Second-order scarcity in Ethiopia: A case study of Gojjam

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Foreword and Acknowledgements

This dissertation is an outcome of several efforts. It was started with a concern about overall socio-economic underdevelopment of Ethiopia despite the general belief that the people seem to hold that the country has generous unexploited natural resources including land, water and largely temperate climatic resources. After some discussion with some family members, Dr. Zoe Wilson, my supervisor, and Mr. Richard Devey, the academic coordinator of the School of Development Studies (SODS) at the University of Kwazulu-Natal (UKZN), I decided that it would be appropriate to focus the study on water resources utilization and development in Ethiopia. Given the fact that it was a short-dissertation for a Masters Degree I needed to focus the topic on as manageable a topic as possible. This tension between a desire to write on the water development problems of Ethiopia as a whole and the need to make the topic manageable resulted in a first rough draft of over 200 pages! Transcribing the responses of 15 interviewees, documenting important views gathered from various literatures and forming my own impressions and lessons from the study activity resulted in such a volume of written work. The necessary effort of cutting the volume of the thesis to about a third of its initial length was made.

I would first like to express my gratitude to the Ford Foundation and the SODS African Integration Grants Programme for awarding me a grant of ten thousand South African Rands to help me carry out this study in Ethiopia. I would also like to thank Dr. Zoe Wilson for her sustained guidance and support she gave me throughout the study. I would also like to thank Mr. Richard Devey, Mr. Glen Robbins and Ms. Lesley Anderson who were all very helpful to me in relation to my academic endeavors. Many thanks are due as well to Mr. Teshome Maru who offered professional advice throughout the research process in Ethiopia. I also owe thanks to all of the interviewees who agreed to take time out to participate in this study. Last but not least, I would like to thank my family for the overall support given to me to study at UKZN. My father was also very helpful in offering me helpful advice and insight on different social and human development issues in Ethiopia and more specifically in the Gojjam area of the Amhara National Regional State (ANRS)-the case study area.

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Declaration of originality

This dissertation represents original work by the author and has not been submitted in any other form to another University. Where use has been made of the work of others this has been duly acknowledged and referenced in the text.

Signature  .....

Date: 02/06/2008

List of Acronyms

ADLI	Agricultural Development Led Industrialization
ANRS	Amhara National Regional State
CFWA	Comprehensive Freshwater Assessment
CSA	Central Statistics Authority
CSD	Commission on Sustainable Development
EEA	Ethiopian Economic Association
EOC	Ethiopian Orthodox Church
EPRDF	Ethiopian Peoples' Revolutionary Democratic Front
GDP	Gross Domestic Product
HDI	Human Development Index
ILA	International Law Association
ILC	International Law Commission
IWRM	Integrated Water Resource Management
MDGs	Millennium Development Goals
MOFED	Ministry of Finance and Economic Development
MOH	Ministry of Health
MOWR	Ministry of Water Resources
NGO	Nongovernmental Organization
PASDEP	A Plan to Accelerate Sustainable Development and End Poverty
UN	United Nations
UNCDF	United Nations Capital Development Fund
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UN-WWAP	United Nations World Water Assessment Programme
USAID	United States Agency for International Development
WRMP	Water Resources Management Policy
WSDP	Water Sector Development Programme
WSSD	World Summit on Sustainable Development
WWDR	World Water Development Report

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF MAPS

CHAPTER 1

THE PROBLEM AND ITS SETTING

1.1 Background to the Problem

Ethiopia is a country located in the Horn of Africa with a current population estimate of 77 million (2006), 85 per cent of whom reside in rural areas and are predominantly engaged in subsistence, rain-fed seasonal agriculture or pastoralism. At the current estimated population growth rate of 2.7 per cent, the population could reach 105 million by 2020 (Kidanu 2005). It is important to note that the last population census carried out in Ethiopia was in 1994 and it is only recently in May 2007 that another one was undertaken and the results of this latest census have yet to be released. The United Nations Development Programme's (UNDP) (2006) *2006 Human Development Report* indicates that Ethiopia is one of the poorest countries in Sub-Saharan Africa with a Human Development Index[1] (HDI) rank of 170 out of 177. Ethiopia is also a country that is naturally endowed with an adequate amount of surface and ground water resources. According to the Ethiopian Ministry of Water Resources (MOWR) (2002), Ethiopia's annual renewable freshwater potential from its 12 major river basins is estimated at 122 billion cubic meters per year while the potential groundwater resources is estimated at around 2.6 billion cubic meters. Even though there is the potential for harnessing these water resources, the country is utilizing less than 2 per cent of these resources (*ibid*). The MOWR (2002) stated that per capita water availability in Ethiopia as of 2002 was 1,924 cubic meters. It is worth noting that there are great disparities in water availability from one region of the country to another due to climatic conditions with annual rainfall varying from 100 millimeters to 2,400 millimeters (Flintan and Tamrat 2002). According to Flintan and Tamrat:

[1] According to UNDP, "the HDI provides a composite measure of three dimensions of human development: living a long and healthy life (measured by life expectancy), being educated (measured by adult literacy and enrolment at the primary, secondary and tertiary level) and having a decent standard of living (measured by purchasing power parity, PPP, income)" (2006, 263).

> On an annual basis and in normal years, Ethiopia has more than sufficient fresh water for the needs of its population. However, its distribution is highly variable. Water, therefore, can be considered to be both abundant and scarce at varying times and places, and for different groups and individuals" (2002, 310).

It is for these reasons that even though some areas of Ethiopia experience water scarcity, the country as a whole cannot be categorized as water scarce. Brunnee and Toope (2002) argue that by 2025 Ethiopia will join the category of water scarce countries. Abate states that "out of the ten major rivers of Ethiopia, only two are confined within the country [Ethiopia] while the rest are either boundary and/or trans-boundary rivers" (1994, 60). Though Ethiopia contributes about 86 per cent of the waters of the Nile River Basin System (World Bank 2006; Abate 1994), it has not been able to exercise its right to utilize this resource because a 1959 agreement between Egypt and Sudan on" full utilization of the waters of the Nile" allocated the total flow to these two downstream countries. Aside from the trans-boundary nature of many of Ethiopia's rivers, two other factors that influence the low level of water utilization in the country are the apparent inability of the current national government to implement policies and strategies to optimize water use and the socio-cultural practice of regular fasting as defined by Canon Law of the Ethiopian Orthodox Church (EOC). The socio-cultural practice of regular fasting affects peasant farmers' human capacity to work on their land thereby negatively influencing their capacity to make optimal use of available water.

Paradoxically, though the country has an adequate amount of water resources, Ethiopia has a recent history of recurring droughts and famines which, in more recent times, have hit the country every three to five years causing many deaths, devastating the economy and perpetuating abject poverty among the people. In 1984/5, Ethiopia experienced it's most devastating drought where one million people died, eight million people experienced famine conditions and thousands of livestock died. In 2002/3, Ethiopia was hit by yet another major drought that according to the World Bank (2006) rendered about 14 million people, about 22 per cent of the population, food insecure. Between these two major droughts there have been others on a smaller scale which have killed many cattle and led to severe water stress especially in lowland and pastoralist areas. Recurrent droughts and famines resulting from erratic rainfall have made a

significant number of the population dependant on food aid from donor countries. In this regard, the World Bank makes the point that "about 10.3 percent of the population (over 5 million people) has required emergency food aid each year" (2006, 9). It is common knowledge that Ethiopia's image in the eyes of the international community has for decades been one of a drought stricken country trapped in abject poverty. Despite its endowment of water resources, general water availability problems cause a large proportion of the Ethiopian population to live in a state of food insecurity and the agricultural sector is struggling to produce above subsistence levels.

1.2 Statement of the Problem

Before stating the research problem it is important to note the conceptual distinction between a first and second-order resource. According to Turton and Warner, "a first-order resource is any natural resource (such as water, land, or minerals) with which a country can be either well-or poorly-endowed" while "a second-order resource…is a social rather than a natural resource" (2002, 53). A second-order resource could be intellectual and institutional capital that is needed to address water scarcity. Therefore second-order scarcity means that there is a lack of sufficient social and other resources to make optimal use of natural capital, in this case water resources. Second-order scarcity, as manifest in contemporary Ethiopia, has three distinct elements of scale: socio-cultural, national and supra-national.

1.2.1 The Sub-problems

In order to address the main research problem, three sub-problems were identified. These are aimed at determining the following:

(a) *First sub-problem*: How is second-order scarcity, as manifest in contemporary Ethiopia, exacerbated by the specific socio-cultural practice of regular fasting as defined by Canon Law of the Ethiopian Orthodox Church (EOC)?

(b) *Second sub-problem*: How is second-order scarcity, as manifest in contemporary Ethiopia, perpetuated by the apparent inability of the current national government to implement policies and strategies to optimize water use?

(c) *Third sub-problem*: How is second-order scarcity, as manifest in contemporary Ethiopia, perpetuated by virtue of the fact that Ethiopia has not been allocated the right of equitable and reasonable utilization of water in the Nile River Basin System, because a 1959 Agreement between Egypt and Sudan on "full utilization of the waters of the Nile" allocated the total flow to Egypt and Sudan?

1.2.2 Hypothesis

In order to address the main research problem of this study, the following hypotheses were developed with respect to each sub-problem:

(a) *First hypothesis*: If the current socio-cultural practice of regular fasting as prescribed by Canon Law of the Ethiopian Orthodox Church remains unchanged, then second-order scarcity is likely to be perpetuated.

(b) *Second hypothesis*: If the national government is unable to implement its policies and strategies to optimize water use for national development, then second-order scarcity is likely to be perpetuated.

(c) *Third Hypothesis*: If Ethiopia exercises the right of equitable and reasonable utilization of water in the Nile River Basin System, then viable national development programs can be designed to alleviate the impact of second-order scarcity.

1.3 Delimitations of the Study

This study focuses on second-order scarcity, as manifest in contemporary Ethiopia, and its three elements of scale (socio-cultural, national and supra-national). This study

was delimited by both resources and time. Resources for conducting this study were limited to a grant provided by the Ford Foundation and School of Development Studies (SODS) African Integration Grants Programme, the majority of which was spent on travel from South Africa to Ethiopia and a Northwestern city called Bahir Dar. With regards to time, the fieldwork was conducted from 15 August 2006 to 19 January 2007. The visit to Bahir Dar was for three days while the rest of the fieldwork was conducted in Addis Ababa, the capital city of Ethiopia.

This study was delimited to a review of literature related to the research problem and in-depth qualitative interviews with 15 key informants. Participants of this study were selected using a purposive sampling approach. According to Babbie and Mouton, "purposive sampling is a type of non-probability sampling method in which the researcher uses his or her own judgment in the selection of sample members" (2001, 202). Using judgment based on a prior review of pertinent literature and informal conversations with people in the field, the researcher selected the participants based on two separate criteria:

1. Knowledge of water-related issues and developments in Gojjam and Ethiopia in general; and
2. Knowledge of the socio-cultural practice of regular fasting as defined by Canon Law of the Ethiopian Orthodox Church (EOC).

The sample is therefore different from a sample of convenience in that the selection of key informants was based on these specific issues. Out of the 15 key informants selected for this study:

- Two were women;
- Three were people who are knowledgeable on the socio-cultural practice of regular fasting as defined by Canon Law of the Ethiopian Orthodox Church;
- One was a peasant farmer;
- Nine were actively engaged in Ethiopia's water sector; and
- Two were people engaged in the Nile Basin Initiative-a framework for cooperation among countries in the Nile River Basin System.

It is also worth nothing that a request to interview the head of the Women's Affairs Department at the Ethiopian Ministry of Water Resources-to gain greater insight into

gender issues with regards to women's participation in water utilization and management-was refused. A request to interview the head of the Ethiopian Nile Basin Discourse Forum-a grouping of civil society organizations working towards raising public awareness in Ethiopia on issues relating to developments in the Nile Basin Initiative-was declined.

1.4 The Research Methodology

This study was designed to gather information and provide insight on second-order scarcity, as manifest in contemporary Ethiopia, and three distinct elements of scale: socio-cultural, national and supra-national.

This study has used a qualitative approach of inquiry that also involves a case study approach where the concept of second-order scarcity and the hypotheses are explored and tested in one geographical area. In order to capture the complexities and nuances of the issues in this case study, diversity of perspectives was more important than representivity. More specifically, this case study focuses on a rural province called Gojjam, located in a Northwestern region of Ethiopia called the Amhara National Regional State (ANRS). This area was selected over others because it provides an unusual example of the manifestation of second-order scarcity in Ethiopia and its linkages to elements of scale (socio-cultural, national and supra-national). Gojjam's uniqueness is interesting because it is an area of Ethiopia that is directly affected by all of the issues in the three sub-problems of this study. What makes Gojjam an unusual case? The reasons for Gojjam being an unusual case are as follows:

1. Gojjam, with about 6 million inhabitants, is a rural province of ANRS (a region that comprises about 26 per cent of Ethiopia's population) (Ministry of Health (MOH) 2006) and is almost encircled by the Blue Nile River Basin-the largest river basin in Ethiopia. It is also where the source of this river is located.
2. The Blue Nile River Basin has an annual runoff of 52.6 billion cubic meters of water of which Ethiopia is utilizing a minute 0.6 billion cubic meters-about 1 per cent (MOWR 2002; Gebre Selassie 2006). This river contributes about 62 per cent of the waters of the Nile River Basin System which flows downstream unimpeded from Ethiopia to Sudan and from there to Egypt (Flintan and Tamrat

2002). If Ethiopia was to make optimal use of this resource it would have to take place at its upstream source, Gojjam (ANRS). What separates the Blue Nile River Basin from the 11 other river basins in Ethiopia is that it contributes about 43 per cent of the country's total combined renewable surface water resources and has the second largest catchment area at 199,812 square kilometers (MOWR 2002).

3. ANRS has 500,000 hectares of potential irrigable land but only 69,787 hectares or about 14 per cent was being used as of 2004 and the majority of the irrigation schemes are small scale traditional schemes built by peasant farmers on less than 300 hectares each (Tilahun and Paulos, 2004 cited in Awulachew *et al* 2005, 8[2]).
4. According to Gelaw (2007), the Ethiopian Orthodox Church (EOC) currently has about 40 million followers, about 51 per cent of the Ethiopian population, most of who predominantly come from Northern areas, most notably ANRS and the Tigray National Regional State. ANRS has the highest number of EOC Churches and the largest proportion of EOC followers in Ethiopia making the religion a fundamental part of everyday life for people in the area.

Gojjam is therefore an unusual example of the manifestation of second-order scarcity in that it is the source of Ethiopia's largest river, the Blue Nile, and paradoxically the majority of the population there has not been able to make optimal use of the relatively abundant water resources in that area. It is for these reasons that the findings of this case study cannot be generalized to other parts of Ethiopia thus it only tries to illuminate the specific circumstances that exist in Gojjam. This is not to say that findings from this study would not be of relevance to other regions or provinces of Ethiopia, indeed optimal water use in Gojjam would be beneficial for the country as a whole, but broad generalizations on water utilization and development for other areas of Ethiopia cannot be made based on this research. It is important to note that this study does not claim to be representative of the views of people living in the Gojjam area. This study focuses more on presenting a diversity of institutional perspectives than on representivity. Towards this

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[2] **Tilahun, H. and D. Paulos.** 2004. Results to date and future plan of research on irrigation and its impact in **Awulachew, S. B., Merrey, D. J.; Kamara, A. B., Van Koppen, B., Penning de Vries, F., Boelee, E., Makombe, G.** 2005. Experiences and opportunities for promoting small–scale/micro irrigation and rainwater harvesting for food security in Ethiopia. Colombo, Sri Lanka: International Water Management Institute. Working paper 98.

end, key informants for qualitative interviews ranged from government officials to a peasant farmer in a rural province (please see list of key informants below). Diversity of perspectives was also the focus of data gathering for a review of literature (please see list of data sources below). Diversity was more important than representivity in this study due to above mentioned resource and time limitations.

To address the hypotheses for the corresponding sub-problems of the study, the following methods of data collection were used in this study:

1. Literature Review
2. Qualitative Interviews.

Data collection was conducted both in Addis Ababa and Bahir Dar ('Bahir Dar', Amharic[3] word meaning '*at the edge of the lake*')-the capital of ANRS. It is worth noting that Bahir Dar is located in Western Gojjam. Thus for the purpose of this study, the researcher traveled to Addis Ababa and Bahir Dar (Gojjam) to gather pertinent literature and to conduct interviews with key informants.

Literature Review

Data for the purpose of a literature review were collected based on the criteria that they were significant to an understanding of the focal issues of the study which are:

- The socio-cultural practice of regular fasting as defined by Canon Law of the Ethiopian Orthodox Church;
- The ability of the current national government to implement policies and strategies to optimize water use; and
- The right of equitable and reasonable utilization of water in the Nile River Basin System.

Even though this study was anchored by literature on second-order scarcity and elements of scale (socio-cultural, national and supra-national) the researcher maintained openness to findings during field research. Data on the issues of the current national government's ability to implement policies and strategies to optimize water use and on the right of equitable and reasonable utilization of water in the Nile River Basin System were sought from different sources including:

1. Ethiopian Ministry of Water Resources

[3] Amharic is the national language of Ethiopia.

2. Ethiopian Ministry of Foreign Affairs
3. Eastern Nile Technical Regional Office (ENTRO)-a regional office of the Nile Basin Initiative (NBI) responsible for coordinating joint water-related projects between Egypt, Ethiopia and Sudan
4. Amhara National Regional State (ANRS) Water Resource Development Bureau
5. The Ethiopian Economics Association
6. Local libraries in Addis Ababa and Bahir Dar
7. Academic and Multilateral papers
8. Civil Society and Nongovernmental Organizations in Addis Ababa
9. Library of the World Bank office in Ethiopia
10. Presentations from a Nile Basin Discourse Forum held in Addis Ababa
11. Ethiopian English and Amharic newspapers
12. International magazines
13. The Internet

Interviews

Data was also collected by conducting in-dept qualitative interviews with fifteen key informants, twelve of who were selected based on their knowledge of or active involvement in Ethiopia's water sector. Four of these people work in Bahir Dar (Gojjam). One of the interviewees is a peasant farmer living in Western Gojjam. Due to the very limited literature on the socio-cultural practice of regular fasting as defined by Canon Law of the EOC, the majority of data on this issue was collected from interviews with 3 key informants.

The interviews were semi-structured to allow for open two-way communication between the researcher and informants with the objective of eliciting detailed information on the main focal areas of the study. The questions that were asked were purposefully broad and open ended rather than closed questions. They were structured as such with the objective of eliciting pertinent information on the specific areas of this study while simultaneously avoiding placing many constraints on information that may emerge. According to Stewart and Cash (2000), open-ended questions encourage respondents to talk more, and to bring in all the information they think is important. Specifically broad

questions encourage people to contextualize their own knowledge which is important for a case study. It is worth noting that two sets of interview questions were used for this study, one directed at people with knowledge of or active involvement in Ethiopia's water sector and the other for people knowledgeable on the socio-cultural practice of regular fasting as prescribed by the EOC. Please refer to Appendix I for a copy of these two sets of interview questions and Appendix II for the informed consent form that was issued to participants prior to interviews. It is worth noting that the researcher conducted and transcribed all interviews. The interview with the peasant farmer was translated by the researcher of this study from Amharic to English.

The following is an alphabetical list of the 15 key informants:

- Mr. Adane Kassa* [Head of Water Action-local NGO working in the water sector]
- Dr. Brhane Gebrekidan [Head of the Amhara Micro-enterprise development, Agricultural Research, Extension and Watershed Management (AMAREW) Project-funded by the United States Agency for International Development (USAID)]
- Mr. Charles [Pseudo] [Hydrologist/Irrigation Engineer]
- Ms. Fetenu Bekele [Head of New Development Perspectives Consultancy-local consultancy firm based in Addis Ababa]
- Mr. George [Pseudo] [Freelance Consultant in Water Resource Engineering]
- Mr. Getenet Tenagne* [A Peasant Farmer in Western Gojjam zone]
- Mr. Gulilat Berhane [Senior Economic Advisor to the Ethiopian Minister of Water Resources]
- Mr. Mekonnen Loulseged [Water Resource Specialist]
- Dr. Mikre Selassie [Theologian, practicing Priest of the EOC and Translation Consultant for the United Bible Society in Africa]
- Mr. Muluken Lakachew Alemu [An Irrigation Water Management Specialist]
- Mr. Teshome Maru* [Director of Temaru Engineering Geosciences Consultancy Plc.–local consultancy firm in ANRS]
- Mr. Tiruneh Sinnshaw* [Retired staff member of the United Nations Children's Fund (UNICEF) now Public Health Consultant (both local & international)]

- Ms. Wesene Lemma [Community Participation Expert with the ANRS Water Resource Development Bureau]
- Mr. Wodaje Abebe [Geologist and Mining Engineer working in a local water resources and mining consultancy firm and also a former high official in the Energy and Mines sector]
- Dr. Yacob Arsano [A Political Scientist specializing in Hydropolitics]

*These interviewees were born and are either currently living or have spent a significant part of their life in Gojjam.

Limitations of the Data

The researcher acknowledges that there are a multitude of important issues relating to water utilization and development in the Ethiopian context such as the relationship between water and gender, sanitation, the environment as well as water rights, water tariffs among others. These issues of equal importance were not integrated as key focal points of this study. However, the interview questions were designed to be able to capture key themes such as these should they emerge from interviewees' responses. Data collected during the research process was scrutinized according to their significance to the main research problem.

Data Analysis

All of the interviews were audio-taped and transcribed into text for analysis. According to Ulin *et al*, "if the study [qualitative study] is grounded in a theoretical framework....analysis should begin with the concepts and categories that have guided the research design" (2002, 137). It is with this in mind that data analysis was undertaken through a theory-based approach to test the accuracy and validity of the hypotheses of this study. The key concepts that have guided this study are:

1. Second-order scarcity
2. Fasting
3. The ability of a government to implement policies and strategies to optimize water use
4. The right to equitable and reasonable utilization of trans-boundary waters

These key concepts were used to separate data gathered from a review of literature according to relevance to a general understanding of these focal ideas and not their application to a case study. The key categories used for data analysis are as follows:

1. Second-order scarcity and the socio-cultural practice of regular fasting as defined by the Ethiopian Orthodox Church (EOC);
2. Second-order scarcity and the ability of the current national government to implement policies and strategies to optimize water use; and
3. Second-order scarcity and the right of equitable and reasonable utilization of water in the Nile River Basin System.

These key categories were used to separate data gathered from both a review of literature and qualitative interviews according to their relevance to understanding the local context of the case study area-Gojjam (ANRS). In sum, Chapter 2 is limited to a discussion of the above key concepts while Chapter 3 uses the key categories to present their application to the case study area.

1.5 Definitions of Key Concepts

The definitions of key concepts presented below have been borrowed liberally from Turton (2003) because it was a comprehensive resource for understanding the concepts of first-order and second-order scarcities and how they are applied to local contexts. For the purpose of this study the following definitions will apply:

Abject poverty. Abject poverty is the lack of access to basic amenities such as basic health care, basic education, basic sanitation, safe drinking water and food security. The manifestations of abject poverty are high infant and maternal mortality rates, hunger, illiteracy and poor housing (own definition).

Adaptive capacity. "Adaptive capacity is the amount of social ingenuity and technical ingenuity available within a given state (or institutional manifestation of the state) with which to solve critical problems such as water deficit" (Turton 2003:8).

Drought. "Drought is a naturally occurring, true meteorological event involving irregular precipitation, which causes spells of exceptionally dry years" (Turton 2003:9).

Fasting. "A periodically applied taboo dependent for its application on certain rhythms to be found either in an individual's life cycle or in the cycles of seasonal or ritual events recurring yearly" (Knutsson and Selinus 1970:956)

First-order resource. "A first-order resource is a natural resource like water and land, which can be either scarce or abundantly available" (Turton 2003:10).

First-order scarcity. "A first-order scarcity is the scarcity of a first-order resource such as water, which can be either short-term such as that experienced during a drought, or long-term such as a water deficit that occurs at a basin level because of over abstraction" (Turton 2003:10).

Food insecurity. Food insecurity is a situation where people, families are not assured of their staple food supply during certain lean seasons or throughout the year (own definition).

Governance. "Governance covers the manner in which allocative and regulatory politics are exercised in the management of resources (natural, economic, and social) and broadly embraces the formal and informal institutions by which authority is exercised" (Rogers and Hall 2003:7).

Gross-domestic product. "The total final output of goods and services produced by the country's economy, within the country's territory, by residents and nonresidents, regardless of its allocation between domestic and foreign claims" (Todaro & Smith 2003:797).

Groundwater. "Groundwater is any water, whether running in a defined channel or not, that is found underground" (Turton 2003:10).

Hegemonic stability theory. "Hegemonic states use their strength to create a set of political and economic structures to enhance the stability of the system. The theory argues that cooperation results from pressure of the hegemon on the concerned parties" (Dinar 2002:242).

Hegemony. "Hegemony can be considered as leadership buttressed by authority…theories of hegemony attempt to explain how groups with power (hegemons) can maintain their pole position (control), other than through mere repression…the methods of hegemony employed depend on the capacity of the hegemon to persuade subordinate actors to accept not just the hegemon's authority, but to adopt and internalize its values and norms intended to impose one solution over others" (Zeitoun and Warner 2006:438).

Hydro-Hegemony. "Hydro-hegemony is hegemony at the river basin level, achieved through water resource control strategies such as resource capture, integration and containment. The strategies are executed through an array of tactics (e.g. coercion-pressure, treaties, knowledge construction, etc.) that are enabled by the exploitation of existing power asymmetries within a weak international institutional context" (Zeitoun and Warner 2006:435).

Hydropolitics. "Hydropolitics is the authoritative allocation of values in society with respect to water" (Turton 2002 cited in Turton and Henwood 2002:16).

Regimes. "Regimes are a set of implicit or explicit principles, norms, rules and decision-making procedures around which actors' expectations converge in a given area of international relations. Regimes differ from institutions because of their lack of enforceability, but regimes are a form of institution" (Turton 2003:14).

Region. "A region is a large area of land with definite boundaries, which is one of the parts of a country that has been divided up for administrative purposes" (Collins Cobuild 1987: 1213).

Second-order resource. "A second-order resource is a social resource. It is the ability of societies, administrative organizations and managers responsible for dealing with natural resource scarcities, to find the appropriate tools (also know as a coping strategy) for dealing with the social consequences of a first-order resource scarcity. It is consequently a specific form of scarcity, namely the scarcity of the necessary adaptive capacity including skills, data and institutions. Some literature refers to this as social capital" (Turton 2003: 16).

Second-order scarcity. "A scarcity of the necessary social resources and adaptive capacity, including social ingenuity and technical ingenuity, can be regarded as being a second-order scarcity" (Turton 2003: 16).

Structurally-induced relative water scarcity. "Structurally-induced relative water scarcity (SIRWS) is a condition that exists when a combination of a high level of second-order resource scarcity and a high level of first-order resource abundance occur simultaneously in a given society. Under such conditions the potential water abundance cannot be harnessed for economic growth and development because of the lack of adaptive capacity or ingenuity in society at that specific moment in historic time" (Turton 2003: 16, 17).

Water Governance. "The system of actors, resources, mechanisms and processes which mediate society's access to water" (Franks and Cleaver 2007:303).

Water Scarcity. "Water scarcity is the condition that exists when the demographically-induced demand for water exceeds the prevailing level of local supply" (Turton 2003: 20).

1.6 Ethical Consideration

There were minimal ethics considerations for this study as it was based purely on a review of literature and interviewees with key informants who are not categorized as vulnerable people. Informed consent forms were submitted to and signed by all informants prior to the interviews in accordance to principles of ethical research. The interviewees were also given the option of anonymity.

1.7 Chapter Outline

To adequately address the research problem, this study was structured around four chapters which are as follows:

Chapter 1 presents the analytical framework that is the basis of this study by providing the following information: background to the problem; the main research problem including sub-problems and hypotheses, delimitations of the study, research methodology definition of key concepts and ethical considerations.

Chapter 2 reviews the available literature on the key variables of the three sub-problems. More specifically the chapter focuses on important elements of these variables. It is worth noting that this chapter only reviews concepts and not their application to a case study.

Chapter 3 presents a case study using the identified sub-problems as a guide and applies the concepts identified in Chapter 2.

Chapter 4 is an evaluation of the accuracy and validity of the hypotheses of the study. It also contains a conclusion and bibliography.

CHAPTER 2

SECOND-ORDER SCARCITY AND SOME ELEMENTS OF SCALE: A LITERATURE REVIEW

2.1 Introduction

In order to gain an understanding of the context within which Ethiopia finds itself in terms of water availability and development, it was important to look at some literature on the important issues of each of the three sub-problems of this study. These issues include:

1. Second-order water scarcity
2. Fasting
3. The ability of a government to implement policies and strategies to optimize water use
4. The right to equitable and reasonable utilization of trans-boundary waters

This chapter focuses on the important elements of each of these issues that are pertinent to addressing the fundamental research problem of this study, which is that second-order scarcity, as manifest in contemporary Ethiopia, has three distinct elements of scale (socio-cultural, national and supra-national). It is worth noting that this chapter is only a review of concepts and not their application to a case study, which is later presented in Chapter 3. Before discussing the important issues behind the three sub-problems of the study it is important to review literature on contemporary water resource development at the international level to gain an understanding of the level of importance attributed to water as a key development issue.

2.2 Water as a development issue

There is wide international consensus around the importance of water to achieving development goals and that increasing levels of water stress are a threat to their achievement (UN-WWAP 2006; UNDP 2006). In 1997, the United Nations (UN) Commission for Sustainable Development (CSD) presented the first Comprehensive Freshwater Assessment (CFWA) report to the UN General Assembly. Björklund and Kuylenstierna (1998) refer to the CFWA as an '*alarm clock*', alerting the global community about the close relation of many future global challenges to the use and management of freshwater resources. In support of this, they make the point that one of the eye opening findings of the first CFWA was that "currently [1997] about one-third of the world population is living in areas suffering from moderate to severe water stress, i.e. where water limits the options and possibilities of economic and social development" (Björklund and Kuylenstierna 1998: 269). The CFWA therefore highlighted the fact that water stress directly impacts socio-economic development. According to UNDP, "the number of people living in water-stressed countries will increase from about 700 million today [2006] to more than 3 billion by 2025" (2006, 24). While referring to the UN Millennium Development Goals (MDGs)-a set of eight development goals principally aimed at reducing global poverty by half by 2015 of which all UN member states signed up to in 2000-the UN Millennium Development Project argues that "sound water resources management and development is a key to achieving all of the Goals" (2005, xii). This suggests that proper water management plays an important role in poverty reduction. The UNDP (2006) focused on what it refers to as a '*global water crisis*' which it argues is a threat to achieving the MDGs and hence restricts human development. There is also consensus at the international level on the importance of stakeholder participation in decision making and water management to avoid conflicts of interests over water use among stakeholders that are emerging because of increasing levels of water scarcity and in some areas food insecurity. The issue of stakeholder participation was particularly highlighted at the World Summit on Sustainable Development (WSSD) in September 2002 held in Johannesburg, South Africa. This summit also highlighted the importance of water and sanitation to the eradication of poverty and for sustainable development.

One significant outcome of the WSSD was that its plan of action, which set targets focused on water and sanitation, called on all participating countries at the summit to adopt an Integrated Water Resources Management (IWRM) framework by 2005. The Global Water Partnership (GWP) defines IWRM as a process that "promotes the coordinated development and management of water, land, and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems" (2004, 7). In essence IWRM is a framework being promoted at the international level within which governments can coordinate efforts among different stakeholders to address water challenges in a holistic and sustainable manner. It is worth noting that IWRM tries to address correlations between land and water use issues instead of looking at them as two different challenges, which as the United Nations World Water Assessment Programme (UN-WWAP) (2006) suggests has so far proven to be a challenging endeavor for many countries. In sum, the past decade has seen an increasing importance being attributed to water as a key development issue that influences efforts at poverty alleviation, especially in poor countries.

2.3 Second-order scarcity as a concept

Considerable effort has been made over the years to try and come up with an appropriate index that accurately measures the level of freshwater availability in countries as well as their respective capacities to address the challenges posed by water scarcity. The intention of working towards such indexes is to provide policy and decision-makers with actionable information on which safeguards can be put in place to guarantee availability of adequate freshwater. With reference to work done by Leif Ohlsson, Turton makes the point that "adapting to natural resource scarcities entails the mobilization of an increased level of social resources. These resources can be called the 'adaptive capacity' of a given society" (1999, 7). He further explains that "a society that does not have sufficient 'adaptive capacity' to make the relevant adjustments needed to cope with increased resource scarcity can be regarded as having a 'second-order scarcity', namely lack of 'adaptive capacity'" (1999, 8). It is important to understand the conceptual distinction between a first and second-order resource. According to Turton

and Warner, "a first-order resource is any natural resource (such as water, land, or minerals) with which a country can be either well-or poorly-endowed" while "a second-order resource…is a social rather than a natural resource" (2002, 53). They further state that:

> A social resource refers to a need (acutely perceived by societies, administrative organizations, and managers responsible for dealing with natural resource scarcities) to find the appropriate societal tools for dealing with the social consequences of first-order natural resource scarcities (Turton and Warner 2002: 53).

It is worth noting that first-order resource availability or scarcity is relative and may vary within countries. In support of this, Turton and Warner make the point that "a first-order resource like water can be either scarce or abundant; and the degree of scarcity and/or abundance is relative spatially, temporally, and in terms of quality" (2002, 53). Institutional and intellectual capital is examples of second-order resources that are needed to address water scarcity. In some cases, water scarcity may also exist in countries that are well-endowed or have abundance in terms of water availability. Turton and Warner support this position, noting that:

> Current work in Zambia, one of the most well-endowed countries in Southern Africa in terms of water availability, shows how acute water scarcity can exist even in that country simply because its government lack the capacity to harness its water in dams and then process and distribute it via an adequate reticulation system (2002, 53).

They argue that countries like Zambia experience what they refer to as structurally-induced relative water scarcity (SIRWS)-a condition that exists when a combination of a high level of second-order scarcity and a high level of first-order resource abundance occur simultaneously in a given society (*ibid).* Countries with low levels of first-order resource availability combined with a high level of second-order resource availability are considered to be experiencing structurally-induced relative water abundance (SIRWA) (*ibid).* In cases where a country has low levels of both first-order and second-order resource availability it is considered to be experiencing water poverty (WP) (*ibid).* Taking this concept of second-order scarcity, the following sections will identify some

specific elements that exacerbate it and that are of importance to the case study that is later presented in Chapter 3.

2.4 Second-order scarcity and fasting

Fasting and nutrition

Fasting is the abstention from consuming some or all drink, food, or both for a given period of time. It may also include refraining from eating certain types of food like meat or other animal products and even abstaining from sexual activity (Knutsson and Selinus 1970). One of the most common purposes for fasting is religious ritual. Fasting is practiced by the following major world religions: Christianity, Islam and Hinduism. According to the rules of the Koran, the holy book of Islam, Muslims have to abstain from all foods and drink before sunset in the months of Ramadan, the holy month of fasting. After sunset they can eat any type and amount of foods thereby allowing their bodies to absorb vital nutrients lost during the day (*ibid).* Fasting is practiced by several Christian denominations especially during the period of Lent-40 days before Easter. The Eastern Orthodox Church distinguishes itself by having four main fasting periods including: Lent, Apostles' Fast, Dormition Fast, and the Nativity Fast. It also observes a fast on every Wednesday and Friday except for certain periods, especially the weeks following Easter. This study does not deal with the moral and ethical issues behind fasting but instead focuses on the effect of regular fasting on human capacity to work especially labor-intensive agricultural work.

Food is a vital source of energy for the growth and maintenance of the human body. The three main foods that are required by the body are proteins, fats and carbohydrates. Proteins are mainly found in meat, fish and dairy products and as Johnson suggests "we [human beings] need to get up to 20 per cent of our daily energy intake in the form of proteins" (1998, 14). Fats are also found in meat and dairy products and provide more than double the amount of energy of other foods (Wingate 1972). Carbohydrates are found in starchy foods such as rice, potatoes and bread and are the human body's key source of energy. According to Wingate, "protein and carbohydrate supply the same amount of energy-about 4 Calories per gram. Fat provides 9.3 calories per gram" and "whereas fat and carbohydrate can be freely consumed, a good deal of the protein in the

diet must be conserved as building material". He further suggests that "an average man needs 1,700 Calories daily. A sedentary worker needs some 2,500 Calories, and heavy manual labor may call for twice as much". Agricultural work, especially non-mechanized labor-intensive farming-common in many developing countries- is probably the most physically demanding work requiring ample energy and stamina. Without delving into a broad discussion on human energy intake requirements it suffices to say that people engaging in labor-intensive agricultural work require a nutritious diet full of proteins, fats and carbohydrates to compensate for all the energy used up in their daily activities.

Human capacity for work: A second-order resource

What does regular fasting have to do with second-order scarcity? In many developing countries, especially those in Sub-Saharan Africa, the agricultural sector forms the backbone of local economies and non-mechanized traditional labor-intensive agricultural production methods are the norm. In this context then the human capacity for work is considered as a fundamental social resource for productivity to which the livelihoods of farming communities depend. As such agricultural production methods fundamentally depend on the combined use of land and water resources therefore human capacity for work is the physical ability to make optimal use of these resources. It can therefore be said that human capacity for work is a second-order resource that is needed to make productive use of available water resources. Regular fasting by people who work in non-mechanized labor-intensive agricultural production is difficult as they are not consuming sufficient nutrients (proteins, fats and carbohydrates) to provide their bodies with enough energy and stamina, hence reducing their capacity to work. It can therefore be said that regular fasting erodes human capacity to work and thus exacerbates second-order scarcity. This cause effect relationship between regular fasting and second-order scarcity is later tested on a case-study in Chapter 3.

2.5 Second-order scarcity and the ability of a government to implement policies and strategies to optimize water use

Second-order scarcity and water governance

Governance is a term that does not have a single definition but for the purpose of this study it will be considered as "the manner in which allocative and regulatory politics are exercised in the management of resources (natural, economic, and social) and broadly embraces the formal and informal institutions by which authority is exercised" (Rogers and Hall 2003:7). The governance of water resources is commonly referred to as water governance. In their work for the Global Water Partnership (GWP), Rogers and Hall define water governance as "the range of political, social, economic and administrative systems that are in place to develop and manage water resources, and the delivery of water services, at different levels of society" (2003, 7). Adopting concepts of social theory, Franks and Cleaver expand on this definition by stating that water governance is "the system of actors, resources, mechanisms and processes which mediate society's access to water" (2007, 303). The latter definition is applied in this study. Governance frameworks and institutions differ from one country to another therefore water governance has to be localized and contextualized for a better understanding of the country specific circumstances (Franks and Cleaver 2007; UN-WWAP 2006). According to the United Nations Second World Water Development Report (WWDR) entitled *Water a Shared Responsibility*, the water crisis currently being experienced around the world is not one of a lack of available water *per se* but a failure in water governance (UN-WWAP 2006). The UNDP agrees, arguing that "the roots of the crisis in water can be traced to poverty, inequality and unequal power relationships, as well as flawed water management policies that exacerbate scarcity" (2006, v). Both UN-WWAP (2006) and Franks and Cleaver (2003) are in agreement that there is no blueprint for good water governance but the former suggests that "more attention needs to be given to resilient institutions and approaches that can govern or guide the complex, often surprise-laden, process of water governance central to long-term management at a regional, basin, aquifer or even local level" (UN-WWAP 2006:83). According to the UN Millennium Development Project, "good water governance requires the involvement of the public and the interests of all stakeholders in the management of water resources" (2005, 155). The UNDP agrees, arguing that:

> Effective water governance builds institutional capacity from the local level upwards and empowers stakeholders with knowledge and the ability to make decisions about

matters that directly affect their lives. It promotes the equal participation of women and men in decision-making (2004c, 10).

This suggests that countries should adopt a bottom-up approach to water governance. The UN-WWAP (2006) stresses that governments cannot afford to continue with a '*business as usual*' or '*laissez-faire*' approach to water governance and must instead increase public investments in the water sector and create governance frameworks that are '*flexible*' and *'adaptive'* in order to optimize water use.

What then does water governance have to do with second-order scarcity? The ability of a government to implement water policies and strategies-a key part of water governance-can be considered as a social resource and hence a second-order resource. If a government is unable to implement coherent policies and strategies to optimize water use for national development, then second-order scarcity is likely to be perpetuated. Even though there is no clear cut blueprint for water governance the United Nations First WWDR states that "it is agreed that the basic principles of effective governance include: participation by all stakeholders, transparency, equity, accountability, coherence, responsiveness, integration and ethical issues" (UN-WWAP 2003:30). These criteria are fundamental to a government's ability to implement its policies and strategies to optimize water use. It is worth noting that even in the event that water governance is decentralized to the grassroots level, people in a society where there is a socio-cultural practice of regular fasting-that reduces their human capacity to work-would remain under-capacitated from participating in bottom-up governance structures. Chapter 3 evaluates the cause-effect relationship between water governance and second-order scarcity in a case study.

2.6 Second-order scarcity and the right of equitable and reasonable utilization of trans-boundary waters

Legal norms in trans-boundary water use

Before the industrial revolution (pre-18th Century), legal agreements on trans-boundary water use focused on ensuring that water resource development in any upstream riparian country do not '*harm*' or obstruct water flow to neighboring downstream countries. The industrial revolution increased water demand for non-

navigational purposes-water use for purposes other than transport-which lead to a concerted effort to adapt legal systems to emerging needs. At the beginning of the revolution, international water law was characterized by bilateral agreements on sharing trans-boundary waters. In 1966, a private Nongovernmental Organization (NGO) known as the International Law Association (ILA) tried to bring about some order in international water law by coming up with what became known as the *Helsinki Rules of the Uses of the Waters of International Rivers* (Tafesse 2001). These rules were a code for use of trans-boundary waters including use for both navigational and non-navigational purposes. According to Eckstein:

> Most notable of its [Helsinki Rules] provisions are articles IV and V, which set forth the well-known doctrine of equitable and reasonable apportionment, and some of the geographic, hydrological, climatic, historical, social, economic and technical elements assessed when effecting this apportionment (2002, 82-83).

The Helsinki Rules have long been used in negotiations over trans-boundary water use however, since they are non-binding or not officially recognized by most states because ILA is an NGO, the codes set by the Helsinki Rules have not been implemented or taken seriously (*ibid)*. Due to the fact that the Helsinki Rules could not be employed as a recognized international water law, this raised tensions in parts of the world where there was growing water scarcity and demand. These tensions as well as ineffectiveness of the Helsinki Rules resulted in the commissioning of the International Law Commission (ILC) by the UN General Assembly in 1970 to produce draft articles that would govern international law with regards to trans-boundary water use for non-navigational purposes (Tafesse 2001). Unlike the ILA, the ILC was a recognized body and since it was commissioned by the UN, countries were obliged to take it seriously. Since the issue of non-navigational trans-boundary water use was such a complex and sensitive matter, it took the ILC close to three decades to prepare draft articles (*ibid*). It finally culminated in the adoption of the UN Convention on the Law of the Non-Navigational Uses of International Watercourses by the UN General Assembly on May 21, 1997 (Eckstein 2002). Article 5.1 of the convention states that "watercourse states shall in their respective territories utilize an international watercourse in an equitable and reasonable manner" and "an international watercourse shall be used and developed by watercourse

states with a view to attaining optimal and sustainable utilization thereof and benefits therefrom, taking into account the interests of the watercourse states concerned" (United Nations 1997:4). On the other hand, Article 7.1 calls on riparian countries "to take all appropriate measures to prevent the causing of significant harm to other watercourse states" (United Nations 1997:5). According to Wiebe, "as of December 2000, only sixteen countries have signed and four countries have ratified the treaty [the UN convention]" (2001, 749). Mason argues that "there are few international river basins where all the countries of the same basin have agreed to this convention; it is therefore unlikely to bring these countries closer to an agreement" (2004, 192). Article 6.1 of the UN Convention states that equitable and reasonable trans-boundary water use should take the following factors into account:

1. Geographic, hydrographic, climatic, ecological and other natural factors;
2. The social and economic needs of the watercourse states concerned;
3. The population dependent on the watercourse;
4. The effects of the use of the watercourse by one state on other watercourse states;
5. Existing and potential uses of the watercourse; and
6. Conservation, protection, development and the economy of use of the water resources of the water course, and the costs of measures taken to that effect (United Nations 1997:5).

What then are the fundamentals of the two principles of significant harm and equitable use? The principle of significant harm is closely related to the principle of acquired rights which according to Waterbury (1997, 281) is where "those riparians who first put the water in a basin [trans-boundary] to use thereby establish a senior claim to it which is tantamount to a property right" and "if another riparian puts forward a rival claim to the water, the property right is put in jeopardy". This principle is also based on the notion that where riparian countries have already made substantial investments in water infrastructure and whose economies as a result are dependant on use of a standard volume of water in a trans-boundary river basin, claims for water use by other riparians may cause significant harm (*ibid*). On the other hand, the principle of equitable use according to Waterbury is one where "those with access to a resource [trans-boundary] have some right to a share in the resource" hence it essentially "protects those who have yet to

harness the resource within their own territories" and "takes as legitimate future claims to water use" (1997, 281). The irreconcilability of these two principles in essence was the reason behind the failure of the convention and as a result the lack of binding international water law governing trans-boundary water use to date. This is not to mean that the UN Convention on the Law of the Non-Navigational Uses of International Watercourses has no significance in current international law. In support of this, Eckstein makes the point that:

> The passage of the Convention strongly suggests that certain principles [including the principles of equitable and reasonable use and of no significant harm] contained in the text have reached the status of accepted norms of international law regarding the non-navigational uses of international watercourses (2002: 89)

In the absence of binding international law on trans-boundary water use, many riparian countries have instead opted to enter into bilateral agreements with neighboring riparian countries over non-navigational use of trans-boundary waters (*ibid).*

Even though conflicting positions among riparians on the principles of equitable use and significant harm have not lead to water wars, there have been non-military or '*silent'* conflicts between states. Zeitoun and Warner (2006) argue that the control of trans-boundary waters by one or more riparians over others is mainly determined by power asymmetries among them which are the reason behind the absence of water wars. These asymmetries are best explained through the concept of hydro-hegemony which Zeitoun and Warner define as "hegemony at the river basin level, achieved through water resource control strategies such as resource capture, integration and containment" and "the strategies are executed through an array of tactics (e.g. coercion-pressure, treaties, knowledge construction, etc.) that are enabled by the exploitation of existing power asymmetries within a weak international institutional context" (2006, 435). The international institutional context they are referring to is the lack of binding international law on trans-boundary water use hence they argue that the status quo of power asymmetries is maintained as a result. Counter-hegemony is where the non-hegemonic or weaker states in a river basin challenge the asymmetrical power of the hegemon through what Cascao refers to as "political strategies not involving violence but designed to subvert the hegemonic status quo and legitimacy" (Cascao 2005: n.p.). On the other hand,

hegemonic states may participate in establishing cooperative institutions with weaker riparians with the aim of maintaining the status quo. Such actions are based on the concept of hegemonic stability theory where the hegemon uses existing power asymmetries to apply pressure on other riparians to maintain stability in their favor (Dinar 2002). Zeitoun and Warner suggest that "the most stable situation in terms of riparian relations is likely to be when the riparians share control of the resource, as the case whereby the hegemon has negotiated a water-sharing agreement that is perceived positively by all riparians" (2006, 444). They further expound that "allocations or benefits resulting from such agreements could be based on customary international water law or on the definitions of 'equitable and reasonable use' as defined by the 1997 United Nations Convention on the Non-Navigational Uses of International Watercourses". To facilitate agreements on trans-boundary water use, riparians usually establish water regimes which Haftendorn defines as "when the affected states to a conflict observe a set of rules designed to reduce conflict caused by use, pollution or division of a water resource or the reduction of the standing costs and the observance over time of these rules" (Haftendorn 2000 cited in Jägerskog 2002:75). It is worth noting that establishment of water regimes alone is not a solution to conflicts over trans-boundary water use but creates a framework for riparians to work in a cooperative manner. The success of water regimes highly depends on the ability of riparians to reach a legal agreement on utilization of their shared waters (Brunnee and Toope 2002).

The right to equitable and reasonable use of a trans-boundary water resource: A second-order resource

What then does equitable and reasonable utilization of trans-boundary waters have to do with second-order scarcity? The ability of a riparian country to exercise its right to equitable and reasonable utilization of a trans-boundary water resource is a second-order resource needed to optimize water use. If a country, especially an upstream riparian country, cannot exercise this right then it cannot design viable national development programs to alleviate the impact of second-order scarcity within its territory. Under such circumstances the *status quo* of exclusive utilization of trans-boundary waters by downstream countries is preserved. Collins argues that "equitable utilization

consequently remains in the eye of the beholder and not enforceable by law" and "a powerful downstream state will undoubtedly marshal its influence to persuade or convince by force weaker upstream riparians to desist from claims for equitable use" (2003, 11). Furthermore, International Financial Institutions (IFIs) like the World Bank have opted not to provide financial assistance for water works on trans-boundary waters unless it is part of a cooperative agreement reached among the riparian countries by reasoning that doing so carries a risk of conflict (Allan 1999). Under such circumstances Waterbury and Whittington argue that "downstream states hold veto power over third-party financing of upstream development" (1998, 152). In cases where a riparian country lacks the financial resources to develop water resources within its territory then it will be dependant on the good will of donor governments or IFIs like the World Bank to provide it with funds to do so. Therefore the only alternative for such countries is to enter into a cooperative framework with other riparian countries to equitably and reasonably utilize shared waters in order to qualify for financial assistance for water infrastructure and other water-related projects. However entering a cooperative framework is a long-term commitment as can be seen by the five decade long effort it took to establish the Mekong River Commission in 1995 (Tafesse 2001). Such cooperative frameworks involve a protracted process of confidence building among riparian countries and the establishment of regional and national institutions to implement agreements reached by consensus (*ibid).* This raises the question as to what extent can riparian countries remain committed to a cooperative framework that produces no immediate benefits on the ground while second-order scarcities persist? Reaching a consensus on the equitable and reasonable utilization of a trans-boundary water resource requires building the capacity of riparian states in a river basin to negotiate a fair agreement. Without building the capacity of weaker states in a river basin, the existing power asymmetries will dominate negotiations resulting in an agreement that only serves to perpetuate the hegemonic status quo. On the other hand, without equity in an agreement between countries sharing a water resource, building capacity is difficult in the first place hence a double edged sword that requires careful negotiation and compromise.

2.7 Conclusion

This chapter has presented some key elements of the important issues of the three sub-problems of this study which include: fasting, the ability of a government to implement policies and strategies to optimize water use and the right to equitable and reasonable use of trans-boundary waters. Chapter 3 explores whether there is a cause-effect relationship between these concepts and second-order scarcity in a case study of Gojjam.

CHAPTER 3

CASE STUDY: GOJJAM

3.1 Introduction

With the aim of gaining an understanding of second-order scarcity, as manifest in contemporary Ethiopia, and its three distinct elements of scale (socio-cultural, national and supra-national), it was important to conduct in-depth interviews with key informants and to review literature on the three sub-problems of the study. To better illustrate how second-order scarcities in Ethiopia are compounded from the supra-national or regional level to the local or grassroots level, this chapter has reversed the order of discussion problems and hypotheses of the study. The sub-problems of this study focus on the issues and inter-relationships between the following issues:

1. Second-order scarcity and the right of equitable and reasonable utilization of water in the Nile River Basin System.
2. Second-order scarcity and the current national government's ability to implement policies and strategies to optimize water use; and
3. Second-order scarcity and the socio-cultural practice of regular fasting as defined by the Ethiopian Orthodox Church (EOC);

This chapter investigates these inter-relationships by applying them to a case study of one rural area in Northwestern Ethiopia called Gojjam which is a province of the Amhara National Regional State (ANRS). It is worth noting that in the Ethiopian context data and information on the local/grassroots level is limited therefore this study has had to depend more on national level statistics. This lack of data and information makes it difficult to analyze for example how use of trans-boundary water resources at the supra-national (regional) level of the Nile River Basin System affects water utilization and development at the local level of Gojjam. Nevertheless, we can deduce the cause-effect relationship between the right to equitable and reasonable utilization of the Nile River Basin System

and second-order scarcity in Ethiopia. The concepts that were identified in Chapter 2 are applied to this case study to investigate the hypotheses for the respective sub-problems of this research.

The first section of this chapter will focus on Ethiopia's utilization of water in the Nile River Basin System and on how the use of this resource has been and continues to be determined by the country's relationship with other Nile riparian countries. It is worth noting that the ability of Ethiopia to exercise its right to equitable and reasonable utilization of waters in the Nile River Basin System is a second-order resource that it needs in order to optimize water use within its territory. This is followed by a section discussing water governance in Ethiopia with a particular focus on the current decentralization process in Ethiopia's water sector and the level of stakeholder participation in water development and management at the national level and at the grassroots level of Gojjam/ANRS. The current Ethiopian government's ability to implement policies and strategies to optimize water use is a second-order resource that the country needs for national development. The third section of this chapter focuses on the effect that the socio-cultural practice of regular fasting by followers of the EOC has on their human capacity to work. It is important to note that human capacity for work (labor intensive farming) in the context of rural Ethiopia is a second-order resource fundamental to the optimal use of available land and water resources. The issues of decentralization and the socio-cultural practice of regular fasting are interlinked as the success of the former is negatively influenced by the latter due to the fact that people who practice regular fasting lack the human capacity to work regularly. Before discussing the issues and interrelationships mentioned above, it is important to localize and contextualize Gojjam and the socio-economic condition of the people living in the area.

3.2 Gojjam

As mentioned in Chapter 1, Ethiopia is one of the poorest countries in Sub-Saharan Africa. Figure 1 below shows how Ethiopia's Human Development Index (HDI) has consistently been far below that of Sub-Saharan Africa, let alone the rest of the world. Table 1 below gives some basic social statistics on Ethiopia and ANRS-where the

province of Gojjam is located. It is worth noting that the researcher of this study was unable to find statistics for Gojjam alone thus those for ANRS have been used to give an idea of how the region compares with the national scale.

As can be seen in Table 1 below, ANRS comprises about 26 per cent of Ethiopia's population (MOH 2006). According to MOWR (Ministry of Water Resources), "by 2000 urban services [in ANRS] had reached 1,151,288 raising the coverage [water supply] from 80 to 96 per cent" (2002, 7). This suggests that the urban population of ANRS, which makes up 11 per cent of the region's population, is well covered with water supply. On the other hand, rural water supply coverage in ANRS, where 88 per cent of the region's population lives, at the end of 2000 was 23 per cent (*ibid*).

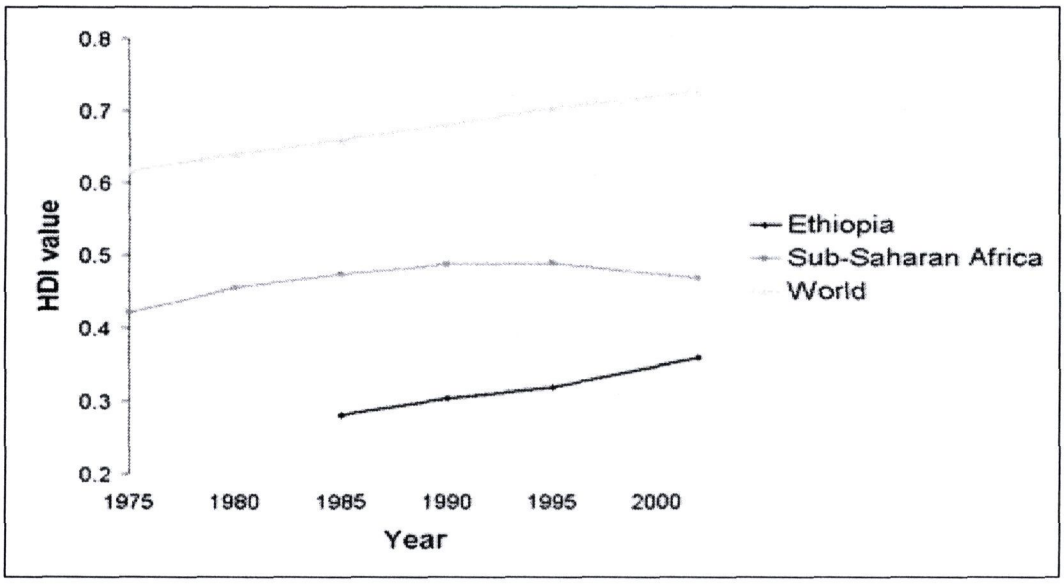
Table 1: Basic Social Statistics of Ethiopia and ANRS

Indicator	Ethiopia	ANRS
Population (in Thousands)	75067 in 2005	19120 in 2005
Urban Population (per cent)	16.2 in 2006	11.5 in 2006
Rural Population (per cent)	83.8 in 2006	88.5 in 2006
Gross National Income per capita	810 (US$) in 2004	
Undernourished People (per cent)	42 in 2001	
Unemployment (per cent) *	8.06 in 1999	7.65 in 1999
Urban Unemployment (per cent)	25.7 in 1999	22.48 in 1999
Adult Literacy (per cent)	Male 39.6 in 2000 Female 18.5 in 2000	Male 33.2 in 2000 Female 16 in 2000
Infant Mortality (per 1,000 live births)	77 in 2005	94 in 2005
Under 5 Mortality (per 1,000)	123 in 2005	154 in 2005
Maternal Mortality (per 100,000 live births)	850 in 2000	
Overall Mortality (per 1,000 live births)	84.5 in 2000	80 in 2000
Life Expectancy at Birth	Male 53.4 in 2005 Female 55.4 in 2005	Male 53.4 in 2005 Female 56 in 2005
Underweight	47 in 2004	52 in 2004
Access to Safe Water	36 in 2004	28 in 2004
Population with adequate sanitation facilities 2004	6 in 2004	

Source: MOH (2006); UNDP (2004a); and CSA (1999).

* Unemployment rates are for people of employable age meaning above 14 years.

Figure 1: Ethiopia's Human Development Index over the years



Source: UNDP (2004b)

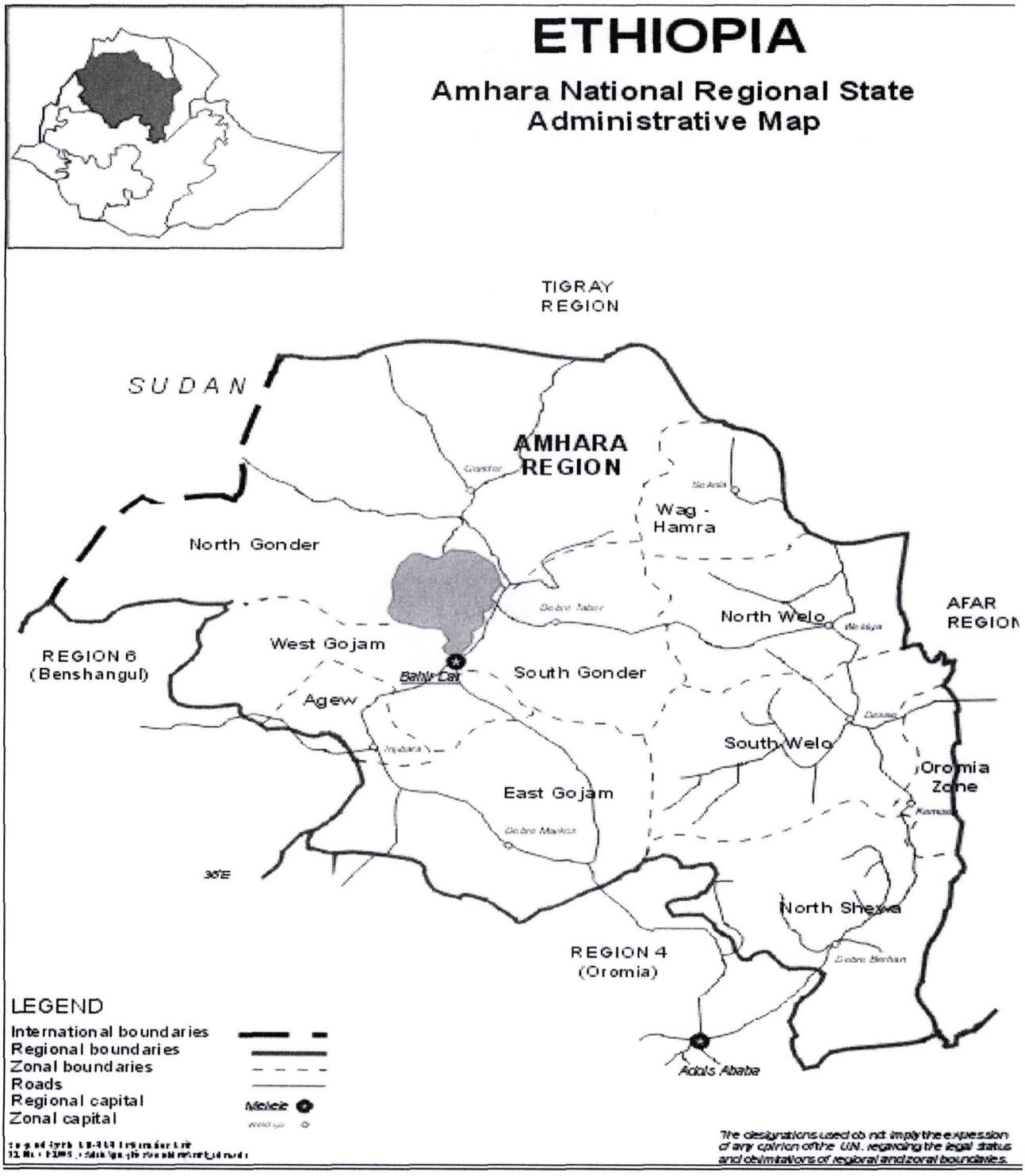
During the timeframe of Ethiopia's current poverty reduction strategy called *A Plan to Accelerate Sustainable Development and End Poverty* (PASDEP), the government plans to increase rural water supply coverage in ANRS to 49 per cent by the end of 2011 and 62 per cent by 2016 (Ministry of Finance and Economic Development (MOFED) 2005). According to USAID, "just 3 percent of rural dwellers in the Amhara region [ANRS] have access to potable water" (2000, 3). To make matters worse the United Nations Educational, Scientific and Cultural Organization (UNESCO) (2004) makes the point that out of 634 rural water supply schemes surveyed in ANRS, 22 per cent were non-functional. Safe water access is very low especially in rural areas of Ethiopia (MOWR 2002). It is paradoxical that in ANRS, where a river the magnitude of the Blue Nile originates and 26 per cent of the country's population resides, only a minimal 28 per cent of the population have access to safe drinking water, the second lowest level in the country (MOH 2006). This suggests that the above mentioned PASDEP targets of increasing water supply coverage in rural areas of ANRS may be overambitious and unrealistic. Therefore, in the case of ANRS, it is clear that a lot of work has yet to be done to increase rural water supply which at the moment remains very minute. According

to the World Bank (2006), the Gojjam area of ANRS has an average annual rainfall level of 1,180 millimeters. Teshome[4] said that parts of the western area of Gojjam has a moisture surplus with a rainfall depth between 1,000 and 1,600 millimeters which he believes makes it an ideal area for irrigation development. He also said that about 70 to 80 per cent of the eastern area of Gojjam has a moisture surplus suitable for irrigation development while 20 to 30 per cent of the area is moisture deficit where water harvesting can be practiced. The fact that water supply projects are failing to meet the demand of an ever increasing population in ANRS and Ethiopia as a whole is an important indicator of second-order scarcity. Table 1 also shows that Ethiopia has high maternal and infant mortality rates along with a significant percent of the population being underweight. According to UN-WWAP (2006) and UNDP (2006), the major causes of high maternal and infant mortality rates in developing countries like Ethiopia are water-borne diseases such as trachoma, diarrhea and intestinal parasites (typhoid, amoeba, relapsing fever etc.). It can therefore be said that access to safe drinking water in a rural area like Gojjam is critical to improving the health condition and livelihood of people in that area.

The basic social statistics of Ethiopia and ANRS presented in this section illustrate a low level of human development and more specifically that safe water supply to rural areas is failing to meet the demand for access by a population growing at a fast rate. The Human Development Index (HDI) measures life expectancy, level of education and income. The inadequate level of access to safe potable water in rural areas of Ethiopia like Gojjam contribute to the country's low HDI level with high maternal and infant mortality rates mainly caused by water borne diseases (UNDP 2006). Ethiopia's minimal use of water for irrigation purposes is another factor contributing to low human development. A recent study by Awulachew *et al* (2005) found that in Ethiopia, as of 2005, a miniscule 250,000 hectares of land were under irrigation which is 6 per cent of a total potential of 4 million hectares. It can therefore be said that inadequate safe water access and low levels of irrigation development negatively influences the standard of living of people in Gojjam manifesting in low levels of human development.

[4] Mr. Teshome Maru (Director, Temaru Engineering Geosciences Consultancy Plc.-consultancy firm based in the Amhara National Regional State (ANRS)) interviewed on 11 January 2007, Addis Ababa.

Map 1: Amhara National Regional State



Source: United Nations Emergencies Unit for Ethiopia webpage

http://www.telecom.net.et/~undp-eue/reports/Amhara.jpg (Accessed 20 May 2008)

3.3 Second-order scarcity and the right of equitable and reasonable utilization of water in the Nile River Basin System

This section will discuss the issues and interrelationships between second order scarcity and the right of equitable and reasonable utilization of water in the Nile River Basin System. The first sub-section will provide some background information on Ethiopia's contribution to and geographic position in the Nile River Basin System. This will be followed by a discussion of Ethiopia's utilization of water in the Nile River Basin System to highlight the challenges and opportunities of using this resource. The third sub-section will discuss the cause-effect relationship between the right to equitable and reasonable utilization of the Nile River Basin System and second-order scarcity in Ethiopia.

Ethiopia's contribution to the Nile River Basin System

The Blue Nile River basin contributes to about 62 per cent of the waters of the Nile River Basin System while the Tekeze and Baro-Akobo Rivers, which also originate from Ethiopia, contribute an additional 24 per cent (Gebre Selassie 2006). Therefore, the Nile River Basin System in total gets about 86 per cent of its waters from Ethiopia. The White Nile, which originates from Lake Victoria, which is bordered by Uganda, Kenya and Tanzania, accounts for the remaining 14 per cent of the waters of the Nile River Basin System. According to Flintan and Tamrat, "the Blue Nile contributes approximately 95 per cent of the Nile waters during the long rainy season (July–September)" (2002, 294). The source of the Blue Nile is located in Gojjam in the Sekela Woreda [Amharic word meaning district] of ANRS in a place known locally as Gish Abbay. From the moment the waters move downstream from Gish Abbay it is called Abbay or the Blue Nile and its tributaries join it on its way to Lake Tana-the largest natural lake in Ethiopia with a total surface area of about 6,900 square kilometers-that is located in Bahir Dar (Western Gojjam).

Ethiopia's utilization of water in the Nile River Basin System

Water utilization in the Nile River Basin System has for centuries been characterized by what is known as Nile hydropolitics-the contention over the use of Nile River waters among riparian countries. Nile hydropolitics has, for many centuries, been a skewed affair where Egypt has benefited from the underutilization of the Nile River waters by other riparian countries, especially Ethiopia (Brunnee and Toope 2002; Cascao 2005; Collins 2003; Tafesse 2001). In 1959, Egypt and Sudan-the two downstream countries in the Nile River Basin System-signed an agreement dubbed the '*Full Utilization of the Nile Waters*' which in essence was an effort to establish a water regime or legal framework by both downstream countries to exercise full control over and exclusively utilize the Nile River waters. In defense of this idea, Tafesse argues that "the 1959 Agreement created a watershed in the hydropolitical history of the Nile valley in the sense that it invigorated a monopoly on the waters of the Nile by Egypt and the Sudan" (2001, 77). The utilization of the Blue Nile River has and still remains a bone of contention between downstream and upstream countries of the Nile River Basin System, most particularly between Ethiopia, Sudan and Egypt. According to Abate (1994), over the past four decades, Ethiopia-in response to developments in downstream countries to exert control over the utilization of the waters of the Nile River Basin System-has stressed its right to utilize the Blue Nile River waters. Successive Ethiopian governments have expressed the country's desire to cooperate with other riparian countries to use the waters of the Nile River Basin System in an equitable manner (Abate 1994; Gebre Selassie 2006; Tafesse 2001; Tilahun 1979). In support of this, Abate makes the point that:

> Ethiopia consistently expressed its willingness to cooperate with Nile co-basin states on the basis of the principle of equitable use and allocation of the Nile waters, and subscribed to the idea of integrated development of the Nile Basin water resources as a framework for a meaningful cooperation among the co-basin countries (1994, 156)

There were past regional frameworks established to foster cooperation among Nile riparian countries but they failed to address the issue of equitable use and with time, upstream countries began to express their impatience and there was increasing rhetoric about potential water wars over use of the waters of the Nile River Basin System. According to Tafesse (2001) many past conflicts (wars) between the rulers of Ethiopia

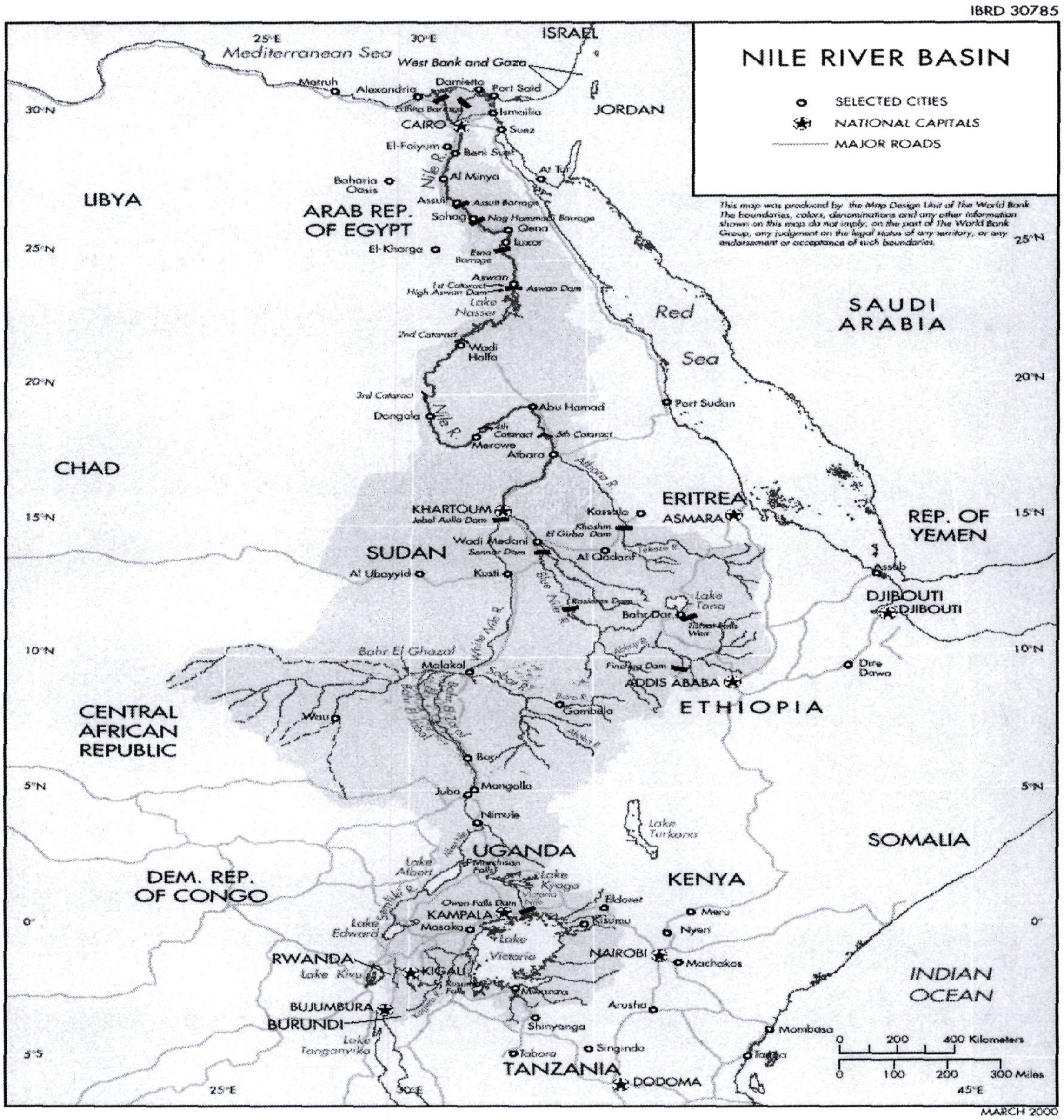
and Sudan or Ethiopia and Egypt were mainly over the use of the Blue Nile and Tekeze Rivers-both originating in Ethiopia. In 1993, the then President of Ethiopia (now Prime Minister), Meles Zenawi, and the Egyptian President, Hosni Mubarak, signed a framework agreement to cooperate on the utilization of waters in the Nile River Basin System. Tafesse (2001) suggests that this agreement only reiterated the '*no harm principle*' as an assurance that Ethiopia will not engage in water works that would harm Egypt. It is worth noting that this agreement is non-binding on both parties. President Meles at that time did however state the Ethiopian government's position with regard to the issue of utilization of waters of the Nile River Basin System. Tafesse quotes President Meles as saying that "the status quo with respect to the Nile cannot be maintained indefinitely'" (2001, 80). It can be recalled from Chapter 2 that the UN passed a Convention on the Law of the Non-Navigational Uses of International Watercourses to mediate between claims of 'equitable and reasonable utilization' and that of 'no significant harm'. According to Wiebe, as of 2001 "none of the Nile Basin countries were parties to the Convention, but nearly all participated in the draft discussions, suggesting willingness to consider Convention principles in a regional agreement" (2001, 749). In February 1999, Nile riparian countries, in an effort to address the issue of equitable use of waters in the Nile River Basin System, jointly established the Nile Basin Initiative (NBI) to develop the water resources in the basin through a cooperative framework. Tafesse (2001) suggests that Ethiopia only joined the NBI because the issue of '*water entitlement*' was made part of the agenda. NBI member countries have since been working through this framework towards establishing a new water regime in the Nile River Basin System.

The establishment of the NBI has yet to address some fundamental issues behind age-old Nile hydropolitics. According to Dr. Yacob[5], a political scientist specializing in hydropolitics, contemporary Nile hydropolitics is centered on "how to establish a legal institutional framework and how to apply such principles as equitable utilization or prior utilization and how to apportion benefits or returns, physical water resources or....benefits that result from the utilization of water resources". The legal institution that

[5] Dr. Yacob Arsano (Ethiopian Political Scientist specializing in hydropolitics) interviewed on 2 January 2007, Addis Ababa.

Dr. Yacob is referring to here is the yet to be established Nile Basin Commission (NBC), which is an institutional framework or water regime that would be a legally recognized institution in every NBI member country, maybe with the exception of Eritrea because it currently has an observer's status.

<u>Map 2: The Nile River Basin System</u>



Source: World Bank NBI webpage
http://siteresources.worldbank.org/INTAFRNILEBASINI/About%20Us/21082459/Nile_River_Basin.htm (Accessed 25 March 2008)

It is important to note that the NBI is a temporary arrangement for the implementation of joint programs until NBI members establish the NBC (Wiebe 2001). With the support of the UNDP, a panel of experts comprising of three members from each NBI member country was formed in 1997 to jointly work "to establish a set of commonly agreed legal and institutional principles to cooperatively manage the Nile waters" (Flintan and Tamrat 2002:304). Although this panel of experts has so far been able to agree on some provisions, the fundamental issues of what to do with the 1959 bilateral agreement between Egypt and Sudan on '*Full Utilization of the Nile Waters*' and the relationship between the principles of '*equitable and reasonable use*' and '*no significant harm*' have remained unresolved (*ibid*). Charles[6] [pseudo] explained that the main stumbling block to the NBI is the debate among member countries over the issue of how to or whether or not to factor in previous Nile agreements-the 1959 agreement between Egypt and Sudan on 'Full Utilization of the Nile Waters'-which essentially arbitrarily divided the Nile waters between Egypt and Sudan. According to Flintan and Tamrat, "Egypt and Sudan still claim that any water use in upstream countries should not affect existing water allocation agreements" (2002, 299). Brunnee and Toope quote Osman el Tom, the Vice-Chairman of Sudan's Water Resources Authority, as saying that disagreements among NBI member countries remained "mainly on the principle of prior notification of planned measures and the state of the existing agreements under the new cooperative framework" (2002, 139). The issue of prior notification mentioned here means that NBI member countries would have to inform other riparians in advance before carrying out any planned projects in the Nile River Basin System. George[7] [pseudo] said that another bottleneck to the establishment of the NBC is Egypt's argument that Ethiopia should not use the runoff water from rainfall in its territory because the country already benefits from the infiltration and evapotranspiration of abundant rainwater. He expounded that this is part of Egypt's and Sudan's claim of prior utilization where they argue that since they have already made use of water in the Nile River Basin System before the other riparian countries, they require more water and also because they have more built capacity to

[6] Mr. Charles [pseudo] (Hydrologist/irrigation engineer with an international organization) interviewed on 21 February 2007, Addis Ababa.
[7] Mr. George [pseudo] (Freelance Consultant in Water Resource Engineering) interviewed on 8 February 2007, Addis Ababa.

utilize the Nile waters. Charles [pseudo] said that NBI is providing a means for the member countries to cooperate and jointly develop the Nile waters for equal benefit in what he referred to as a '*win-win situation*'. George [pseudo] however warned that Egypt has used cooperative frameworks like NBI in the past as a tactic of presenting a façade to donors like the World Bank that it is cooperating with other riparian countries with the sole aim of attracting funding for its own water projects. Mohammed states that "Egyptian's favor wide ranging regional schemes, that downplay the importance of water sharing and want to put in place integrated development projects on such issues as environmental concerns, tourism, etc" (2004, n.p.). This suggests that Egypt is employing hegemonic stability theory where as the powerful hegemon it is using a cooperative framework to pressure weaker riparians into accepting the status quo hence maintaining stability. Cascao (2005) argues that the control of the Nile River Basin System by Egypt-the hegemon-is mainly determined by power asymmetries among Nile riparian countries which are the reason behind the absence of water wars. According to Zeitoun and Warner (2006), the lack of binding international law on trans-boundary water use serves to maintain the status quo of these power asymmetries. These asymmetries are best explained through the concept of hydro-hegemony that was discussed in the preceding chapter (Zeitoun and Warner 2006; Cascao 2005). Cascao suggests that Ethiopia employ a non-violent counter-hegemony strategy to challenge Egypt's hegemonic position and legitimacy as the almost exclusive beneficiary of the Nile River Basin System. She argues that:

> Ethiopia's goal should not be a unilateral control over the water resources within its territory, but a shared control of the common resources – that means to challenge and limit the hegemonic (almost unilateral) control operating in the Nile Basin and simultaneously to propose a new and constructive water regime, emphasizing the win-win results (upstream and downstream) of an appropriate and equitable trans-boundary water management. (2005, n.p.)

As mentioned above NBI member countries are currently in negotiations that have the objective of establishing a new water regime but age-old Nile hydropolitics seem to be impeding progress.

One important factor which has limited upstream countries like Ethiopia from utilizing and developing the waters of the Nile River Basin System within their territories is the lack of finances to build the necessary water infrastructure. Allan agrees, arguing that "the eight upstream states of the Nile Basin have not been able to mobilize resources to develop their water resources, neither from internal resources nor from the international community" (1999, 4). He further expounds that "the upstream riparians have water but they do not have either the economic, the technical, institutional or the social adaptive capacity to utilize their Nile waters" (*ibid*, 4). This refers to the issue of the ability of the current Ethiopian government to implement its water policies and strategies to optimize water use that is discussed in the following section. Allan (1999) argues that low economic and political capacity of upstream states in the Nile River Basin System has guaranteed water security for the downstream countries. Furthermore, International Financial Institutions (IFIs) like the World Bank have opted not to provide financial assistance for water works on the Nile River Basin System unless it is part of a cooperative agreement reached among the riparian countries by reasoning that doing so carries a risk of conflict (Allan 1999). Therefore the only alternative for upstream countries like Ethiopia is to enter into a cooperative framework with other riparian countries to equitably and reasonably utilize shared waters in order to qualify for financial assistance for water infrastructure and other water-related projects. On the other hand, Ethiopia could resort to a unilateral approach and seek alternative sources of funding from local and/or international sources.

It seems that eleven years on, the NBI is reaching its make or break point where the failure to reach a consensus towards the establishment of the NBC could spell the end of cooperation among the Nile riparian countries which would lead to countries taking unilateral action in terms of water utilization and development. Flintan and Tamrat argue that "growing demands for Nile waters by the different basin states has fuelled competing demands, leading to tension and potential conflicts should an agreement [legal] not be reached" (2002, 295). In sum, the success or failure of the NBI and the establishment of the NBC fundamentally rests on how the riparian countries address the bottleneck that is the 1959 agreement between Egypt and Sudan on '*Full Utilization of the Nile Waters*' that is currently impeding negotiations.

The right to equitable and reasonable utilization of water in the Nile River Basin System: A second-order resource

The ability of Ethiopia to exercise its right to equitable and reasonable utilization of waters in the Nile River Basin System is a second-order resource that it needs in order to optimize water use within its territory. If Ethiopia cannot exercise this right then it cannot design viable national development programs to alleviate the impact of second-order scarcity. Under such circumstances the *status quo* of exclusive utilization of the waters of the Nile River Basin System by the downstream states of Egypt and Sudan is preserved. The current effort towards establishing a cooperative framework is being undertaken through the NBI and it has incorporated some of the principles set out in the UN Convention on the Law of the Non-Navigational Uses of International Watercourses. According to Brunnee and Toope, "the language of the NBI appears to follow the lead of the Watercourses Convention in drawing together the equitable utilization and no harm principles so as to neutralize both principles" (2002, 152). Even though the UN Convention contains useful guidelines to establishing a water regime for the Nile River Basin system some have stressed the importance for decision makers to take the local context into account. As Wiebe argues, "regional mechanisms have the ability to more efficiently and speedily aid troubled areas than general international instruments, because they can be written precisely for that situation" (2001, 750). Abate stresses that "solid regional cooperation can only be built when co-basin states realize their reciprocal and equitable entitlement to the Nile resources" (1994, 168). In sum, the case of the Nile River Basin System illustrates the cause-effect relationship between the right to equitable and reasonable utilization of trans-boundary waters and second-order scarcity.

3.4 Second-order scarcity and the current national government's ability to implement its policies and strategies to optimize water use

This section will discuss the issues and interrelationships between second order scarcity and the current national government's ability to implement its policies and strategies to optimize water use. The first sub-section will discuss Ethiopia's water

governance framework and the current decentralization of water management in the country. This will be followed by a discussion of stakeholder participation in water development and management in Ethiopia and more specifically in the Gojjam/ANRS area. The third sub-section will discuss how poor water governance in Ethiopia is impeding the current national government's ability to implement policies and strategies to optimize water use.

The water governance framework

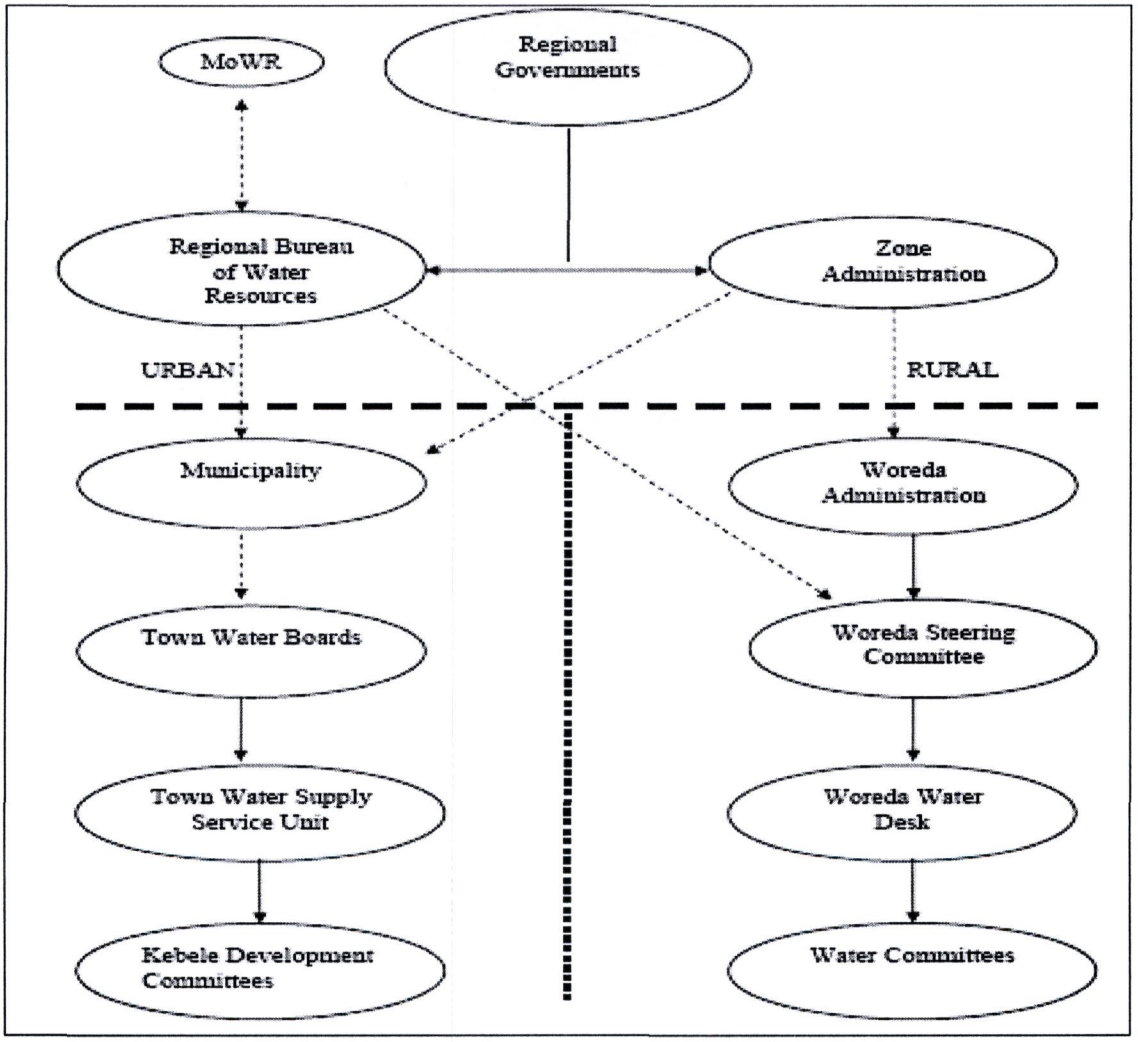
In the early 1990s, the current Ethiopian Peoples' Revolutionary Democratic Front (EPRDF)-led government, upon coming to power in 1991, adopted a policy of decentralization and regionalization ostensibly to shift governance and decision making down to the grassroots level. The Ministry of Finance and Economic Development (MOFED) states that government's aim is to "deepen and strengthen the decentralization process to shift decision-making closer to the grassroots population, to improve responsiveness and service delivery" (2002, i). It is worth noting that the current EPRDF-led government adopted a federal system of government which professes autonomy of regional governments that are divided according to ethnic groupings. For example ANRS is the regional state of the Amhara ethnic group and they have their own regional government. With regards to the water sector Abate states that:

> The institutional framework for the management of water resources [in Ethiopia] has been in a state of evolution and adjustment since the late 1950s. The organisations so created and set up have been changing to suit development conditions prevailing at any given time (1994, 114).

Figure 2 below illustrates the institutional structure of water governance in Ethiopia for urban and rural areas. For the purpose of fostering partnerships among different stakeholders engaged in the water sector the government introduced water committees, water boards and water users associations as can be seen in Figure 2. The establishment of the Ministry of Water Resources (MOWR) itself in 1994 is the most significant endeavour in Ethiopian water development history in that it is an attempt to coordinate and harmonize water sector activities. The government issued a Water Resources Management Proclamation in 2000 that gives the MOWR the legal jurisdiction to allocate

and distribute water to all regional states in the country (UNESCO 2004). It is worth noting that this proclamation is a water law that governs water use/ownership for both urban and rural areas therefore there is no specific water law governing water use in rural areas like Gojjam or the broader ANRS.

Figure 2: Institutional Structure for Water Governance in Ethiopia



Source: UNESCO (2004).

The fiscal decentralization provides regional governments like that of ANRS with block grants but according to UNDP and the United Nations Capital Development Fund

(UNCDF) (2003), the federal government collects more than 80 per cent of total tax revenue. In support of this, Oertel makes the point that:

> Despite the considerable amount of powers and responsibilities assigned to regional government structures by the Constitution, they tend to be highly dependent on federal financial transfers to fulfill their duties, which in turn considerably restricts their autonomy from the central government (2004, 17).

The level of dependence on central subsidies/transfers by ANRS in 1999/2000 was 78.1 per cent (*ibid*). According to Van der Loop, "the regional governments [e.g. ANRS government] give conditional grants to Woredas [districts]" and "there is no discretion for local governments to change allocations between sectors according to local priorities, and this undermines autonomous local government" (2004, 100). It is for these reasons that some say that governance in Ethiopia is actually a centralized top-down system as the central government largely controls the purse strings for budget allocation to regions (Flintan and Tamrat 2002).

According to the government's Water Resources Management Policy (WRMP), decentralization in the water sector includes the establishment of water institutions at both regional and Woreda (district) levels (MOWR 2000). These institutions are mandated (at least in theory) to identify, plan and implement water development projects in their respective jurisdictions. Flintan and Tamrat argue that "many regional governments are weak, inexperienced and lack the capacity and human and financial resources to carry out their responsibilities" (2002, 285). Mekonnen[8], a water resource specialist, supports this position noting that institutional capacity in Ethiopia's water sector is very limited and there is also limited research in the sector. This suggests that the constraint of institutional capacity is one of the major bottlenecks to innovation and development in the water sector. Wesene[9], a community participation expert in the ANRS Water Resources Development Bureau, said that she believes the human resource capacity in the water sector is inadequate and that it is exacerbated by constant institutional restructuring in water institutions which forces skilled manpower to leave the

[8]Mr. Mekonnen Loulseged (Water Resource Specialist) interviewed on 29 December 2006, Addis Ababa.
[9] Ms. Wesene Lemma (Community Participation Expert with the Amhara National Regional State (ANRS) Water Resource Development Bureau) interviewed on 18 January 2007, Addis Ababa.

institutions for work opportunities elsewhere. In a report prepared for the United Nations Economic Commission for Africa (UNECA) on governance in Ethiopia Oertel states that:

> A further problem appears to be the shortage of managerial capacity at the local level, as administrators heading the Woredas rarely have any formal education beyond 12th grade, for instance. Accordingly, nearly three-quarters of the experts interviewed stated that local government administrations have only a very limited capacity to manage the decentralized responsibilities effectively" (2004, 18).

This report gave Ethiopia a low ranking in terms of overall governance when compared with other African countries.

Charles [pseudo], a hydrologist/irrigation engineer with an international organization, said that there is a low level of water management in ANRS and that there is little knowledge of the hydrology of Lake Tana-located in the Gojjam area-which could be a source of water for irrigation or other purposes if such information was available. He also said that lack of technical and institutional capacity in ANRS can result in uninformed decisions being made on water resources development in the Lake Tana area which can have a negative impact on the Lake's environment and ecology. Teshome said that there is a problem of water harvesting technology selection in ANRS because a lot of water harvesting structures have been constructed but have not benefited the farmers up to now and this is principally due to wrong technology selection. This lack of human resource and institutional capacity suggests that rural communities have not been able to rely on their local government to address their water and sanitation needs.

The decentralization process opens up a number of political complexities for water governance. In Ethiopia, it has complicated relations with donors because for a donor agency to contribute to a development project in a certain Woreda (district) it now has to communicate and coordinate directly with the autonomous (at least in theory) authorities of that area. In this scenario, access to information and communication is problematic as telecommunications with and accessing many areas is still physically and structurally difficult. Harrison (2002) argues that decentralization in the Ethiopian context has been used in the past to expand the bureaucracy so as to enforce political power and protect against internal uprising. MOFED opposes this position, noting that "a strong state will significantly enhance the prospect of ADLI [Agricultural Development Led

Industrialization] in Ethiopia" (2002, 41). It is important to mention here that ADLI is a long term development program that envisions using agricultural productivity to develop Ethiopia's industrial sector and it is the driving force behind the government's poverty reduction strategies (e.g. PASDEP). The World Bank argues that "sometimes decentralization has simply shed responsibilities from the central government—not an example of good decentralization" (2001, 86). In support of this, Flintan and Tamrat make the point that:

> Although the establishment of commissions responsible for water, agriculture and environmental development and rehabilitation at the regional levels has helped to overcome organizational difficulties, many regional governments lack the capacity to develop water resources or to mediate between the different interests and parties involved" (2002, 270).

It must be said that decentralization in theory does provide the opportunity of establishing local governments which are closer to the people, with authority and autonomy to formulate and implement development plans based on the needs at the grassroots level. Yet these structures will fail to deliver unless they have the required capacity/know-how, manpower and finances as well as full autonomy from the federal government.

With respect to coordination in water governance, Mekonnen and Adane[10], the head of Water Action-a local NGO working in the water sector-both said that it is a constraint in Ethiopia's water sector because the different actors or stakeholders do not coordinate with each other. In support of this, Charles [pseudo] made the point that there is what he called '*vertical integration*' instead of '*horizontal integration*' between groups engaged in Ethiopia's water sector because they are all working within their own mandates and this will for example adversely affect the implementation of PASDEP that aims to irrigate 471,000 hectares of land (MOFED 2005) in 5 years time. Flintan and Tamrat argue that "lower levels of the institutional hierarchy [in Ethiopia's water sector], such as the zone, *wereda* [Woreda] and *kebele* levels are incorporated in decision making to an even more limited degree" (2002, 309). Gulilat[11], a Senior Economic Advisor to the

[10] Mr. Adane Kassa (Head of Water Action-local Nongovernmental Organization) interviewed on 28 December 2006, Addis Ababa.
[11] Mr. Gulilat Birhane (Senior Economic Advisor to the Minister of Water Resources) interviewed on 29 December 2006, Addis Ababa.

Minister of Water Resources, said that communication between different institutions in the water governance hierarchy is inadequate and he attributed this to a lack of capacity at the grassroots level.

With regards to budget allocation to the water sector, Gulilat said that "we [Ethiopians] have never in our history put about 1 per cent of the Gross Domestic Product [GDP] for the water sector" and "if you look at the history of the country, we have invested about 30 per cent of our GDP on defense". This broadly corroborates the findings of UNDP (2006) that the Ethiopian government's spending on defense was 10 times more than that of the water sector. Teshome on his part stated that "studies conducted by the World Bank say that 38 per cent of the Ethiopian economy is dependant on hydro-economy so anything that affects the water sector automatically affects the macro economy of Ethiopia". This means that low levels of utilization and development of water resources in Ethiopia can also be attributed to a lack of political will.

Stakeholder Participation

The MOWR states that both the WRMP (Water Resources Management Policy) and the water sector management strategy are aimed at "fostering stakeholder participation and empowerment, especially of women, for sustainable use and management of water resources" (2002, 14). Rahmato disagrees, arguing that:

> The approach of government agents in the rural areas has invariably been top-down. Peasants have been given to understand that they are in no position to run development projects and that they do not have the technical expertise to manage them, and therefore their participation is not needed (1999, 26).

Flintan and Tamrat agree, arguing that "community participation in water development and decision making [in Ethiopia] is virtually non-existent" (2002, 309). Both Dr. Yacob and Gulilat seemed to be in agreement that the Ethiopian government has created a space for some stakeholders to participate in water governance. The latter said that there was wide consultation and engagement of non-state actors during the formulation of the WRMP, the water sector management strategy and the Water Sector Development Programme (WSDP). Adane disagrees, arguing that "lack of involvement of NGOs [Nongovernmental Organizations], the private sector and civil society in general in the

planning and policy making processes of water resources management in Ethiopia is a constraint". He further said that the NGO sector in Ethiopia contributes about one-third of the budget of the water sector but they receive little recognition or support from the government. As Adane is the head of a consultative group of NGOs working in the water sector, his comments carry more weight on this issue and this means that stakeholder participation in Ethiopia leaves a lot to be desired. Fetenu[12], the head of New Development Perspectives Consultancy (a local consultancy firm), and George [pseudo] both discussed the government's participatory approach which professes to promote equal participation of women and men in the water sector as key stakeholders. Fetenu said that "this is more rhetoric than practical" and George [pseudo] explained that though there is an article in the water policy that states that the government has adopted a participatory approach in the sector, implementation remains weak. In support of this, Mekonnen suggests that the government review the way in which it engages non-state actors in the water sector. It can therefore be said that though the government has included stakeholder participation into its policy documents, the situation on the ground indicates that water governance remains to be a strictly government affair.

With regards to participation of women and girls in water governance, Wesene, Fetenu and Getenet[13], a peasant farmer in Western Gojjam, spoke of the water related burden on women and girls. Wesene said that "drinking water is a woman's problem because management of the home is run on the shoulders of women therefore they [women in general] travel long distances to fetch water for family consumption...and for other purposes". Speaking on the situation in his community within the Western area of Gojjam, Getenet said that "sometimes the men can carry water on a jerry can if it [the water source] is near enough but if it is a long distance then the woman brings it". This suggests that it is a cultural norm that the burden of fetching water from water points is mainly the responsibility of women and girls.

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[12] Ms. Fetenu Bekele (Head of New Development Perspectives Consultancy) interviewed on 14 March 2007, Addis Ababa.

[13] Mr. Getenet Tenagne (Farmer in the West Gojjam zone of ANRS) interviewed on 17 January 2007, Bahir Dar.

An Ethiopian woman in a rural area fetching water from a water point (Photo: A. Hoel, World Bank)

In support of this, Fetenu makes the point that "if we go down to the micro level, people [women and girls] are spending so many hours walking to fetch water everyday and human labor is being taken away from productivity in the agricultural sector or elsewhere". According to Wesene, Ethiopia's patriarchal society, particularly in Gojjam, has set cultural and traditional barriers that forbid women from participating in awareness raising activities unless they receive consent from their husbands or family. Wesene said that this makes community participation promoters' work very difficult and it means that they have to work on raising awareness of both men and women in order to reach the latter. This suggests that women and girls are difficult to reach for awareness raising campaigns. It also suggests that women, who have knowledge of some uses of water and its significance to their families' welfare, are not empowered to participate in water governance processes.

Mekonnen, Teshome, Wesene and Gulilat were all of the opinion that there is limited stakeholder participation in Gojjam and ANRS in general. Mekonnen stated that "as far as the government is concerned it tries to involve major stakeholders but may not involve all relevant stakeholders". On the other hand, Teshome said that "there is no direct representation of communities". Dr. Brhane[14], the head of a USAID funded project in ANRS, mentioned that farmers are not involved in the conceptual stage of water projects but play a major role in the implementation phase where their labor is required. These views suggest that peasants in Gojjam and in ANRS in general are not considered as stakeholders but rather as passive actors who are expected to accept what is decided for them by either regional or federal level water bodies.

The ability of the current national government to implement policies and strategies to optimize water use: A second-order resource

The above sub-sections have illustrated that water governance in contemporary Ethiopia is characterized by: inadequate human resource and institutional capacity, lack of political will, poor coordination among stakeholders and low levels of stakeholder participation. All of these issues are barometers of the current national government's ability to implement policies and strategies to optimize water use which as mentioned in Chapter 2 is a second-order resource. These failures in water governance point to the apparent inability of the current national government to implement policies and strategies to optimize water use which in turn is perpetuating second-order scarcity not only in Gojjam but in Ethiopia as a whole. Waterbury and Whittington warn that "failure to develop its water resources may leave Ethiopia with increasingly complex political and economic problems, as population growth, soil erosion, and deforestation contribute to a downward spiral of environmental degradation, decreasing food supplies, and famine" (1998, 161). Countries with an abundance of water resources but that are unable to harness it because of a lack of social or second-order resources experience what Turton (2003) refers to as structurally-induced relative water scarcity (SIRWS). He suggests that:

[14] Dr. Brhane Gebrekidan (Head of the Amhara Micro-Enterprise development, Agricultural Research, Extension and Watershed Management (AMAREW) project) interviewed by M. Tiruneh 19 January 2007, Bahir Dar.

> SIRWS countries are relatively well-endowed with water, but lack institutional capacity and have other problems that render them unable to mobilize that water (via dams and related hydraulic infrastructure) and reticulate it to the end-user…a logical outcome of this condition [SIRWS] would be low economic activity, poor public health, and a general low level of infrastructural development" (Turton and Warner 2002: 54)

Given Ethiopia's potentially abundant water resources, and the high level of second-order resource scarcity as well as its basic social statistics it can be categorized as a SIRWS country. On the issue of decentralization in Ethiopia, Van der Loop argues that "the federal [national] government and in particular the regional states have yet to put in place an enabling institutional framework and a legal basis for the proper operation of local governments" (2002, 98). With regards to the role of the MOWR, Flintan and Tamrat argue that "the organizational set up is sorely lacking in capacity and efficiency, and as a result the Ministry has little power to implement a sound water policy (2002, 308). On the issue of implementation of the water policy, Adane said that the lack of reinforcement guidelines for the policy is impeding its implementation. Dr. Yacob supported this position, by saying that the water policy has to be developed at the operational level. Both Dr. Yacob and Wodaje[15], the head of a local energy and mining consultancy firm, were in agreement that the inadequate human resource and institutional capacity in the water sector is due to a lack of capital to finance the human resource demand. This would require political will on the part of the government to increase budget allocation to the water sector. In addition to this, both Teshome and Muluken[16], an irrigation water management specialist in ANRS, said that capacity building is needed in the area of data collection to have accurate information on the amount of water available in various areas and this would require training of skilled manpower to carry out such activities as well. On the issue of stakeholder participation, Wesene argued that water projects cannot be sustainable without community participation and that there needs to be an increase in the number of well trained and skilled community participation promoters not only in Gojjam

[15] Mr. Wodaje Abebe (Head, Local energy and mining consultancy firm) interviewed on 7 February 2007, Addis Ababa.
[16] Mr. Muluken Lakachew Alemu (Irrigation Water Management Specialist) interviewed on 17 January 2007, Bahir Dar.

but for the country as a whole. This again points back to the issue of inadequate human resource capacity. In sum, poor water governance in Ethiopia is impeding the ability of the current national government to implement policies and strategies to optimize water use and hence exacerbating second-order scarcity.

3.5 Second-order scarcity and the socio-cultural practice of regular fasting as prescribed by Canon Law of the Ethiopian Orthodox Church

The socio-cultural practice of regular fasting by followers of the EOC relates to second-order scarcity in that it reduces peasant farmers' capacity to work hence reducing their capacity to make optimal use of available water resources. This section will discuss the issues and interrelationships between second order scarcity and the socio-cultural practice of regular fasting as prescribed by Canon Law of the Ethiopian Orthodox Church (EOC). The first sub-section will provide some background information on the EOC and the socio-cultural practice of regular fasting by its followers. This will be followed by a brief discussion of agricultural productions methods in Gojjam to illustrate how human capacity for work in the context of rural Ethiopia is a second-order resource. The third sub-section will discuss how the socio-cultural practice of regular fasting by followers of the EOC erodes human capacity to work and thus exacerbates second-order scarcity.

The Ethiopian Orthodox Church and the socio-cultural practice of regular fasting

The Ethiopian Orthodox Church (EOC) took hold in Ethiopia in the 4th Century A.D. and has been the most widely followed religion in most parts of Ethiopia including Gojjam. The Church has about 51 per cent of the Ethiopian population-about 39 million people-as its followers, most of who predominantly come from Northern areas, most notably ANRS and the Tigray National Regional State (Gelaw 2007). One important rule set in the Canon Law of the EOC is that of observing fasting and holydays. Knutsson and Selinus quote J. Ludolf, a historian, who wrote in the middle of the 17th century that "nowhere in the Christian world is fasting so strictly observed as in Ethiopia" (1970, 958). Battell quotes the Fethe Negast (Amharic for Justice of the Kings), which was enforced during the era of Ethiopia's last Imperial government (1930-1974 with a break from 1936-1941 when the country was under Italian occupation), as saying that:

> Fasting is abstinence from food and is observed by man at certain times determined by law to obtain forgiveness of sins and much reward, obeying thus the One who fixed the Law. Fasting also serves to weaken the force of concupiscence so that the body may obey the rational soul (2005, 7).

The actual number of fasting days as prescribed by Canon Law of the EOC is large. Nevertheless, the number of days that EOC followers are expected to observe is contested. Dr. Mikre[17], a theologian and practicing priest, said that at present out of a total of about 160 fasting days it is only about 80 days of the year that the EOC expects its followers to fast and that other fasting days like the fasting in relation to Apostles' and Prophets' days only apply to clergy. He argues that because of the conservativeness of people in areas like ANRS (including Gojjam), people there observe the normal fasting days as well as those that are only expected of clergy. Tiruneh[18], a public health consultant, opposes Dr. Mikre's position, noting that followers of the EOC fast for about half of the year. He added that every Wednesday and Friday of the year, constituting about 104 days of the year, are fasting days except during the two months following Easter which are waved off. Aside from Wednesday and Friday fasts, Tiruneh states that:

> There are Easter related fasting days which last between 50 to 55 days of the year and everybody must fast then and in August there is a 16 day fast that all Christians above the age of 7 are supposed to fast. Besides these days, there are fasting days between September and October and almost the whole of December.

Knutsson and Selinus (1970) support Tiruneh's position, noting that the fasting period for priests, monks and devout followers can reach about 220 days. Getenet said, "we can say that the Ethiopian farmer is passing most of his life fasting. We fast almost all year round".

There are two kinds of fasting rules according to Canon Law of the EOC. One rule states that followers should not consume animal or poultry products even when breaking the fast during a fasting period or day. According to Knutsson and Selinus, "even touching the forbidden food or inhaling its smell is considered as a break in the fasting rules and must be followed by request for absolution by the church" (1970, 957). The

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[17] Dr. Mikre Selassie (Translation Consultant for the United Bible Society in Africa) interviewed on 8 January 2007, Addis Ababa.

[18] Mr. Tiruneh Sinnshaw (Public Health Consultant) interviewed on 5 January 2007, Addis Ababa.

second fasting rule regards eating times which can differ according to who is asked. Dr. Mikre explained that on a fasting day, followers of the EOC are only expected to stay without food until midday (between dinner and noon the following day excluding breakfast). Both Tiruneh and Knutsson and Selinus (1970) disagree, arguing that followers are expected not to eat for some 18 hours at a stretch (between dinner the previous night and past lunch time the following fasting day). Getenet said that during fasting periods like those in August, followers of the EOC in his area (Western Gojjam) are expected to stay without food from 21:00 hours the previous evening to 17:00 hours the following day, which constitutes 20 hours of fasting.

The fasting rules of the EOC are strict and hard physical labor or work cannot be used as grounds for exemption (Knutsson and Selinus 1970). Getenet said that there is greater social pressure to fast in rural areas like Gojjam as compared to urban areas. Those exempt from fasting include children under the ages of 7-8, pregnant or lactating women as well as people with severe illnesses or who are in too weak a position to do so. Tiruneh said, "as a child I remember that I had to start fasting from the age of seven every Wednesday and Friday except the two months after Easter". Getenet said that nowadays girls in the countryside start fasting when they are seven years old while boys start when they are ten and he explained that this three year difference is because girls could be exempt from fasting when they are pregnant and when they breast feed. Children between the ages of 7-12 are expected to fast but do not have to wait until 15:00 hours to eat their first meal of the day (*ibid*). It is likely that the requirement of children to start fasting at such an early age could be negatively affecting or hampering the growth of their bodies and their mental development as well. Knutsson and Selinus argue that "knowledge about the rights of exemption is often not widespread" and "even if exemption is achieved, the whole food market during fasting periods is geared to the fasting pattern which makes it difficult, not to say impossible, to get animal protein" (1970, 957). In addition to this, followers of the EOC cannot buy meat that has been slaughtered by another denomination like Muslims as it is believed to be contaminated. Therefore it is very difficult for those exempt groups to access non-fasting foods during the fasting season.

Devout followers of the EOC are expected by their religious leaders not to plough, mow, and use an axe or any other farming implement on Saints' days. Knutsson and

Selinus make the point that "names of the days that are called after the Saints, the monthly Saint feast, the big Church feasts, and fasting periods have created a ritual calendar with a detailed indication and division of time that serves also the needs of a secular time reckoning" (1970, 967). Tiruneh said that the Saints' days that followers of the EOC have to observe are especially those which fall on the Ethiopian 5th, 7th, 12th, 16th, 19th, 21st, 27th, and 29th days of any of the 12 months of the year as well as on all Saturdays and Sundays. This means that on these days of the month, followers are restricted from productive agricultural work (*ibid)*. Ethiopia's main rainy (food crop planting) season is between June and September hence the busiest months for farming and planting agricultural work is from May to September. It can therefore be said that the many holydays and the regular fasting of followers of the EOC restrict them from working on their land efficiently.

While reasoning why he believes the socio-cultural practice of regular fasting by followers of the EOC are a constraint to water utilization and development, Tiruneh, a modern follower of the EOC, said that "the faithful have been made to believe that what they do to prepare themselves for heaven is more important than what they do for improving their livelihood on earth". He added that the socio-cultural practice of regular fasting and observing non-working days by followers of the EOC have become a culture which is perpetuating low agricultural productivity and low development in general. Getenet said that "productivity [agricultural] is reduced because of our observance of religious holydays. If a farmer is seen to be working (ploughing, cutting etc.) on a religious holyday, the priest challenges him on the spot and warns him that the farmer can bring about God's wrath on the country in many forms [including crop destroying hail stones] and threatens to excommunicate the farmer!". It can therefore be said that the socio-cultural practice of regular fasting by followers of the EOC are likely to have negative effects on agricultural productivity of peasant farmers thus reducing their capacity to make optimal use of available water resources as well as their other farming assets such as land, draught animals and human resources. According to Gelaw, a theologian who has served in the EOC, he would "prefer to see most of the holydays (including Saturday) simply remembered with no cessation of work" (2007, 27). Dr. Mikre conceded that the socio-cultural practice of regular fasting and the observance of

holydays have some effect on low agricultural productivity but he said that the EOC is in his words "not to blame for this".

With regards to religious practices of followers of Orthodox Christian Churches in other countries, Dr. Mikre said that the Greek Orthodox Church has reduced the fasting days and now only requires followers to fast on the first and last weeks of lent. He also added that during the first week of lent, followers of the Greek Orthodox Church are allowed to eat cheese and eggs but not meat, unlike in Ethiopia where the EOC does not allow followers to eat any animal or poultry product. Dr. Mikre also said that the Egyptian Orthodox Church has become less strict with fasting requirements and Saints' day observances which are now only observed once a year unlike in Ethiopia where they are observed every month. As the majority of Ethiopia's population-about 85 per cent-is engaged in agricultural work it is important to also consider what their agricultural production methods are to understand how regular fasting affects their livelihoods.

Agricultural Production Methods

Ethiopian peasant farmers farm using traditional methods (ox-drawn ploughing or hand digging) that have been in use for centuries while modern practices like mechanized farming, irrigation, rainwater harvesting and conservation as well as reforestation are widely unknown to them in many parts of the country, especially in Gojjam (Ethiopian Economic Association (EEA) 2000). Peasant farming is concentrated on producing staple food crops like Teff [the staple crop of the country], Dagusa [rye], Maize, Wheat and Barley which have been traditional agricultural products for centuries (*ibid).* It is worth noting that growing Teff requires peasant farmers to plow the land nine times and is very labor intensive. After the labor and time consuming effort of producing the crop, they sell any surplus they may have for relatively low prices on the local market that does not factor in their physical labor and repeated working of the land that gradually reduces its fertility. Peasant farmers seldom grow fruits and vegetables thus perpetuating their low nutritional status (Chanyalew 2005). It is therefore common place to see people with skinny limbs, dirty clothing and generally stunted physical statures among the young and old alike. The poverty of peasant families can clearly be seen by their largely stunted and

thin physical stature and by their small thatch-roofed and mud-walled dwellings. This is paradoxical in a country with good land and water resources.

A peasant farmer in Gojjam carrying traditional farming implements to his plot (Photo: Tiruneh Sinnshaw, 1999)

Second-order scarcity and the socio-cultural practice of regular fasting

Biology and physiology on one hand and human need for energy and nutrients indicate that regular fasting physically weakens the peasant farmer who is engaged in subsistence farming (energy consuming work) that is at the mercy of variable rainfall. In support of this Bellete makes the point that "fasting days and the excessive number of non-working days spent in a month for the commemoration of Saints and other holydays have definitive repercussions on the nutritional status of the community, particularly in rural Ethiopia" (2005, 30). Both Tiruneh and Getenet said that fasting weakens farmers' physical and mental ability to work and affects their productivity while Dr. Mikre did not share this view and said that followers of the EOC only miss breakfast on a fasting day therefore this cannot have such a debilitating effect on the farmer.

What then does the socio-cultural practice of regular fasting as prescribed by Canon Law of the EOC have to do with second-order scarcity? The traditional agricultural production methods in Ethiopia are physically demanding on the human body and require physical strength and stamina. Agricultural work in this context means the utilization of land and water resources for productive purposes using crude and outdated farming tools. Thus, human capacity for work in the context of rural Ethiopia is a second-order resource fundamental to the optimal use of available land and water resources. It can therefore be said that the socio-cultural practice of regular fasting by followers of the EOC erodes the human capacity of peasant farmers to work thereby adversely influencing agricultural productivity and their livelihood. Regular fasting erodes human capacity for work as there is no consumption of vital nutrients like protein required for the type of physical energy needed to engage in such activities. Knutsson and Selinus support this position, noting that "for older children and adults the long hours of hard work on an empty stomach understandably mean a great hardship" (1970, 965). Tiruneh said that the religious practices of regular fasting and Saints' day observances of followers of the EOC greatly reduces the time that families have for farming activities such as ploughing, weeding, harvesting and cutting. Speaking about his experience growing up in Western Gojjam, Getenet said that after the age of 18 one is required to have what in Amharic is called '*yenefse abat*' which if directly translated to English means the father of the soul or a religious father. Getenet said:

> One's religious father monitors and controls your religious practices including fasting and observance of religious holydays. He can expose his religious son in front of the congregation on a Sunday if he has violated the observance of holydays stating that he has not failed to teach the son on how he should practice his religion. The congregation can then isolate the farmer for having violated the instructions of the religious father. He [the individual] could be isolated from social life in the area.

Thus if a farmer is seen working on the land on a Saints' day he could be isolated from his Church group (society) which seldom happens for fear of bringing a bad omen upon society. Dr. Mikre said that the EOC synod has recently reduced the number of holydays that have to be observed to just 4 in a month except Sundays and Saturdays. He

recommended that in order to get the message to people at the grassroots level in Gojjam-that they are not required to fast on all fasting periods and do not have to observe every holyday or Saints' day observance-the clergy should write and distribute booklets with this information. Similarly, Tiruneh said that the EOC should make the Canon Law more accessible to people in Gojjam. He however stressed that it is the government's mandate to ensure that literacy rates in the area increase so that people can get this message. Dr. Mikre recommended that the government embark on a literacy campaign to insure that people at the grassroots level have what he called '*functional literacy*' which he explained means constantly providing people with literature to read instead of a one off literacy drive which can make them literate one year and illiterate the next. Tiruneh said that the clergy is not making enough effort to communicate recent changes of the EOC's Canon Law, which includes reductions in Saints' days observances and clarifications on when not to fast or fast, because it may be unduly worried that the people, especially in conservative areas like Gojjam or ANRS in general would not accept these changes or challenge the authority of the clergy. This suggests that there is a disconnect between clergy at the local level and synod members in the capital Addis Ababa like Dr. Mikre who are promoting less observance of fasting and Saints' days. Gelaw suggests that "the synod of the EOC revise the holydays and decree that only some of the holydays be remembered [observed]" (2007, 27). Tiruneh further said that there should be no excuse for not communicating these canonical changes and he believes that people in ANRS and Gojjam in particular seem to be ready to change their 'conservative ways' if properly informed by credible personalities, both clergy and lay.

It can therefore be seen that the socio-cultural practice of regular fasting by followers of the EOC erodes human capacity to work and thus exacerbates second-order scarcity. This case study illustrates that even if followers of the EOC live in areas with a potential abundance of water resources-like Gojjam-their regular fasting indirectly limits their capacity to make optimal use of this natural endowment. This in turn makes it difficult to introduce decentralized water management due to weak local capacity. At the supra-national or regional level, weak local capacity as a result of regular fasting negatively influences Ethiopia's capacity to make optimal use of water in the Nile River Basin System.

3.6 Conclusion

This chapter has investigated linkages between second-order scarcity, as manifest in contemporary Ethiopia, and its three distinct elements of scale: the socio-cultural practice of regular fasting as defined by Canon Law of the Ethiopian Orthodox Church (EOC), the current national government's ability to implement policies and strategies to optimize water use and the right of equitable and reasonable utilization of water in the Nile River Basin System. Based on the findings of Chapters 2 and 3, the following Chapter will revisit the specific hypotheses of this study to evaluate their validity.

CHAPTER 4

CONCLUSION

4.1 Introduction

The previous two chapters have established the linkages between second-order scarcity and the three distinct elements of scale: the socio-cultural practice of regular fasting, the ability of a government to implement policies and strategies to optimize water use and the right of equitable and reasonable utilization of trans-boundary waters. It can be recalled that the main research problem of this study is that second-order scarcity, as manifest in contemporary Ethiopia, has three distinct elements of scale: socio-cultural, national and supra-national. This chapter evaluates the accuracy and validity of the three sub-problems of this study and the respective hypotheses.

4.2 The First Sub-Problem and Hypothesis

(a) *First sub-problem*: How is second-order scarcity, as manifest in contemporary Ethiopia, exacerbated by the specific socio-cultural practice of regular fasting as defined by Canon Law of the Ethiopian Orthodox Church (EOC)?

(b) *First hypothesis*: If the current socio-cultural practice of regular fasting as prescribed by Canon Law of the Ethiopian Orthodox Church remains unchanged, then second-order scarcity is likely to be perpetuated.

The case study presented in Chapter 3 illustrates that the socio-cultural practice of regular fasting as prescribed by the EOC erodes the human capacity of peasant farmers to work thereby adversely influencing their agricultural productivity and livelihood. As human capacity-in the context of rural Ethiopia-is a second-order resource, it is therefore clear that there is a negative cause-effect relationship between second-order scarcity and the socio-cultural practice of regular fasting of followers of the EOC. Even though

changes have been made to fasting rules of the Canon Law of the EOC, this information has not reached people in rural areas like Gojjam hence they continue to observe an excessive number of fasting days, Saints' days and other holydays. Therefore if these changes to the Canon Law of the EOC are not communicated to people in rural areas, second-order scarcity is likely to be perpetuated. Based on the findings of this study it can be concluded that the *first hypothesis* is valid because even though changes to fasting rules in the Canon Law of the EOC have been made, as long as these are not communicated to people in rural areas, the *status quo* of excessive, regular fasting will continue to perpetuate second-order scarcity.

4.3 The Second Sub-Problem and Hypothesis

(a) *Second sub-problem*: How is second-order scarcity, as manifest in contemporary Ethiopia, perpetuated by the apparent inability of the current national government to implement policies and strategies to optimize water resource use?

(b) *Second hypothesis*: If the national government is unable to implement its policies and strategies to optimize water use for national development, then second-order scarcity is likely to be perpetuated.

The case study presented in Chapter 3 illustrates that water governance in contemporary Ethiopia is characterized by: inadequate human resource and institutional capacity, lack of political will, poor coordination among stakeholders and a low level of stakeholder participation. Poor water management in Ethiopia is driven by a government policy of decentralization to areas where local capacity is weak partly as a result of a socio-cultural practice of regular fasting that reduces human capacity to work. The ability of a government to implement policies and strategies to optimize water use-a key part of water governance-is a second-order resource. Therefore these failures in water governance point to the apparent inability of the current national government to implement policies and strategies to optimize water use which in turn is perpetuating second-order scarcity not only in Gojjam but in Ethiopia as a whole. Based on the findings of this study it can be concluded that the *second hypothesis* is valid because due

to failures in water governance, the current government is unable to implement its policies and strategies to optimize water use for national development thereby perpetuating second-order scarcity.

4.4 The Third Sub-Problem and Hypothesis

(a) *Third sub-problem*: How is second-order scarcity, as manifest in contemporary Ethiopia, perpetuated by virtue of the fact that Ethiopia has not been allocated the right of equitable and reasonable utilization of water in the Nile River Basin System, because a 1959 Agreement between Egypt and Sudan on "full utilization of the waters of the Nile" allocated the total flow to Egypt and Sudan?

(b) *Third Hypothesis*: If Ethiopia exercises the right of equitable and reasonable utilization of water in the Nile River Basin System, then viable national development programs can be designed to alleviate the impact of second-order scarcity.

The case study presented in Chapter 3 illustrates that the ability of Ethiopia to exercise its right to equitable and reasonable utilization of waters in the Nile River Basin System is a second-order resource that it needs in order to optimize water use within its territory. Furthermore, if Ethiopia cannot exercise this right then it cannot design viable national development programs to alleviate the impact of second-order scarcity or possible future water (first-order] scarcity. Based on the findings of this study it can be concluded that the *third hypothesis* is valid because Ethiopia's inability to exercise its right to equitable and reasonable utilization is a bottleneck to increasing its capacity to address second-order scarcity in the country.

4.5 Conclusion

This study was designed to gather information and to provide insight on second-order scarcity, as manifest in contemporary Ethiopia, and its three distinct elements of scale: socio-cultural, national and supra-national. More specifically, this study used a case study

approach to focus on one province in Northwestern Ethiopia called Gojjam that is located within the Amhara National Regional State (ANRS). This area was selected over others because it provided an unusual example of the manifestation of second-order scarcity in Ethiopia and its linkage to elements of scale. As the source of the Blue Nile River-the largest river in Ethiopia-, Gojjam has a potential abundance of water resources but due to variability in its distribution and lack of second-order resources to harness it for socio-economic development, the area is experiencing structurally-induced water scarcity (SIRWS). This problem is even more acute when one considers that Gojjam is home to about 26 per cent of Ethiopia's population (MOH 2006) who are dependant on rain-fed subsistence agriculture for food security. In addition to this, in the region that Gojjam is located in (ANRS), the rural population makes up 88 per cent (CSA 2005) of whom only 23 per cent have access to safe water supply (MOWR 2002). Water use for irrigation purposes is minimal with only 6 per cent of Ethiopia's potentially irrigable land being put to productive use (Awulachew *et al*, 2005)

One factor that distinguishes Gojjam from other parts of Ethiopia is that it is located in a region that has the highest number of Ethiopian Orthodox Churches and followers making the religion a fundamental part of everyday life for people in the area. It is for these reasons that the findings of this case study cannot be generalized to other parts of Ethiopia thus it only tried to illuminate the specific circumstances that exist in Gojjam. This is not to say that findings from this study are not of relevance to other regions or provinces of Ethiopia, indeed optimal use of water resources in Gojjam would be beneficial for the country as a whole, but broad generalizations on water utilization and development for other areas of Ethiopia cannot be made based on this study.

In conclusion second-order scarcity, as manifest in contemporary Ethiopia, especially in Gojjam, has three distinct elements of scale: socio-cultural, national and supra-national. The local socio-cultural element is the practice of regular fasting by followers of the EOC that erodes human capacity to work and thus exacerbates second-order scarcity. The national element is the current government's apparent inability to implement policies and strategies to optimize water use for national development as a result of poor water governance that is perpetuating second-order scarcity. The supra-national element is Ethiopia's inability to exercise its right to equitable and reasonable

utilization of water in the Nile River Basin System that is a bottleneck to the design of viable national development programs to alleviate the impact of second-order scarcity.

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APPENDIX 1: INTEVIEW QUESTIONS

INTERVIEW QUESTIONS: SET 1

1. Could you tell me your professional background and what role you and/or your organization/institution play in Ethiopia's water sector?
2. What is the history, if any, of water resource development in Ethiopia?
3. Do you believe that there is an underutilization/over utilization of Ethiopia's water resources? If so what do you attribute these to?
4. Please tell me what you know about hydropolitics in the Nile River Basin.
   4.1. Please indicate as to which stakeholders usually participate in considerations of water utilization and management schemes at the regional level (Nile River Basin).
5. What contemporary/current water resource development initiatives in the Nile River Basin are you aware of?
   5.1. Please let me know what you consider to be the opportunities and constraints for water resource development in the Nile River Basin.
   5.2. What kind of water infrastructures would you consider to be useful in the Nile River Basin?
6. What is your understanding (assessment) of hydropolitics in general within Ethiopia?
   6.1. Please indicate as to which stakeholders usually participate in considerations of water utilization and management schemes in general within Ethiopia.
7. What contemporary/current water resource development initiatives in Ethiopia are you aware of?
   7.1. Please describe what you consider to be the opportunities and constraints for water resource development in Ethiopia.
   7.2. What kind of water infrastructures would you consider to be useful in Ethiopia?
   7.3. Please describe the hierarchy of structures for water management in Ethiopia.
8. What is your understanding (assessment) of hydropolitics in general within the *Amhara* National Regional State (ANRS)?

8.1. Please indicate as to which stakeholders usually participate in considerations of water utilization and management schemes in general within the ANRS.

9. What contemporary/current water resource development initiatives in the ANRS are you aware of? In the East and West *Gojjam* zones?
   9.1. Please describe what you consider to be the opportunities and constraints for water resource development in the ANRS and more particularly in the East and West *Gojjam* Zones.
   9.2. What kind of water infrastructures would you consider to be useful in the ANRS? In the East and West *Gojjam* zones?
   9.3. Please prioritize the purposes (benefits) of the Tana Beles Integrated Water Resources Development Project (TBIWRDP)? For Ethiopia in general and for the East and West *Gojjam* zones?
10. What linkages do you think there are between the history of water resources utilization/underutilization and contemporary Blue Nile/*Abbay* river water resource development initiatives?
11. Please describe linkages between agricultural productivity, food security and water utilization/underutilization in the Blue Nile Basin.
12. Please prioritize the purposes (benefits) of the Integrated Water Resources Management (IWRM) framework? For Ethiopia in general and for the East and West *Gojjam* zones?
13. Do you have any other comments, suggestions which you would care to add?

INTERVIEW QUESTIONS: SET 2

1. Could you please tell me your background and current role in society?
2. Do you believe that a better utilization of river and rainwater resources could contribute to the socio-economic development of people in the East and West *Gojjam* zones of the country?
3. How could these resources be better utilized?
4. Do you think you/the farmers are producing at your optimal capacity? If not what factors are affecting your/the farmers less than optimal productivity?

5. Do the peasants' religious practices such as fasting and observation of religious holydays affect their agricultural productivity? If so in what ways?
6. How many days of the year are Ethiopian Orthodox Christians required to fast?
7. How many days of the month is the Ethiopian Orthodox Christian expected not to perform farm related work such as plowing, weeding, harvesting and threshing etc.?
8. On an Ethiopian Orthodox fasting day, how long does a person have to fast?
9. Do you think fasting affects the productivity of the farmer?
10. When are the main planting and harvesting periods in the East and West *Gojjam* zones?
11. Do you think that the Ethiopia Orthodox Church could significantly reduce the current fasting and non-working days without compromising the afterlife of the people in the East and West *Gojjam* zones? In this respect have there been any recent developments to reduce fasting and non-working days imposed on the faithful?
12. How do fasting and non-working day (Saints' day observance) practices of the faithful in the East and West *Gojjam* zones compare with their religious brothers and sisters in other parts of Ethiopia and with other practitioners of the Eastern Orthodox Church faith such as Egyptians, Greeks and Eastern Europeans?
13. Do you think religious practices of Ethiopian Orthodox Christians affect utilization of the water resources of the Blue Nile and its tributaries?
14. Do you have any other comments, suggestions which you would care to add?

APPENDIX 2: INFORMED CONSENT FORM

(To be read out by researcher before the beginning of the interview. One copy of the form to be left with the respondent; one copy to be signed by the respondent and kept by the researcher.)

My name is Melhiku Tiruneh (student number 205519922). I have a Bachelors of Arts degree in International Relations and I am currently pursuing a Masters in Development Studies degree in the School of Development Studies at the University of KwaZulu-Natal (UKZN) in Durban, South Africa. I am doing a research thesis on 'Ethiopia's Water Resources and Challenges to its Development' for the completion of the degree. This study is supervised by Dr. Zoe Wilson.

This study is designed to elicit information on water resource development in Ethiopia with a particular focus on the East and West *Gojjam* zones of Ethiopia and to assess the contributing factors behind the underutilization of water resources for the development of Ethiopia. This subject was identified after the researcher analyzed the various development needs of Ethiopia and the current development initiatives underway in the country. It emerged that water resource development in Ethiopia affects all economic sectors and has a crucial role to play in the socio-economic development of the people. Should you have any questions my contact details are as follows:

School of Development Studies, University of KwaZulu-Natal, Durban 4041, South Africa. South Africa Mobile: 0027728022513 or Ethiopia Mobile: 00251911668534 or Ethiopia Tel: 002519116639976. Email: mtiruneh@yahoo.com or 205519922@ukzn.ac.za.

Thank you for agreeing to take part in this study. Before we start I would like to emphasize that:
-your participation is entirely voluntary;
-you are free to refuse to answer any question;
-you are free to withdraw at any time.

The interview will take not more than 1 hour. The interview will be kept strictly confidential. Excerpts from the interview may be made part of the final research report. If you have no objection a tape recorder will be used for the purpose of transcribing the interview. Do you give your consent for any of the following to be used in the study: *(please tick one of the options below)*

Your name, position and organization, or
Your position and organization, or
Your organization or type of organization *(please specify),* or
None of the above
Please sign this form to show that I have read the contents to you.

---------- (signed) ---------- (date)

---------- (print name)

Write your address below if you wish to receive an abstract of the study's findings: