HAS MANAGED IN ADDRESSING ECONOMIC DIMENSION

Table 4.5 The extent to which the Water Resource Management Policy (WRMP) has Managed in Addressing Economic Dimensions:

Economic Dimensions	Responses									
	Nil		Low		Moderate		High		Very High	
	No	%	No	%	No.	%	No.	%	No.	%
1. National Economic growth in										
1.1.Hydropower generating	3	7.9	3	7.9	4	10.5	26	68.4	2	5.3
1.2. Irrigation Development	1	2.6	12	31.6	17	44.7	7	18.4	1	2.6
1.3. Water supply & Sanitation	0	0	11	28.9	18	47.4	7	18.4	2	5.3
2. Enhancing poverty reduction	1	2.6	17	44.7	11	28.9	7	18.4	2	5.3

Source: Field survey, 2010

The overall goal of water resources policy is to enhance and promote all national efforts towards the efficient equitable and optimum utilization of the available water resource of Ethiopia for significant socio economic development on sustainable basis. The above table show as:

4.3.1 NATIONAL ECONOMIC GROWTH IN HYDROPOWER GENERATION

Each respondent was asked to express the satisfaction level in the hydropower generating development. Out of 38 respondents 26 (68.4%) of them rated high and the rest 12 respondents nil 3 (7.9%) low 3 (7.9%) moderate 4 (10.5%) and very high 2 (5.3%). This indicates that due emphasis has been given by the government to improve the national energy demands. Group of experts during the interview has also confirmed high satisfaction on the effort made in hydropower generation. This does not mean that national energy demand is highly satisfied. The energy to be generated will not only cater for the increasing growing demand for energy in the country but also should have surplus production to be exported to neighboring countries and earn foreign exchange.

According to the annual report, 2010 of EEPCO the national target to be achieved up to year 2011 was 2218MW and the base year 2002 it was 791MW in year 2010 it has reached 2000MW. When this result is compared to 2011medium term target 2218MW the total achievement is 90.188%.

4.3.2 NATIONAL ECONOMIC GROWTH IN IRRIGATION DEVELOPMENT

As you can see in the above table 4.5 out of the 38 respondents 17(44.7%) rated moderate level 12(31.6%) low, 7(18.4%) high, and 1(2.6%) nil and very high level. From the above facts, one can understand that the over all efforts and commitments of government in enhancing irrigation development is satisfactory. The government has invited many stakeholders, which include local and foreign investors in developing irrigations, but

interviews result showed the involvement of the private sector in the irrigation policy implementation is weak with the area of irrigated agriculture cultivated so far is insignificant compared to the irrigable potential. According to the interview made, sufficient food has to be produced to meet the requirement of the fast growing population and should ensure food security for eventualities at household level despite the considerable irrigation potential, Ethiopia has been facing persistent drought and famine aggravated by under developed irrigation infrastructure. Small, medium and large-scale irrigation schemes shall be developed in order to enhance reliable agricultural development in Ethiopia.

4.3.3 WATER SUPPLY AND SANITATION

As shown in the table 4.6, respondents were asked to rate the water supply and sanitation development level. Out of 38 respondents majority of them 18(47.4%) rated moderate and the rest rated 11(28.9%) low, 7(18.4%) high, 2(5.3%) very high and 0(0%) nil. From the above data, one can understand that the progress level in water supply and sanitation development is satisfactory. As per the interview conducted with the experts, the coverage of improved water supply and sanitation facilities in the whole country before year 2004 was generally low. According to Teshome Workie, national consultant the sanitation situation is even more severe than the water supply. 75% of health problems in the country are due to disease related to unsafe and inadequate water supply and sanitary and unhygienic environment. Annual {2010} report of ,ministry of water resources regarding water supply and sanitation shows that in year 2002 the coverage was 17% and in year 2010 the coverage have reached 68.5%. The long term year 2016 target was 76% coverage at national level. Comparing with the target it has been done in promising manner and the rest percentage will be successfully achieved with the remaining years.

When comparing the urban centers with rural areas reports of the ministry shows urban population is provided with better water supply services than rural population.

4.3.4 THE EXTENT TO WHICH THE WATER RESOURCES MANAGEMENT POLICY HAS MANAGED IN ENHANCING POVERTY REDUCTION

The extent to which the water resources management policy has managed in enhancing poverty reduction, respondents are asked to rate their level ranging from very high nil and the respondents responses was 17 (44.7%) low, 11 (28.9%) moderate, 7 (18.4%) high, 2 (5.3%) very high and 1 (2.6%) nil. From this analysis, we can say that the respondents are highly dissatisfied with the result in enhancing poverty reduction and needs along way to go.

Poverty is being tackled at global, regional, national and local levels as 1.2 billion people are estimated to be currently leaving on less than one dollar a day (extreme poverty). This need for global poverty reduction has been identified over the years. Principle 5 of the 1992 RIO declaration on environment and development state, “All states and all people shall cooperate in the essential task of eradicating poverty.. The United Nations millennium development goal also has as it focused the halving living in extreme poverty and those who suffer from hunger (World Bank 2002).

4.4 THE EXTENT TO WHICH THE WATER RESOURCE MANAGEMENT POLICY HAS MANAGED IN ADDRESSING POLITICAL DIMENSIONS.

Table 4.6: The Extent to which the Water Resource Management Policy (WRMP) has Managed in Addressing Political Dimensions:

Political Dimensions	Respondents' Responses									
	Nil		Low		Moderate		High		Very High	
	No.	%	No.	%	No.	%	No.	%	No.	%
1. Women empowerment	0	0	25	65.8	4	10.5	7	18.4	2	5.3
2. Private sector participation	0	0	26	68.4	5	13.2	6	15.8	1	2.6
3. NGOs participation	0	0	25	65.8	8	21.1	4	10.5	1	2.6
4. Empowering water related professionals association	11	28.9	18	47.4	6	15.8	2	5.3	1	2.6
5. Organizing water users' cooperatives	16	42.1	14	36.8	6	15.8	1	2.6	1	2.6

Source: Field Survey, 2010

4.4.1 WOMEN EMPOWERMENT

Respondents were asked to rate their level to what extent has empowering women's in implementing the water resources management policy. As shown in the above table out of 38 respondents majority of them 25(65.8%) have rated low and the rest 7(18.4%) high 5 (13.2%) moderate 2(5.6%) very high. From this data, one can understand that the gender bias is still not manifest in all domains at all levels and women are not properly empowered in implementing the policy. Arrangements are required to facilitate conditions conducive to achieve equality between men and women, so that women can participate in political, social and economic life of the country on equal terms It is very important to participate community in particular women in any policy implementation process.

4.4.2 PRIVATE SECTOR PARTICIPATION

The private sector involvement in the policy implementation, according to the respondents 26(68.4%) which is nearly one third of them have rated low level. Group of experts during the interview has also feel that stakeholders at lower levels do not own the policy and the laws, and that the role of private sector is not clearly defined.

4.4.3 NGO PARTICIPATION

From the above table the participation of NGO status in the policy implementation as stated by respondents out of 38 respondent's Majority of them 25(65.8%) have rated low level. This indicates that due attention was not given for the contribution of NGO in implementing the Ethiopian water resources management policy.

4.4.4 EMPOWERING WATER RELATED PROFESSIONALS ASSOCIATIONS

Respondents were asked to rate the level of empowering to water related professional associations in implementing the water policy of Ethiopia. Majority of them told that it is very

low i.e. 18 (47.4%). As per the interview conducted with the experts, they have confirmed that there are no water related professionals associations in the ministry including at regional level.

4.4.5 ORGANIZING WATER USERS COOPERATIVE

On the above table 4.6 respondents were asked to rate the efforts made in organizing water users cooperative .The response was 16(42.1%) nil, 14(36.8%) low,6(15.8%) moderate, 1 (2.6%)high and 1(2.6%) very high. Depending on the data and interview made with the group there is no registered water users cooperative in federal as well as in regional governments

4.5 THE LEVEL OF ENCOURAGEMENT MADE BY GOVERNMENT FOR PRIVATE SECTOR TO ENGAGE IN WATER SECTOR DEVELOPMENT PROGRAMS

The water sector development programme (WSDP), based on water strategy and water policy, has been drawn up in 2002 to contribute to major socio economic targets such as enhancing the access of population to safe drinking water, improving food security through irrigation and increasing the generating of electricity by constructing dams and power plants. Within the above perspective the level of encouragement to private sector made by government to water, sector programs are indicated in table below.

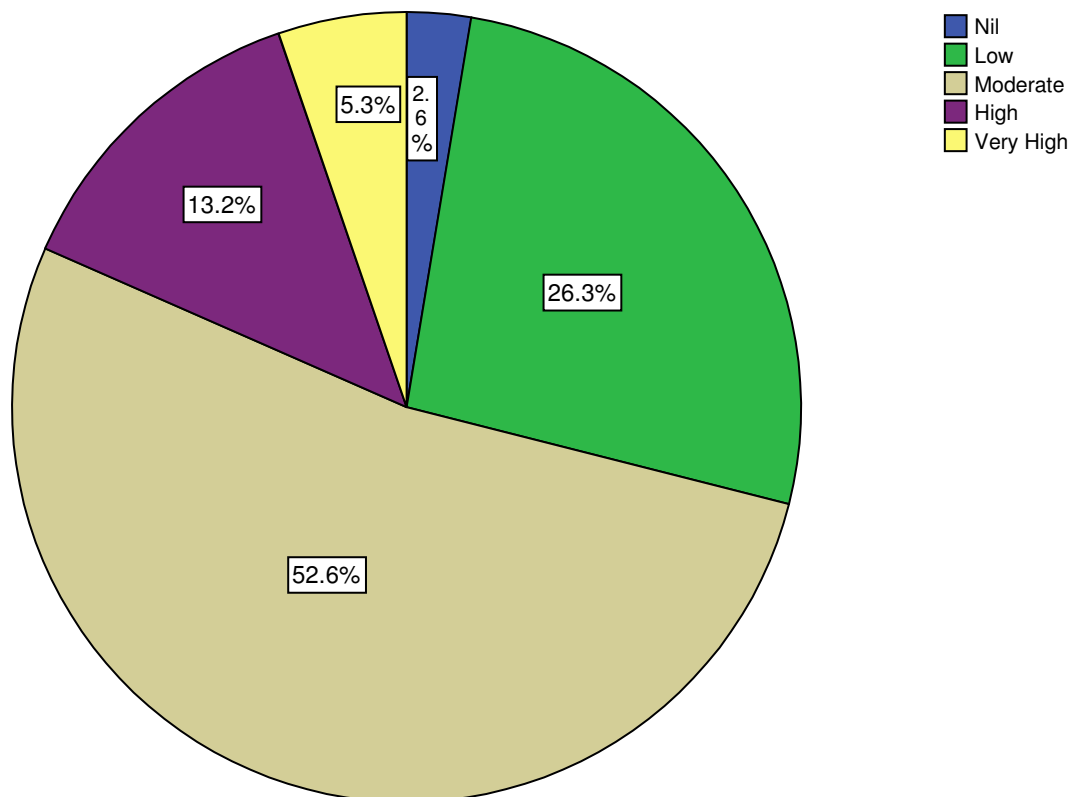
Table 4.7 the level of encouragement made by government for private sector to engage in water sector development program

Water sector programs	Respondents' Responses									
	Nil		Low		Moderate		High		Very High	
	No	%	No	%	No	%	No	%	No	%
1. water supply and sanitation services	5	13.2	17	44.7	11	28.9	3	7.9	2	5.3
2.Irrigation development	2	5.3	14	36.8	13	34.2	7	18.4	2	5.3
3.Generating and distribution Hydropower development	22	57.9	6	15.8	6	15.8	3	7.9	1	2.6

Source: Field survey, 2010

Respondents were asked to rate the level of encouragement made to private sector. The response for water supply and sanitation was 17(44.7%)low, irrigation development was also low 14(36.8%) and generating and distribution hydropower development is nil 22(57.9%) . This indicates the private sector so far has played very little role in the development of water sector .The Ethiopian government should think the possibility of introducing different kinds of incentives to create conditions conducive to private sector participation in the implementation of the policy.

Figure 4.1 The Extent to Which there are Linkages and Coordination Between the Ministry and Regional, Zonal, *Woreda* and Community Levels,



Source: Field Survey, 2010

According to the above table respondents were asked to rate the level of linkages and coordination between the ministry and regional, zonal, woreda and community. Out of 38 respondents more than half 20(52.6%) rated moderate. This shows that there is a weak institutional linkage between ministry of water resources and the regional water bureaus. In addition, the interview made with the experts also confirmed that lack of necessary guidance, poor coordination and collaboration among stakeholders at all levels regarding activities of water policy.

4.6 FEDERAL AND REGIONAL GAPS OF THE EXISTING WATER POLICY.

Management arrangements for the implementation of water sector development programs are believed to ensure linkages between the federal and regional components of WSDP. The management framework for implementing WSDP includes:

- National Steering Committee (NSC)
- Federal Programme Management (FPMU)
- Regional Programme Management Unit (RPMU)
- Sub-Programme Level Teams.

The National Steering Committee is the committees at the highest level consisting of representatives of relevant federal ministers and institutions, regional states, donors and private sectors .Selected community representatives from different regions are also part of the committee. The Regional Programme Management Unit is a unit to be established in each region, within the Executive Council Office. The unit focuses mainly on the regional level activities. However, until today the National Steering committee and Regional Programme Management are not yet inplace.Thefore water policy implementation, arrangements, monitoring, follow-up and feedback do not exist, this information was obtained during interview with the group.

4.7 HAS THE MINISTRY ACHIEVED THE TARGETS IN ESTABLISHING WATER RELATED INSTITUTIONS AS PER THE WATER RESOURCES PROGRAMS?

In order to strengthen the institutional framework and to implement the water policy there is the need of establishing water related institutions at federal and regional level. Based on this questionnaire were designed and distributed to all respondents to evaluate the level of achieved targets. In line with the opinion of respondents were collected and presented in the following table.

Table 4.8 Has the Ministry Achieved the Targets in Establishing of Water related Institutions as per the water Resource Programs?

Name of Institutions	Responses				Total	
	Established		Not-Established			
	No.	%	No.	%	No.	%
1. Water resource Research Centers	20	52.6	18	47.4	38	100.0
2. Water resource Information Centers	27	71.1	11	28.9	38	100.0
3. Water resource Training Institutions	36	94.7	2	5.3	38	100.0
4. Basins Development Authorities	14	36.8	24	63.2	38	100.0

Source: Field survey, 2010

4.7.1 WATER RESOURCES RESEARCH CENTERS

Regarding the establishment of water resources research center question was asked. The result presented in the above table shows out of 38 respondents 20(52.6%) said yes established and all of them have put with their remarks by saying departmental level and the rest 18(47.4%) said not established. In line with this, a group of expert's interview have confirmed that there is no single water related institution so far in Ethiopia. However, there is one department with

3-4 staffs. From this fact, one can conclude that the ministry did not achieve the target, which was set before ten year ago.

4.7.2 WATER RESOURCES INFORMATION CENTERS

Regarding to the establishments of water resources information centers the above table shows that out of 38 respondents 27 (71.1%) the majority said yes established and the rest 11 (28.9%) said not established. From this result the efforts made by the ministry of water resources is satisfactory in achieving the target. But this shall be done also in all regional bureaus.

4.7.3 WATER RESOURCES TRAINING INSTITUTIONS

Capacity building is one of the important provisions of the water policy .The shortage of adequate, trained, skilled and experienced work force in the technical, managerial legal and administration fields is very critical. Based on this questioner was designed to now the level of achievement in establishing water resources training institutions. The result presented in the table shows out of 38 respondents majority 36(94.7%) of them said yes established and the rest 2 (5.3%) said not established. Beside to this nine junior colleges had been established in the last five years. Thus, this result confirms that the effort made in establishing water resources training institutions is highly satisfied.

4.7.4 BASIN DEVELOPMENT AUTHORITIES

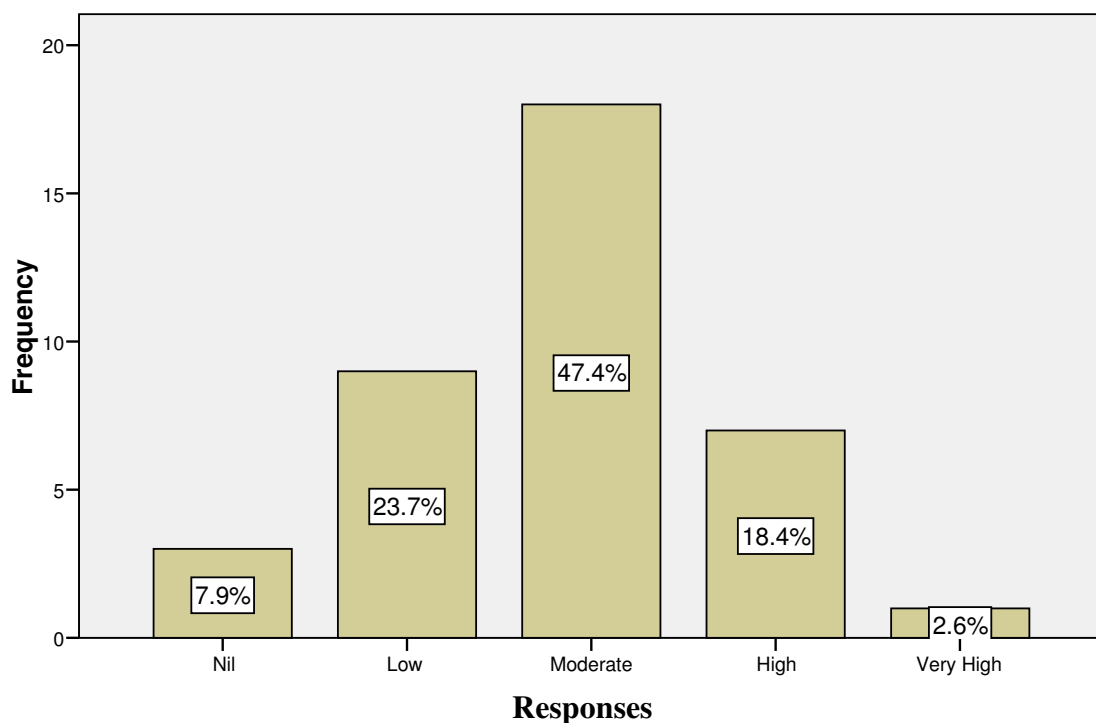
Ethiopian water resources management policy, envisages the establishment of river basin councils and authorities as one of the main instrument to implement integrated water resources management policy. Relating to this issue respondents was asked to rate the level of establishment of river basin authorities in Ethiopia. The data presented in the above table shows that majority 24(63.4%) of them said established and the rest 14(36.8%) of them said not established. However, the interview conducted with the experts confirms that even though the river basin council and authorities proclamation is issued in 23 July 2007 and Abbay basin

high council and authority issued in 12 may 2008 until now the offices are not yet opened, director general and members of basin high council are not appointed by the government.

4.8 Issues Related to Transboundary Rivers Management.

Ethiopia is firmly committed to develop its international water resources based on equitable utilization of the shared water resources. This principle is clearly indicated in the water resources management policy of Ethiopia

Figure 4.2 The Extent to Which is Concerted Transboundary River Management Plans



Source: field survey, 2010

The above figure shows that 47.7%, 23.7%, 18.4%, 7.9% and 2.6% of the respondents rated 'the extent to which there is concerted Transboundary rivers plans' as moderate, low, high, nil and very high respectively. This shows that the extent to which there is concerted (agreed) Transboundary rivers management plan in Ethiopia was considerably moderate. From this figure, it can be said that the agreed Transboundary river management plan in Ethiopia would be expected to be high or very high in the near future.

4.8.1 STATUS OF ETHIOPIAN TRANSBOUNDARY RIVERS

MASTER PLAN

As it is shown in the literature review and confirmed through interview, Ethiopia has 12 water resources generating major river basins. These basins generate an estimated annual flow of about 122 billion cubic meters. Six of these rivers flow across the Ethiopian border to neighboring countries thus becoming Transboundary Rivers. During the implementation period integrated development master plan studies were carried out on the following transboundary rivers

- Abbay (Blue Nile) river basin
- Tekezie river basin
- Baro Akobo river basin
- Gibie-omo river basin
- Wabi-Shebelle river basin
- Genale-Dawa river basin.

This Indicates that all Ethiopian transboundary rivers have their own master plan and this is one of the major achievement of the water policy.

4.8.2 WHETHER ETHIOPIA AGREES WITH THE RIPARIAN COUNTRIES IN THE FOLLOWING ISSUES

Table 4.9 knowledge Perception of the Respondents towards the Agreement

Elements of monitoring and evaluation	Respondents' responses			
	Yes		No	
	Frequency	%	Frequency.	%
1. ecological function of its river basins	10	26.3	28	73.7
2. criteria for uses and functions of the basins	8	21.1	30	78.9
3. Quantified management targets	6	15.8	32	84.2

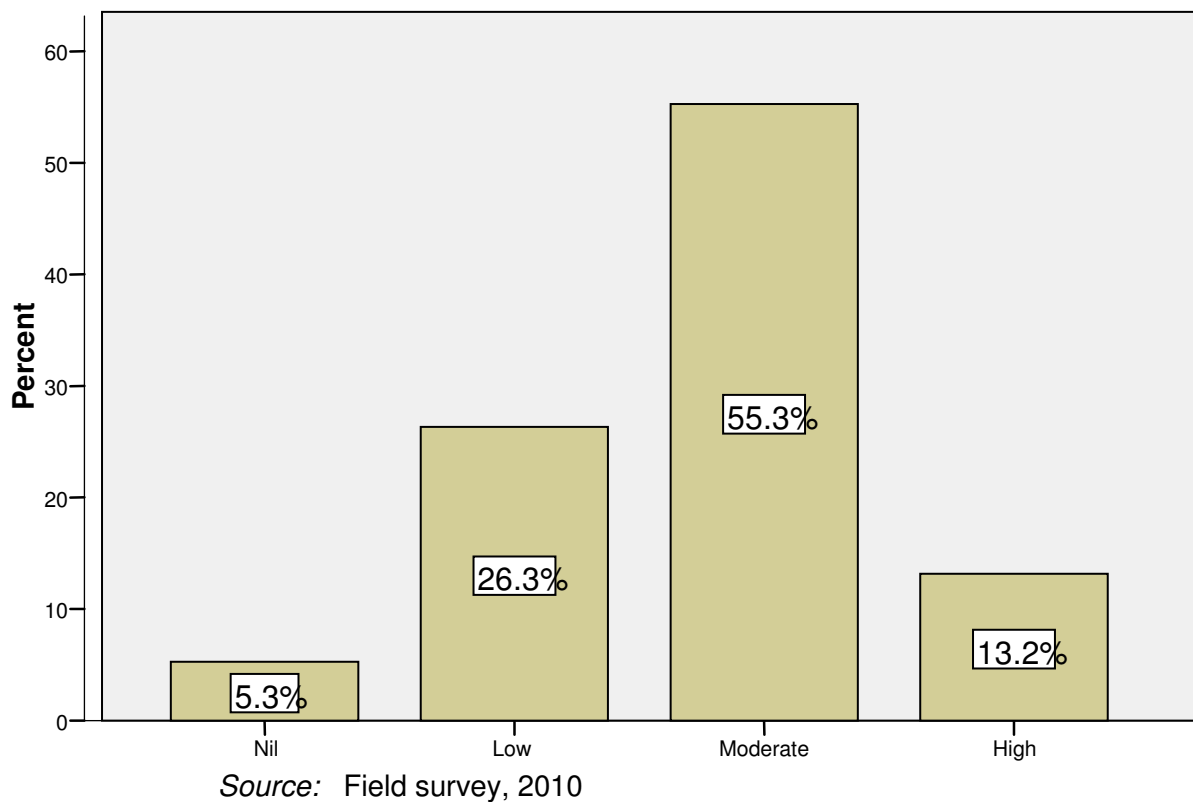
Source: Field survey .2010

This table shows the knowledge perception of the respondents towards the agreement its riparian countries in terms of ecological function of its river basins, criteria to uses the basins and quantified management targets. According to respondents vast majority nearly from 73.7%-84.2% says no and few from 15.8%-26.3% have responded yes. This implies that around 78.3% of the respondents express their dissatisfaction on the above three elements. Group of experts during the interview; have also confirmed their dissatisfaction in the above issues. But as shown in the literature review the water policy of Ethiopia has given special emphasis in the use of water resources of the transboundary rivers the policy addresses issues related to Transboundary rivers to ascertain and promote the meaningful and mutually fair regional cooperation and agreement on the joint and efficient use of Transboundary waters with riparian countries based on equitable and reasonable use principle.

4.8.3 THE EXTENT THAT THE NILE BASIN INITIATIVE HAS ACHIEVED ITS TARGETS

In order to understand the perception of the respondent's questionnaire was design to know the level that the Nile basin initiative has achieved its targets. The opinion of the respondents were collected and presented in figure below. The result shows majority of the respondents (55.3%) rated moderate while about (26.3%) rated low. This figure indicates that the achievement is almost satisfactory.

Figure 4.3; The extent that Nile Basin Initiative has achieved its targets



And mutually fair regional cooperation and agreement on the joint and efficient use of transboundary waters with riparian countries based on equitable and reasonable use principle

The theoretical assessment under chapter two of this paper indicted that the water policy in relation to transboundary water has put forward different policy directives such as, to promote the establishment of an integrated framework for joint utilization and equitable cooperation and agreements on Transboundary waters. Ascertain and promote Ethiopia's entitlement and use of transboundary waters based on those accepted international norms and conventions endorsed by Ethiopia. This time the Nile basin countries have laid the foundation for joint management of the greatest shared natural resources. NBI have developed and implemented abroad of mechanisms, systems, capacities and structures to better manage the Nile waters, and thus to improve life for the basins over 160 million people. And have gone from suspicion

and dispute, to cooperation and trust. This can be considered as an achievement of the basin. And it also includes,

- Efforts are made to promote fair regional cooperation on the efficient use of Transboundary Rivers with Nile basin countries, especially with downstream riparian countries (Sudan and Egypt).
- Regarding to this the government of Ethiopia is actively participating in the Nile Basin initiative
- A national consultative group in Transboundary water issues is established
- The Nile basin initiative countries have already accepted 4 hydropower and 4 Irrigation development proposed by Ethiopia. This time some of the projects are completed and the rest are under construction and feasibility studies.
- Ethiopia already has signed cooperative framework agreements for establishing Nile basin commission
- The establishment of basin development authorities were proposed and only one Basin authority Abbay Basin authority has been enacted by the federal Parliament and issued in the negarit gazeta regulation No 151/2008 .
- River basin council and authority proclamation 534/2007. 13th July 2007 but until now the council is not so far established.
- Up to now integrated development, master plan of five basin studies has been done.

4.9 THE EXTENT TO WHICH THE FOLLOWING CHALLENGES AND PROBLEMS ARE THE DETERMINANTS OF ETHIOPIAN WRMP

The problem in public policy implementation is due to conceptual, political administration problems and lack of public involvement. This time no policy response is likely to be effective with out a challenge. In order to understand the perception of the respondents questionnaire was developed to rate the level of major challenges and problems of the Ethiopian water resources management policy. The opinion of the respondents were collected and presented in the following table.

Table 4.10 The Etent to Which the Following Challenges and Problems are the Determinants of Ethiopian WRMP

Major Challenges and problems	Respondents' Responses									
	Nil		Low		Moderate		High		Very High	
	No.	%	No.	%	No.	%	No.	%	No.	%
1.pressure from neighboring countries	0	0	3	7.9	14	36.8	11	28.9	10	26.3
2. Lack of capital	0	0	1	2.6	2	5.3	14	36.8	21	55.3
3. Absence of domestic legal framework	5	13.2	12	31.6	14	36.8	7	18.4	0	0
4. Lack of skilled manpower	0	0	0	0	5	13.2	16	42.1	17	44.7
5. weak various stakeholders' participation	0	0	10	26.3	12	31.6	13	34.2	3	7.9
6. lack of monitoring and evaluation systems	0	0	9	23.7	5	13.2	19	50.0	5	13.2
7. implementation capacity problems	0	0	2	5.3	5	13.2	22	57.9	9	23.7

Source: Field survey, 2010

4.9.1 Pressures from neighboring countries

As it is revealed out the table above shows out of 38 respondents 14(36.8%) rated moderate, 11(28.9%) high, 10(26.3%) very High and 3(7.9%) low. This indicates that there is a need to create platform for trust and confidence among the riparian countries and also there is a need to build capacity across the transboundary rivers to lower the pressures from neighboring countries.

4.9.2 LACK OF CAPITAL

It is possible to observe from the table that majority of the respondents 21(55.3%) rated very high and 14(36.8%) high. Therefore, this result confirms that there is a shortage of financial resources on one hand and huge investment requirement for large water resources projects.

As it is shown in the theoretical assessment under chapter two of this paper indicated that total financial requirements for the water sector development program over the entire planning period of 2002-2016 are estimated to be USD 7,444.8 million.

4.9.3 ABSENCE OF DOMESTIC LEGAL FRAMEWORKS

The above facts show that majority of the respondents 14(96,8%) rated moderate 12(31.6%)low ,7(18.4%) high and 5(13.2%)nil. Therefore, this result grants to consider it as a minor problem. As it is shown in the literature review in chapter, two of this paper the federal democratic republic of Ethiopia based on the constitution the government has issued a set of polices and lows during the last decade. Given these recent changes, particularly the case in the water sector some of the legal framework still needs further development.

4.9.4 Lack of skilled manpower

The shortage of adequate, trained, skilled and experienced manpower in the technical managerial and administration fields is very critical. To confirm this respondents were asked to rate the level and the response was 17(44.7%) rated very high, 16(42.1%) high and

5(13.2%) moderate. From this result one can understand that the policy implementation is not well equipped with adequate staffs. This calls for developing capacity-building programs at all levels national, regional, zonal, wereda and grass roots levels and private sector in the fields of water resources management.

4.9.5 WEAK STAKEHOLDERS PARTICIPATIONS

Implementation of water sector development activities and projects will involve a large number of partners with different roles and functions. These include government institutions, private sector, local communities, individuals, NGOs and external support agencies. Based on this out of 38 respondents 13(34.2%) rated high 12(31.2%) moderate 10(26.3 %) low. Therefore, this indicates the respondents are dissatisfied with the participation of stakeholders

4.9.6 LACK OF FOLLOW-UP, MONITORING, EVALUATION AND FEEDBACK

It is very important to create effective and continuous monitoring and feedback mechanisms during the implementation of any policy. Inline with this the opinion of the respondents was collected and presented in the above table. Based on this 19(50 %) rated high, 9(23.7%) and 5(13.2%) high and moderate. From the result we can say that the monitoring and evaluation system is not systematical handled by implementing body If one refers to policies of water related sectors such as population policy, Environmental policy, policy on Ethiopian Women,etc, institutional arrangements of policy implementation, follow-up, monitoring and feedback have been established from the top and down to the lowest level. The water policy should have had such arrangements. Absence of such arrangements has created considerable gaps at all levels and led to non-existence of follow-up monitoring and feedback of water policy implementation.

4.9.7 IMPLEMENTATION CAPACITY BUILDING PROBLEMS

Capacity building for implementation of water policy involves human resources development, institutional development and infrastructure development. The human resources development should emphasize on training at all levels using national regional and international institutions in order to carryout the policy implementation. According to the respondents 22(57.9%) rated high 9(23.9%) very high 5(13.2%) moderate 2{5.3%} low. This shows that the policy requires developing and implementing capacity building programmer at all levels.

4.10 GAPS IN IMPLEMENTING THE WATER RESOURCES MANAGEMENT POLICY

Many respondents and group of experts interviewed forwarded different gaps in implementing the water resources management policy of Ethiopia. These include,

- Absence of implementation plan with appropriate monitoring and feed back system; no means of assessing the merits and drawbacks of the policy since there has been no lesson learning
- Lack of public awareness and lack of active participation by all stakeholders in the implementation of the policy.
- Lack of institutional mandates, responsibilities and linkages of various actors such as ministry of health, ministry of agriculture, environmental protection agency and Ethiopian Electric and Power Corporation.
- Lack of institutional arrangements for the implementation of the policy at regional, zonal,woreda and community level; roles, responsibilities, relationships and accountability not clearly defined.
- Lack of capacity to implement the policy at all levels.
- Lack of coordination and collaboration among users of the policy.
- The water policy has not clearly and adequately covered the pastoralists issues

- The water policy mainly deals with surface and ground water resources. It leaves out rain water management
- even though the river basin council and authorities proclamation is issued in 23 July 2007 and Abbay basin high council and authority issued in 12 may 2008 until now the offices are not yet opened, director general and members of basin high council are not appointed by the government.
- Failed to collect water charges from water users especially from hydropower and irrigation owners.
- The policy lacks to indicate the effective utilization of the existing trained experienced manpower. The ministry has no system on how to treat turnover of professionals and sub professionals

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATION

This chapter has three sections. The first section summarizes the major findings, the second section presents the conclusion of the research and the third section deals with recommendations. The summary, conclusions and recommendation are based on the results obtained and discussions made under chapter four.

5.1 SUMMARY

- The demographic characteristics of the respondents revealed out that gender wise out of 38 respondents about 30(78.9%) are male and the remaining 8(21.1%) are female, the work experience of the respondents was more than 20 years 19, 10-20 years 14, 5-10 years 5 in water sector, education wise majority of the respondents are 2nd degree 26, first degree 11 and diploma 1. Organization which have been approached are, one ministry, three agencies, two public enterprises, four regional water bureaus, one NGO and three private water related companies. Regarding respondents position majority of them are 17(44, 7 %) experts, 8(21.1%) directors 5(13.2%) bureau heads, 6(15.8%) department heads and 2(5.3%) higher officials. Most of them are strategic and operational managers and the rest are expertise level in the water sector.
- The Ethiopia water resources management policy has been formulated (1999) and the water strategy (2001) started to put the water policy into action. Based on the strategy water sector development programme has been drawn up from 2002-2016 for 15 year with short, medium and long-term plan. As far as water supply and sanitation in year 2002 the coverage was 17% in year 2010 the coverage is 68.5%. The long-term 2016 target was 76% coverage at national level. Comparing with the target it has been done very successfully the remaining will be achieved within the next few years. Irrigation development in the base year 2002 was less than 5% in year 2010 it has reached 20 % progress. Hydropower development in year 2002 it was 791mw in year 2010 it has reached 2000mw when this is compared to 2011 medium term target 2218 mw the total achievement is 90.28%

- Regarding Transboundary Rivers management, up to now integrated development master plan of all the transboundary rivers studies has been already done. The establishment of basin development authorities were propose and only one basin authorities Abbay basin authorities has been enacted by the federal parliament and issued in the Negarit Gazeta regulation 51/2008^{12th} may 2008 and river basin council authority proclamation 534/2007^{13th} July 2007 has been also.issued.Efforts are made to promote fair regional cooperation on the efficient use of transboundary rivers with Nile basin countries especially with down stream countries(Sudan and Egypt) The Nile initiative countries has already accepted 4 hydropower and 4 irrigation development proposed by Ethiopia This time some of the projects are completed and the rest are under construction and feasibility studies. Ethiopia has already signed cooperative framework agreements for establishing Nile basin commission.
- As per the questionnaire and interview result the responsibilities, roles, relationships and accountabilities of policy implementation have not been clearly defined. There is also absence of clear institutional arrangement for policy implementation at regional, zonal, woreda and community levels and absence of coordination with the federal ministry of water resources.
- Lack of adequate policy popularization and existence of very little awareness of the water policy among the public and among those that are very much concerned with the use of water. Lack of active participation by all stakeholders in the implementation of the policy.
- Absence of experienced and skilled manpower at various levels to implement the water policy.
- Lack of implementation plan and capacity to implement the policy. Failed to collect water charges from water users especially from hydropower and irrigation owners and also failed to establish water related professional associations, water users cooperative and water board in all area of the country.
- Overlapping of responsibilities in some areas of work there appears to be over lapping of responsibilities. For example, it is not clear which department is responsible for water quality management. The role of regional water bureaus in this respect is not yet

defined as well. There are some tasks left out to be no ones responsibility, for example study and development of ground water

5.2 CONCLUSION

The Federal Water Resources Management Policy (WRMP) has been prepared by Ministry of Water Resources and approved by the council of ministers in 1999. The water policy is based on the country's macro economic and social policies and strategies. It has considered the principles of water resources development objectives and it has attempted to include the felt needs and mutual interests of the peoples of Ethiopia. several national teams of experts specialized in various fields of water and related fields have formulated the water resources management policy taking into consideration integrated water resources development and management, economic efficiency, cost recovery, community participation, gender mainstreaming, private involvement, cross-cutting issues, sectoral issues and Transboundary water issues.

It is now about eleven years since the water policy has been issued. The extent of its impact on water resources development and management has not been clear so far due to absence of policy implementation plan with appropriate monitoring system and feedback mechanisms. At this time there is no means of assessing the merits and drawbacks of the policy since lessons to be learnt from implementation.

Institutional arrangements for policy implementation at various levels are clearly defined for related policies of Environment, population Women etc, such arrangements do not exist for water policy. There is lack of regulatory instruments, especially at regional, zonal, woreda and grassroots level. Regarding activities of water policy there is a lack of necessary guidance, poor coordination and collaboration among stakeholders at all levels.

Public awareness and community participation are critical for the implementation of the policy. The water policy lacks popularization and needs considerable promotion work to do. There is a lack of system for policy implementation, review, exchange of information on policy issues. The Water Policy lacks severe implementation capacity and manpower capacity building is imperative for the policy to succeed. There is a strong need for capacity assessment,

determination of training needs and developing training programme at all levels and implementation the same. From current observation and consultation with some resourceful persons, there is no much capacity currently to carry out implementation of the water policy at all levels.

5.3 RECOMMENDATIONS

To this end, this research provides list of findings, which can also serve as a stepping-stone for other related research, regarding the Water Resources Management Policy of Ethiopia. The other important point is that, this research considered only sectoral issues and Transboundary Rivers in particular. It is very vast area that covers all related to the water sector and future researches should incorporate. However based on the findings and conclusions researched, for better policy implementation: the following recommendation were forwarded in order to improve effective monitoring, continuous follow-up and frequent feedback.

- Clearly defining the responsibilities, roles, relationships and accountabilities of policy implementation at all levels.
- Setting-up clear institutional arrangements for policy implementation at federal, regional, zonal, woreda and community levels.
- Creating effective and continuous monitoring and feedback mechanisms during the policy implementation of the policy.
- Promoting policy popularization and creating public awareness of the policy.
- Establishing legal bases for policy implementation at regional and lower levels.
- Creating efficient and effective collaboration among users of the water policy.
- Building manpower capacity to implement and review the policy.
- Promoting private sector involvement in the policy implementation
- Enhancing active community participation, in particular women, in the implementation of the policy.
- Creating enabling environment to keep trained and experienced staff on work and reducing staff turnover.
- Office for a river basin councils and authorities should be opened and the government in a short period shall designate basin high council members.

REFERENCES

Awash Basin Water Resources Administration Agency proclamation 129/1998

Addis Ababa: Ethiopia

Central Statistical Agency (CSA), 2006. Statistical Abstract, Addis Ababa:
Ethiopia

Chow Etial (1988 :189) Applied Hydrology Civil Engineering McGraw Hill
Higher Education

Cochran,c. and Malone,E.(1999) Public policy: Perspectives and choices 2ed ,
McGraw-Hill College,Bosten.

Council of Ministers Regulation to establish Abbay Basin High Council and
Authority. Regulation no 151/2008. (Negarit Gazeta).Addis Ababa:
Ethiopia.

Ethiopian Water Sector Development Program, 2002-2016, Berhan Selam Printing
Addis.Ababa: Ethiopia.

Ethiopian Water Sector Strategy (2001). Berhanena Selame Printing Enterprise
Addis Ababa Ethiopia

Ethiopian Water resources management proclamation, Proclamation No
197/2000..9 march 2000.Addis Ababa: Ethiopia

Ethiopian Water Resources Management Regulations Council of ministers
Regulation No, 115/2005 29.march 2005.Addis Ababa: Ethiopia

FDRE House of Peoples Representatives (1995) to provide definition of powers and duties of the executives Proclamation No 4/95, Berhanena Selame Printing Enterprise, Addis Ababa: Ethiopia.

Fifth Nile 2002 conference proceedings Addis Ababa Ethiopia 24-28 February 1997

Health Policy of Ethiopia 1993. (Negarit Gazeta).Addis Ababa: Ethiopia

Hogwod and Gunm (1984) for success full policy implementation

<http://WWW.cuwfd.com/html/rivers.html/>. Accessed on 26 July 2010

[http:// encyclopedia in 2the Frederic Twnory/com/Nile River](http://encyclopedia.in2theFredericTwnory.com/NileRiver). Accessed on July 2010

([Http: //www. Transboundary watersorst Edu publication/register paper](http://www.TransboundarywatersorstEdupublication/registerpaper)) Accessed on July 2010

IGNOU (2006:187) cited in Christopher Hood for perfect policy implementation

ICWE (1992) international conference on water and environment (Dublin)

Jacqueline Medley and Jason A.Hubbart (2010). Clarification for water resources concepts

Ministry of Water Resources, (1999), Ethiopian Water Resources Management Policy: comprehensive and integrated water resources management, Berhanena Selsme Printing Enterprise Addis Ababa: Ethiopia

National Water Policy of India (1990)

Nile News December 2009

Pieter Hulsman Etal Water Policy2 (2002)

Policy on Ethiopian Women, September 1993 Addis Ababa: Ethiopia

Population Policy of Ethiopia, April 1993 Addis Ababa: Ethiopia

Reporter News Paper no381/1060 page 2 June 28/2010 Addis Ababa: Ethiopia.

Richard Fellows, Research Methods for construction page 33-34

River Basin Councils and Authorities proclamation No 534/2007. Addis Ababa:
Ethiopia

Rural Development of Ethiopia, 2002 Addis Ababa: Ethiopia.

Taye Assefa (2009) Digest of Ethiopians national policies, Strategies and program

Printed in Addis Ababa Ethiopia

Teshome Workie (2005), a base line and Need Assessment Study of Water
Resources in Ethiopia, UN published, Addis Ababa

Theodoulou, S, and Kofinis, C. (2004). The art of the game: Understanding
American public policy making, Thomson-wadsworth, Australia.

Water and Development quarterly published journal (21/2002) Addis Ababa:
Ethiopia

Water and Development quarterly published journal (1/2002) by MoWR

Water Resources Development Fund Proclamation number 268/2002 Addis Abeba
Ethiopia

Water Resources Management in Brazil <http://11en.wikipedia.org/wiki/>

World Water day journal 22 March 2009

Water Works construction Enterprise proclamation number 196/1994 Addis
Ababa Ethiopia

Water works Design and Supervision Enterprise Regulation number 42/1998
Addis Ababa Ethiopia

Pieter Hulsman et al. water policy 2/2000/ 83-89

Water Resources Management in Brazil <http://en.wikipedia.org/wiki/>

(<http://www.transboundarywaters.orst.edu/publication/register/paper/>)

Annex 1

Questionnaire

Addis Ababa University, Faculty of Business and Economics
Post-graduate program for Public Administration (MPA)

Dear Respondent:

The main purpose of this questionnaire is to gather relevant information in order to assess the “*Ethiopian Water Resources Management Policy (EWRMP) and its implementation*”.

Therefore, the researcher kindly requests you to provide genuine information. Be sure that all the information provided by you shall be treated with at most confidentiality and used only for Academic Purpose.

General instructions:

1. You are not required to write your name
2. Depending on the nature of the question:
 - Fill appropriate figures, or
 - Make “√” mark in appropriate box, and/or
 - Write on the space provided.

Thanks in advance

Respondent’s personal information

1. Sex: Male ☐ Female ☐

2. Level of education: Below Diploma ☐ Diploma ☐ First Degree ☐
2nd degree and above ☐

3. Name of your organization _____
4. Position/title _____
5. Your experience : Below 5 years ☐ 5-10 years ☐
10 to 20 years ☐ more than 20 years ☐

6. The extent to which there is concerted trans-boundary rivers management plans in Ethiopia

Nil	Low	Moderate	High	Very high

7. Does Ethiopia identify and agree with its riparian countries on the following elements?

No	Elements of monitoring and Evaluation	Yes	No
7.1	Specific ecological function of the river basins		
7.2	Criteria for uses and functions of the basins		
7.3	Quantified management targets		
7.4			

Comments:

8. To what extent the WRMP has managed the trans-boundary rivers in addressing the following dimensions:

No	Variables	Response Alternatives				
		Nil	Low	Moderate	High	Very high
8.1	Social dimension in terms of					
	➤ Equitable use of water resources					
	➤ Allocation and distribution of water resources					
	➤ Positive impacts on livelihood opportunities					
	➤ Establishing transportation, tourism and recreation services					
8.2	Economic dimensions in terms of					
	➤ National economic growth in Hydropower generating Irrigation development Water supply					
	➤ Enhancing the prospects of poverty reduction					
8.3	Political empowerment dimensions in terms of:					
	➤ For women					

	➤ Private sector					
	➤ NGOs					
	➤ Water-related professional Associations					
	➤ Water Users' Cooperatives					
8.4	Environmental sustainability dimension					

9. The level of encouragement made by government for private sector to engage in different water development schemes:

No	Water Development schemes	Response Alternatives				
		Nil	Low	Moderate	High	Very high
9.1	Water supply and sanitation					
9.2	Irrigation development					
9.3	Hydropower development					
9.4	Other (state the name					

10. The level of private sector participation in different water development schemes:

No	Water Development schemes	Response Alternatives				
		Nil	Low	Moderate	High	Very high
10.1	Water supply and sanitation					
10.2	Irrigation development					
10.3	Hydropower development					
10.4	Other (state the name					

11. Does WRMP accommodate the need for cooperation with other countries/Riparian countries in the management trans-boundary Rivers?

Yes ☐ No ☐

12. Does International law provide a framework for avoidance, or resolution of conflict among riparian countries?

Yes ☐ No ☐

13. Does international law promote the sustainable use of shared water resources?

Yes ☐ No ☐

14. Is Water Resource Management Council (WRMC) functional in discharging responsibilities in the past and at present?

Yes

No

If it is yes, indicate the level

Nil_____

low_____

moderate_____

high _____

Very high_____

15. The extent to which there are linkages and coordination between Ministry of Water Resources and Regional, Zonal, Woreda and Community water related institutions?

Nil	Low	Moderate	High	Very high

16. Has the Ministry achieved the targets related to establishment of institutions as per the water resource programs?

No.	Institutions	Response alternatives	
		Established	Not Established
16.1	Water Resources Research centers		
16.2	Water Resource Information Center		
16.3	Water Resource Training Institute		
16.4	Basins Development Authorities		
16.5	Any other (state them)		

17. Indicate the status of Master Plans for the twelve major river basins in the country in terms of their study phase and implementation phase. Indicate by “√” mark in the box.

NO.	River Basins	Master plans studied		Implementation status of the master plans	
		Before the WRMP ¹ policy issued	After WRMP issued	Started	Not started
16.1	Abbay				
16.2	Awash				
16.3	Baro-Akobo				
16.4	Genele-Dawa				
16.5	Mereb				
16.6	Omo-Gibe				
16.7	Rift Valley				
16.8	Tekeze				
16.9	Wabishebele				
16.10	Afar-Danakil				
16.11	Ogden				
16.12	Aysha				

¹ WRMP refers to Water Resource Management Policy

If the Master Plans for River basins have not been realized, what do you think the major reason is?

18. The extent to which Nile Basin Initiative has achieved its targets in benefiting the country in terms of economic, social and political perspectives:

Nil	Low	Moderate	High	Very high

19. The extent to which the following challenges and problems were the determinants of Ethiopian Water Resources Management Policy on trans-boundary Rivers

No	Challenges and Problems	Response Alternatives				
		Nil	Low	Moderate	High	Very high
19.1	Pressure from Neighboring countries					
19.2	Lack of capital					
19.3	Institutional capacity constraints					
19.4	Absence of domestic legal framework					
19.5	Lack of political will and commitment					
19.6	Limited resources and funding					
19.7	Lack of skilled manpower					
19.8	Uncooperative international mechanisms					
19.9	Various stakeholders participation					
19.10	Lack of monitoring and evaluation systems					
19.11	Implementation capacity problems					
19.12	Negotiation skills at the Ministry level					
19.13	Negotiation skills at national level					
19.13	Negotiation skills at Regional level					
19.14	Others (state them)					

Comments:

20 Please list down any gap in implementing the water resource management policy of Ethiopia.

1. _____
2. _____
3. _____
4. _____

Recommendations to enhance the proper management of Transboundary Rivers:

21. What do you recommend to address the challenges and problems encountered related to Water Resource Management Policy with particularly emphasis on Transboundary rivers management in Ethiopia?

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

22. Any other suggestions Achievements, Challenges and Gaps on the implementation of Ethiopian Water Resources Management Policy in relation to Transboundary Rivers?

Once again, thank you for your cooperation

Annex 2

INTERVIEW Questions

- 1 In formulation of the water resources management policy of Ethiopia what were the problems to be addressed by the policy?
- 2 How do you express the magnitude of the problems at the country level?
- 3 How these problems were recognized? Was there any assessment of government to address the problem?
- 4 What were the important modalities applied for the implementation of the water resources management policy
- 5 How was the policy adopted? Were there parliamentary hearing, workshop discussions?
- 6 What were the main goals and objectives of the policy?
- 7 Is monitoring and evaluation system into the policy? What are these systems?
- 8 What are the challenges and gaps in the implementation of the water resources management policy?
- 9 What are the policy outcomes in relation to goals and objectives?
- 10 What do you say about the key strength and weakness of the policy as a whole?
- 11 What do you recommend for improvement in any area of the policy?