

# FORUM FOR SOCIAL STUDIES

## CIVIL SOCIETY AND ENVIRONMENTAL POLICY DIALOGUE



*CONSULTATION PAPERS ON ENVIRONMENT No. 3*

### Environmental Conflict

Edited by  
Gedion Asfaw

Addis Ababa  
July 2003

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**CIVIL SOCIETY AND  
ENVIRONMENTAL POLICY  
DIALOGUE**

*Third Forum, May 23, 2003,  
Semien Hotel*

<b>Introduction Environmental Conflict</b>
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*Gedion Asfaw, Editor, and  
Programme Coordinator*

On behalf of the FSS I thank you for honoring our invitation to attend this Forum and once again welcome you to the third Civil Society and Environmental Policy Dialogue.

This is the third Forum, which will address issues related to environmental conflict. The short title of the theme may be misleading but the theme is intended to address issues related to conflicts arising from competition over the use of scarce environmental resources.

The last two meetings dwelled on two themes covering *Environment, and Environment Change in Ethiopia* and *Environment, Poverty and Gender* at which a total of six papers were presented. The papers presented and the proceedings of the discussions are now published in the FSS Consultation Papers No. 1 and 2. We hope these consultation papers will be useful references.

Environmental conflict is a rarely discussed subject in Ethiopia while it is a very widely and intensively discussed issue worldwide. Countries such the USA have Institutes of Environmental Conflict and their higher institutions of learning offer courses on environmental conflict reflecting the importance countries attach to the issue.

Environmental conflict mainly refers to renewable natural resources over the use of which conflict may arise and do not refer to non-renewable resources such as fossil fuel.

Our immediate interest in Ethiopia relates to the issues of population growth vis-a-vis degradation and scarcity of environmental

resources. Conflicts over scarce environmental resources are common phenomenon in most parts of Ethiopia, manifested mostly in inter and intra clan conflicts over grazing resources and water. Over the past several decades, we have witnessed *environmentally induced* conflicts in the pastoral areas of the country. These conflicts still continue unabated. The level of conflict has been high and claimed many lives and damaged property. Conflicts in the highlands of the country over scarce agricultural land have also taken place, some times fueled by ethnic and political factors. These conflicts have so far been managed through local traditional conflict resolution mechanisms.

This brings us to what some researchers refer to as "*social resources scarcity*" which is the adaptive capacity of society to environmental resources scarcity.

It is quite obvious that we have been unable to provide improved access to water and grazing resources to the pastoral population when they are faced with scarcity of these resources driving them to compete for unavailable resources and ultimately resort to conflict. Our inability to sustainably manage our environmental resources has led to environmental resources scarcity and our low capacity to manage or adapt to these scarcities has resulted in conflict among users.

I believe there are three areas of concern in this country with regards to scarcity of environmental resources: shortage of arable and grazing land, water scarcity and transboundary water use and biomass/ forest scarcity. We need to rapidly enhance our capacity to find ways and means of responding to the scarcity of these resources and avoid possible conflicts and mass displacement of people in the country.

Population growth must be included in any discussion of environmental resources scarcity and Malthus's "*Essay on the Principles of Population*" (1798), over 200 years old, still keeps the debate on population and food production alive. Malthus's famous argument states as follows:



*"I think I may fairly make two postulata. First, that food is necessary to the existence of man. Secondly, that the passion between the sexes is necessary and will remain nearly in its present state. These two laws, ever since we have had any knowledge of mankind, appear to have been fixed laws of our nature.... Assuming then my postulata as granted, I say, that the power of population is indefinitely greater than the power in the earth to produce subsistence for man. Population, when unchecked, increases in a geometrical ratio. Subsistence increases only in an arithmetical ratio."*

This simply stated logical statement is partially why we have gathered today to debate on why and how environmental conflict arises. Malthus may have not considered the power of intensive agriculture or the power of biotechnology when he referred to "power in the earth to provide subsistence for man" but considering the negative impacts of such interventions his conclusion may still be true.

While population growth is clearly a key element in environmental resources scarcity, the unsustainable pattern of high levels of consumption in industrialized societies must also be considered a primary contributor to accelerated scarcity of environmental resources.

When and under what conditions environmental conflicts threaten national security and be causes for political instability deserves serious consideration and research. Many researchers contend that the underlying cause for the Rwandan genocide to be environmental resources scarcity which happened to be triggered by ethnic tensions. We need to seriously examine the environmental and ethno-political situation in the country and review them from time to time to avoid similar disasters.

Global environmental issues such as climate change, ozone depletion or other issues such as biodiversity degradation, water scarcity and pollution, deforestation, soil erosion, and air pollution can be potential sources of conflicts. There are countries, which think

that their environmental security and political stability may be threatened by environmental related events in other countries. These countries may resort to force to address these threats. One may even wonder what will happen in cases of non compliance of countries to global environmental conventions. Will a global force emerge to ensure compliance? What will happen if countries with tropical rain forest unilaterally decide to clear their forests? Will the big powers attempt to protect their interests? Will globalization undermine sovereignty of states to manage their natural resources in accordance with their priorities? These are troubling questions and some of the conclusions of development researchers in the developed countries seem to affirmatively respond to these questions.

The University of Toronto researchers on environmental conflict concluded as follows:

*"Countries experiencing chronic internal conflict because of environmental stress will probably either fragment or become more authoritarian. Either outcome could seriously disturb international relations."* (in Environmental Scarcities and Violent Conflict: Evidence from Cases, Thomas Homer-Dixon, University of Toronto.)

The Toronto researchers may be laying the foundation for big powers to interfere in managing the natural resources of developing countries, thus opening up yet another venue for international conflicts. Policy makers of developed countries have immediately taken this conclusion on board and have made public statements including the necessary preparation for implementation.

Mr. Warren Christopher, Secretary of State of the USA in 1996 made the following statement: *"The environment has a profound impact on our national interests in two ways: First, environmental forces transcend borders and oceans to threaten directly the health, prosperity and jobs of American citizens. Second addressing natural resources issues is frequently critical to achieving political and economic stability,*



*and pursuing our strategic goals around the world.... We must lead in safeguarding the global environment on which that prosperity and peace ultimately depend... In carrying out America's foreign policy, we will of course use our diplomacy backed by strong military forces to meet traditional and continuing threats to our security. But we must also contend with the vast new danger posed to our national interests by damage to the environment and resulting global and regional instability."*

The above statement was repeated by other policy makers in subsequent years and the US has now established "**environmental hubs**" in embassies situated at places regarded as critical from the point of view of environmental degradation and resources scarcity being a threat to regional stability.

An "Environmental Hub" for East Africa has been established in Ethiopia with regards to desertification, deforestation and water use.

Whether such initiatives will lead to global peace and stability or the emergence of a global *authoritarian* power, time will tell but there is a need for international organizations such as the UN to proactively engage in shaping global policy and governance.

With this brief remarks let me once again welcome you to the third forum and wish all of us a successful deliberation on the theme of the day.

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## 2. Summary of General Discussions

This is the third proceeding comprising the summary comments and views, questions and responses given by the panelists.

**Program Coordinator:** Ato Gedion Asfaw

**Moderator:** Ato Tamene Tiruneh

**Presenters:** Ato Yohannes Habtu on *The Nature and Consequences of Environmental Conflicts (livelihood of people, the environment...etc)*

Ato Sahilu Habte from Pakard Foundation on *Population, Environment, and Development*

Ato Gullilat Berhane, from the Ministry of Water Resources, on *Utilization of Transboundary Water Resources and Its Consequences*

**Rapporteur:** Ato Girma Feyissa

### General Discussions

#### Comment

Many studies on population propose and recommend ways of curbing the population problems. Population issue is a time bomb. It is very crucial. What really lacks is implementation. Although the issue involves not only the government but also the community at large including nongovernmental organizations, there is a need for a coordinating body that should take the initiatives to lead.

#### Question 1.-

What should be the role of such forums to urge implementing policies and proposals? What should be done about it?

#### Question 2.-

The Ethiopian population has increased from 11 million to 24 million in 60 years. However, there is a drastic population growth in recent years. What is the reason for this leap in a relatively shorter span of time?

#### Question 3.-

Is there an international law that prohibits us from using tributaries of Abay such as Didessa River?

#### Question 4.-

What is the level of apathy amongst government circles about family planning? What is your assessment of the trends in the government towards population issues?

#### Question 5.-

We have various master plans regarding water resources. Master plans of Abay, Tekeze, Awash and so forth. How did you quantify the volume of water in the basins, and arrived at 122 bcm instead of the previous 111 bcm?

**Reaction:** All tributaries of international rivers are also considered as international waters. Whatever is done in the basins concerns the riparian countries.

#### Comment:-

The alarming population growth can be elaborated in the context of environment. For instance, population growth will put pressure on natural resources such as firewood, agricultural land and has an impact on the degradation of land. There is also the other school of thought, which are the proponents of population growth. This side of the argument should also be presented to keep balance. African farmers have over the years developed mechanisms to withstand population pressure and its impacts with such measures as agricultural intensification or rotation etc...

Secondly, Ato Gullilat ought to elaborate on the problems of the Nile Basin Initiative. It may be a good endeavor and policy which is in the right direction for developing and using our Abay River. However, there is a kind of euphoria that the Nile Basin Initiative is the solution for everything. However, I think there may be problems related to big projects such as irrigating 500,000 hectares of land. The problems are



related to lack of environment impact analysis.

(The Panelist gave elucidations starting from the last questions and comments.)

#### *Ato Sahilu*

It is true that people adapt to situations. However, it is also true that human beings not only adapt to situations but they also want to change their qualities of life. In the Ethiopian context, the quality of life is deteriorating from time to time. There are quite ample figures indicating how much people have gone poorer and poorer with the increase of population. In 1995 our income was about 100 dollars per capita but today it is only 35 USD. The quality of life has goes down.

To answer the question of what is to be done, we must discuss the problem openly. We have to convince officials that the population problem is serious. One official was recently mentioning China and India to understate the population issue. We are Ethiopia not China or India. We cannot feed our people. The Pakard Foundation is organizing next week (June 17, 2003) a discussion forum at ECA to discuss the issue in an attempt to get the attention of the officials and policy makers.

What is the reason for the alarming population growth? I suppose this is the natural growth, which is geometrically progressing. This is not typical to Ethiopia but the death rate and the birth rate were almost equal in previous years but as we progress and develop better health system, vaccination, better medical treatment, etc the death rate decreased and the situation created huge number of young men and women.

Besides the impact of population on the environment, there is the problem of conserving natural resources. Unless you address the problem of population there can hardly be any development in this country.

The level of apathy in this country is very difficult to assess. It is subjective. There can be two reasons. One is ideological. When

the present day leaders were students they used to subscribe to the idea that population was not a problem. Marxian theory believes that population is a productive force of the economy. The second reason I think is due to the overwhelming problems this country is facing one after the other. There is civil strife, there is drought, there is famine, and there is flood and what have you. I think this government did not have a break to consider long term development planning and strategic thinking not to mention population issues, which are long-term issues.

#### *Ato Gulilat*

As regards to the method of quantifying the volume of water during the preparation of the master plan, there are advanced methods of measuring. We have international organizations that have developed ways and means of quantifying the volume of runoffs and underground water.

Regarding the last question related to environment impact analysis, the master plans also consider its importance. The Omo/Gibbe basin master plan for example lays detailed studies that include impact analysis.

#### *Ato Yohannes*

I will try to start with the question raised for elaboration on Shoa Robit and Chefe Meda area which had state intervention. That was an unusual compassion on the part of the state to save the Afar pastoralists from the plight of the drought that was brought down by the animals from the highlands of Shoa Robit and Chefe Meda. I believe today we lack a comprehensive environmental policy in Ethiopia. The disturbances that were manifested during the demise of the previous regime continued for sometime until the new government consolidated its grips and normalized the situations. It is not necessary to have a change in government, even temporary instability like the one exhibited in Addis some time back is enough to trigger danger to the environment.

The second case study of the Sirraro and Alaba it is to be revered since it is an unfortunate situation. Both have been



neighbors for centuries. In terms of conflict resolution, they have a very good conflict resolving mechanisms. During the monarchy, intermarriage was a way of fending off conflicts and consolidation of power. What happened during the downfall of the Dergue was that the Sirraro people ganged up and attacked the Alaba farmers who had better land and water resources. That is what is called *worrera* in Ethiopia, a situation people collectively take actions to improve their lots.

The lessons learnt from that is that there are not only ethnic conflicts but also economically motivated conflicts and you cannot be secured all the time. It happens in the highlands too.

In earlier times, it was presented that the encroachment of capitalist mode of production like modern farming and technology was threatening the nomadic life in the area. In fact, the pastoralists are not as

homogeneous as they were thought to be. A closer examination shows that there are wealthy pastoralists who produce cattle and export cotton as well. However, there are confrontations with external bodies. It is due to not only the introduction of modern and complex technology, but due to simple technologies like *Birkat* where they dig boreholes to abstract water for human beings and their animals. Where people start settled life, there you have conflict between pastoralists and settlers because those who settle want the water resource for their animals as well as for agriculture. Researchers inside or outside the country or academic work do not help much in resolving local conflicts in the pastoralist areas.

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## The Nature and Consequences Of Environmental Conflicts In Ethiopia

Yohannes Habtu, Consultant

### Introduction

For the purposes of this work environmental conflicts are defined to be "Disputes, both non-violent and violent, in which natural resources (land, water, vegetation or otherwise) are either the deliberate target of destruction or trophies sought after by contesting parties." The paper was originally prepared for a twenty minute oral presentation at the FSS's bi-monthly panel discussion on *Environmental Policy and Civil Society in Ethiopia* consequently some aspects of its written presentation maybe overly summarized. The purpose of the paper was to provoke debate at the forum. The topic is one that has been approved for research in the current program and it was hoped that the discussions would contribute to defining the direction of fieldwork. Every attempt has been made to ensure each forwarded proposition is presented with supportive evidence from at least one empirical case study or personal field experience. However, it is necessary to bear in mind that the amount of research work on the subject has hitherto been very modest and supportive primary research is in very short supply. The views expressed are entirely those of the author.

### Non-Violent Environmental Conflicts.

The word conflict evokes images of violence - of flames of destruction, human loss of life, and injury. However, where the physical environment is concerned irredeemable decimation of natural resources can take place without so much as a single injury or loss of life to human beings. Arguably the most graphic evidence of such destruction in Ethiopia can be found in the fate that befell the woodlands around the Rift Valley Lakes during the transition of political power from the Derg to EPRDF regimes.

Widespread peasant protests erupted in the brief power vacuum that marked the transition of power between the Derg and EPRDF

governments. Some violence was leveled against environmental assets as part of the protests. The acts included expansion of smallholder agriculture into state held enclosures, destruction of conservation structures and cutting and burning trees on state and communal holdings for firewood and charcoal production. [See Desalegn 1994 1996]. The general disturbances died down with the restoration of peace and order across the nation and installment of the Transitional Government of Ethiopia. However, the cutting and burning of trees for firewood and charcoal production continued relentlessly for many months after the end of the rural disturbances.

Land tenure history in the Rift Valley has a past rife with the disenfranchisement of local Arssi communities. Successive governments had fenced off large tracts of land and granted entitlements to absentee landlords and various state and commercial interests (wildlife sanctuaries, livestock ranches, hotels and children's village), respectively to the exclusion of the local communities. The Arssi seized the opportunity provided by political instability to unremittingly take what they could off the land before a new round of prohibitions could be introduced. Intimidated by the general political instability the few armed guards who remained at their posts put up little resistance to the encroachments of the much more numerous local inhabitants.

The intensity of offtake was such that the traditional Addis Ababa bound direction of trade changed to include firewood and charcoal trading with the relatively well wooded towns of Shashemene, Awassa and possibly beyond. The speed and aggression of deforestation prompted the very rare incidence of environmental protest in Ethiopia where concerned residents in Rift Valley towns held public rallies seeking proactive environmental actions from government and responsible officials. The protests were led by staff of the Ministry of Agriculture and concerned citizens and were especially brave for having been mounted in the midst of very far-reaching government restructuring and retrenchment programs. Sadly it was too little to late and the Acacia cover in the Rift Valley had for the most part been lost to charcoal burners and firewood sellers forever.



Though the actions of Rift Valley communities, and charcoal/firewood sellers in particular, was in no small measure due to the long history of the Derg's prohibitive policies on local community use and marketing of forest products, the process of deforestation was undoubtedly accelerated by the role of markets and support of a developed road infrastructure. An insatiable demand for charcoal and firewood continues to exist in Addis Ababa and every urban settlement between the Rift Valley and capital city. In the interest of political expediency and consistent with the country's need for a makeover as a liberalized economy, roadblocks and checkpoints that had served to curtail the illegal flow of forest products during the Derg had been dismantled. Firewood and charcoal poured unimpeded into Addis Ababa's inexhaustible markets. Emboldened by the abolition of checkpoints a wholesale charcoal market began to emerge in Addis Ababa. Some traders transported whole truckloads of charcoal to supply terminals at strategic locations in Addis Ababa. However by far the largest amounts of charcoal to reach Addis Ababa arrived courtesy of the public passenger and dry cargo transport systems running on one of the nations busiest highway corridors the Addis Ababa -Awasa highway. For a modest fee passenger buses and light vans tolerated the loading of a few extra sacks of charcoal for persistent passengers. The fees rarely reflected the true cost of transferring what would under more regulated market regimes be classified to be fairly bulky cargo. Without the relatively well developed road infrastructure and the access it provided to unwavering demand for charcoal in Addis Ababa, the scale and speed of destruction of the Rift Valley Woodlands might have been significantly reduced.

The devastating cost of excluding peasant communities from environmental policy development, implementation and natural resources management seems now to be deeply appreciated by decision makers. State interventionism is now outmoded and the blatant heavy handed interventionism of the Derg is now securely in the past. It is now en vogue for contemporary environmental literature to advocate the virtues of participatory community led models of

natural resource management. In spite of many signals by the Ethiopian government favoring more participatory approaches to natural resource management and conservation, concise environmental policies that can be interpreted into comprehensive action programs at grassroots levels have not been forthcoming from the EPRDF regime.



Photos: Courtesy Mahibere Kidusan

Even though some pilot testing of community forest management by NGOs have been approved and are underway a wide gap exists between environmental policies promoted by the government and practitioners' requirements.

Environmental polemics in Ethiopia have pitted peasant proponents of use first (consumption) against a sometimes fallacious championing of conservationism by the state. Little has changed to diminish the threat of recurrence



of the Rift Valley Woods experience in other similar settings in the country. A strategic vision for linking the consumption/conservation wedge has yet to be articulated by the government. The state can be said in this regard to be suffering from a case of indecision.

The damage inflicted by decades of overzealous state conservationism cannot be overstated, particularly with regard to its eroding peasants sense of ownership of natural resources. It is tempting in such a setting to over romanticize the disenfranchisement of peasants and underestimate the irrationality of peasant actions against the environment in some cases. In a case more recent than the Rift Valley experience peasants set whole forests on fire because the hand axes they carried for cutting trees proved too flimsy for chopping down the aged hardwood trees. The forests involved are held by a cluster of monasteries belonging to the Ethiopian Orthodox Church near Asebot town, Western Hararghe. Urban residents from as far away as Dire Dawa rallied to help put out the first major outbreaks of fire. Probably because the fires were not as significant as those that burnt for months in Bale, neither Regional nor Federal security units were ever deployed to help extinguish them.

Under pressure of frequent incursions the monasteries yielded to the advice of the local administration to employ armed forest wardens. Only the most diehard intruders brave the forests now an unhealthy tension from having armed groups confronting each other in thick forest now prevails. Some of the unflinching culprits pictured above showed no fear of retribution or regret for what are by any measures callous acts of intrusion. There have been no attempts at educating and sensitizing the aggressors on the environmental and social consequences of their actions by civic organizations to date. The poles will be sold at local markets. The forest have for centuries been the domain of the Orthodox nuns and monks for centuries. The experience challenges options for security of tenure on forest lands. Is private property the only property that will be respected by environmental marauders? Future research should tell!

### *Conflict in Cropping Areas*

Violent conflicts among sedentary farmers in Ethiopia have become increasingly frequent. Though the path of escalation and driving force behind each conflict is certain to have its own unique characteristics severely incapacitating options for comparisons and drawing conclusions from extrapolations, most have tended to conclude as fights between ethnic groups. More exhaustive field research is required to acquire a clearer understanding of the dynamics that transform farmer conflicts into ethnic conflicts. This is however a task easier stated than executed for the management and resolution of conflicts in Ethiopia is a very secretive affair where even identifying the officials responsible for resolving the many conflicts (cropping areas included) has proved a formidable task far more accessing and even retroactively analyzing their records. For these reasons only one sample case is presented to provide detail on the path of conflict escalation rather than breadth of national coverage.

The sample presented here for investigating the case of environmental conflicts in cropping areas is also taken from the Rift Valley. It relates to the conflict between the Siraro Arssi (Oromos) on the Shashemene - Sodo road near the town of Ajie and the Alaba who inhabit the lands around the town with the same name. These Muslim neighbors have some history of conflict and in imperial times betrothing and intermarrying the offspring of prominent personalities between the groups successfully quelled their frequent clashes. The strategy seems to have succeeded as a band of border area between the lands held by the two groups is inhabited by cross-ethnic households. Peace prevailed throughout the rule of the Derg until a little over a year before the regime's collapse clashes between the groups re-ignited.

The immediate cause of conflict was the death of an Arssi cattle thief at the hands of his Alaba partner in crime. The two bands of thieves worked in cahoots exchanging their booty for sale in rural markets too deep in the territories of their respective kinsfolk for their victims to pursue. The dispute of the thieves reportedly arose from



disagreements over the barter rate for stolen cattle. Instant retaliation followed the death of the Arssi boy and soon battle lines had been drawn displacing people in the border areas and forcing them to take sides and seek refuge among one or other of the disputing parties even though some families were ethnically mixed. Families got separated, farms and homes got burnt down and traffic on the Shashemene - Sodo road closed to vehicles belonging to people from the conflicting communities. Special police units were deployed to first secure and open the Shashemene-Sodo road to general traffic. After a manhunt that lasted several months the leader of the Alaba gang of thieves accused of murdering the young man from Arssi and inciting the ethnic violence was captured and sentenced to fifteen years in Ziway prison. When prison populations broke out with the fall of the Derg, the much feared inciter of ethnic violence escaped returning to his old haunts to ply his old trade.

Soon after the arrival of this notorious gang leader who now attained celebrity status for his eerie exploits the killings resumed, this time of revenge against those of his kinsmen who had provided the information to security forces that led to his capture and eventual incarceration. These killings led to very visible and immediate rises in militancy among the Alaba youth mainly because of the certainty that information about the return of their leader in battle would instigate retaliatory missions by the neighboring Arssi for unavenged deaths from previous skirmishes. Not long after the arrival of the inciter battles between the Alaba and Arssi were resumed this time with much greater intensity and wielding a considerably more sophisticated arsenal on both sides. An unknown number of combatants died as both sides were keen to hide their casualties. Civilian deaths too were never recorded if they occurred. In an area that spanned less than fifty square kilometers hundreds of rural households got uprooted driving with them what they could find of their livestock and hundreds of young men faced each other in battle in a narrow stretch of common border.

This was a time filled with uncertainty for most of the country because the Derg was certain of falling and had fallen in most places in the north and the EPRDF had not yet completed its drive to secure international boundaries. Trade, passenger traffic and dry cargo transport had been disrupted by frequent highway robberies, including day time hold-ups on the Addis Ababa-Shashemene highways. Government and commercial installations in remote unprotected locations were being looted for whatever they were worth. A general air of insecurity prevailed. Added to the insecurities brought on by the lack of the rule of law, the political tone of the times, which promulgated ethnic nationalism, was met with some degree of intimidation cum skepticism by minority groups like the Alaba who had very large and powerful neighbors to worry about. The Arssi Oromos. The conflict, which started as a tussle between cattle thieves two years previously, escalated very rapidly drawing in urban interest groups (traders, truckers and community leaders) as potential rearguard and strategic advisors (*Dejen*) to the youth engaged in patrolling the guarded perimeter on the boundaries between the two groups. Urban groups got drawn into the conflict mostly by fears of protracted political instability and the need to build a local contingency force as insurance for collective security. The frustrations of suffering so many robberies and losses from disruptions of trade that is so important to the Alaba economy must also have contributed to their willingness to engage in supporting the conflict. Another motivation was the need to display a willingness to fight as a deterrent to future incursions.

The dynamics on the Arssi end of the conflict was a little different. Revenge killings both within and across ethnic groups are not uncommon in rural Ethiopia. Such feuds linger timelessly, eating away at the nucleus family of those affected and occasionally at their extended family members too. Feuds alone cannot explain the escalation of one murder into major ethnic conflict far less its recurrence two years after normalization. Since they are by far the largest ethnic group in the Rift Valley area, and have a fearful reputation for combat, the Arsi do not suffer the same



fear of domination by other groups such as they impose on their less numerous neighbors. Though much of the areas held by the Arssi is lush agricultural land, especially the area around Arssi Negelle, a lot of it is not, in particular the areas occupied by the Siraro Arssi on the Shashemene - Sodo road which was where the fighting was focused. With the passage of the time the contest between the two groups became an unabashed contest for control over the best endowed land and water resources in the area. The political climate of deep-seated change undoubtedly played a role in the posturing and maneuvering for visibility and supremacy that occurred in the course of the conflicts conclusion. Some of the underlying economic justifications for the Arssi's pressures to relocate follow below.

The economic origins of the conflict can be traced back to the inept implementation of the 1975 land reform. The reform was welcomed in Siraro for its abolition of absentee landlordism. In spite of the state's retention of vast amounts land for commercial and government interests land was in comparatively plentiful supply when it first got distributed to smallholders. The sandy alluvial soils that dominate in the area are prone to swift and high seepage rates. The general terrestrial gradient is for water to drain into either the Shala Lake system or on the opposite side of the dividing Shashemene-Sodo road into the Lake Awassa system. For residents of Peasant Associations whose boundaries were not adjacent to the shores of Lake Shala, water is even in the best of times a critical constraint. For several months in the dry seasons between the two rainy seasons the communities are dependent on trickling night-fills into hand dug wells on the Lake shores. The walk to the Lakeside, where water table is reachable by hand dug wells, was a goof three hours for some communities. This already precarious situation was made more acute by the previous government's drive for villagization which complicated even wet season water supplies by concentrating households in dry viallges. The toll of water scarcity was heaviest on livestock, families with large livestock holdings and labor

deficit households. Livestock have huge social as well as economic significance in Arsi society. In an act that further accentuated the plight of livestock owners, the PA administration took to auctioning dry season pastures on the flood land lands along the Lake shores using justifications of avoiding rivalry amongst residents and revenue generation for the local administration. So in addition to distant and unreliable water supplies aggregate feed supply was reduced by the auctions which allowed the participation of town based dairy farmers. All of these seemingly distant and unrelated phenomena combined to make life truly volatile for both the very rich and the very poor in Arsi society. To cope with these bottlenecks residents of the PA sandwiched between the town of Ajie and the relatively well endowed PAs whose boundaries fell along the shores of Lake Shala invoked the age old practice of seasonal migration known among the Arsi as *Godantu*. The annual route of the migrants who move with slow moving large herds of cattle is in the direction of the tributaries of the Blate River which drains into Lake Awassa but meanders to the very gates of the town of Alaba. When the opportunity provided by rampant adventurism and insecurity provided itself, the Arsi committed their formidable might towards securing the watering and pasture routes along their seasonal migratory routes. These routes were considerably faraway from the scene of the original murder that was the pretext for inciting the violence. The assault of the Arsi was for the most part foiled by the concerted resistance of the Alaba youth with logistical and tactical support from town dwellers. The intensity of battles increased as each side tried to out smart, out gun and out resource the other. Towards the conclusion of the conflict the Arsi were accused of recruiting trained mercenaries (fellow Arssis promised the booties of war) from the remnants of the crumbling Derg's army to do their bidding. The conflict ended with the deployment of a small contingent of EPRDF forces in Ajie town and the setting up of an EPRDF garrison (Corps) in Alaba town. The conflicting forces retreated to their respective boundaries and EPRDF campaigns of confiscating unlicensed guns



succeeded in the rapid concealment/retraction of the show of force by the conflicting parties.

Granted the case in point refers to a period of extreme political instability, what conclusions can be drawn on environmental conflicts in Ethiopia from Alaba-Arsi conflict of Derg and Transitional Government times? The first conclusion has to be one of recognizing how even the most mediocre events, such as fights between cattle thieves, can, if left untended, lead to the creation of potentially explosive situations. Playing on the fears of local psyche even the most transparently sinister characters can transform themselves from thief to warrior and social champions. More research is required into such transformations and on the issue of conflicts path of escalation to draw lessons on how such transformations occur and on how best to mitigate them. Lessons from the Arsi perspective show how desperate livelihoods will lead to desperate measures and how peasants will if granted the opportunity use even violent means to reverse the effects of bad policy and governance or just generally improve their resource endowments and stock in life.

### *Pastoralist Conflicts*

Pastoralism and environmentalism share a troubled past. For many years it was widely held that pastoralists and their overstocked and undernourished cattle holdings were bad for the environment and contributed to the spread of desertification. This problem analysis was promoted by the equilibrium school of ecologists who thought it possible to determine accurate 'carrying capacities' per unit of rangeland and further pronounced that modern management systems would be more efficient beef producers (ranchers) on the range than traditional pastoral production systems. The declarations have not been verifiable in reality and ranches in the rangelands (at least in Ethiopia) certainly have not proved to be more efficient animal producers than traditional pastoral systems. An alternative paradigm, the disequilibrium school's, has been promoted by range ecologists who laud the prudence of indigenous pastoral systems' use of rangeland resources. According to this school range ecology is in a constant state of imbalance

rather than balance and uncertainty (of finding adequate water, pasture) is inherent to the pastoral way of life which justifies the rationality of pastoralists constant mobility in search of the most productive land and water niches in the system. The disequilibrium school accepts that massive destocking occurs in drought years and that the options for restocking after a widespread drought year are very limited due to the unavailability of breeding stock. Among the restocking options used by pastoralists in such occasions is appropriation of cattle through raids on their neighbors who may or may not be other pastoralists. Conflict is hence acknowledged to be part of pastoral livelihoods.

In Ethiopia, the North East Rangelands Development Unit (NERDU), Southern Rangelands Development (SORDU) and the various livestock sector development programs such as Third Livestock Development Program were all built on the 'carrying capacity' paradigm. However, the belief that modern management can enhance livestock productivity in the rangelands seems to have had its day in Ethiopia. This is probably less because of a deliberate weighing and selection of strategic options than because the donor (mostly World Bank) resources that supported these costly approaches have run out. No attempt was ever made at replacing the programs with more participatory models of engaging pastoral societies in the same style as is being promoted for farm communities.

Instead engagement with pastoral groups and focus on the plight of pastoralists arrived through the backdoor after a stubborn series of widespread drought hit almost every pastoral system in the country at turn of the millennium, i.e. between 1998 and 2001. Thus far attempts by government to engage pastoral groups has consisted of tailoring the goals and objectives being promoted in highlands systems for adoption in pastoral settings.

Though it is not within the scope of this work to venture the justifications for conflict - whether it is because it is inherent to pastoral life or otherwise there have been a proliferation of conflicts in pastoral areas involving pastoralists and croppers, varying



groups of pastoralists and pastoralist from within the same ethnic and production systems.

The most common explanation for conflict between pastoralists and croppers is expansion of agricultural land. Many examples are available of conflicts of this nature in Ethiopia. The boundary between the territories of Borena pastoralists and Konso farmers in southern Ethiopia is a wide swath of lush land which serves as a buffer 'demilitarized' zone to avoid unnecessary threats of re-igniting their long running conflicts. Similar skirmishes over borderlands have occurred between Amhara highlanders and Afar pastoralists in the Shewa Robit area and yet another example of conflict over boundaries can be found in the periodic clashes between Somali pastoralists and Ormo farmers in the Afder area.

Ayalew in his description of the relationship between Karayu pastoralists and Ittu (Oromo) croppers in the Awash Valley has described a unique tale of a long-term alliance between croppers and pastoralist collapsing to the pressures of increased demand for agricultural land by the Ittu inside Karayu territories. The work also describes the complexities of conflicts over land resources confronting the Kararyu's efforts at practicing of pure pastoralism in the Middle Awash Valley.

Perhaps the most frequently related tale of conflict in pastoral settings in Ethiopia is about the confrontations between commercial agricultural and Afar pastoralists in the Awash Valley. The history of this conflict goes back to the reign of the Imperial Government when commercial agriculturalists backed by powerful political interests evicted Afar pastoralists from their wet season pastures to establish cotton, horticultural, fruit and various other crop plantations. Despite the violent past of the plantations the equity driven land reform of 1975 did not restore Afar ownership over the disputed lands. Instead the commercial farms were nationalized and transformed to state farms, many of them considerably expanding their land holdings. The standoff between commercial agriculture and Afar pastoralists remains to today. After decades of uneasy co-existence the Afar have reportedly developed

more devious means of extracting economic gain from their prohibited ancestral holdings. Some of the strategies employed by the Afar included the deliberate provocation of conflict at or close to harvest time when agriculturalists are most vulnerable to economic damage and squeezing of peace tributes for peaceful resolution of problems. It is said that Afar intimidation is sometimes also leveled against seasonal migrant workers essential to the commercial agriculturalists for timely harvesting of their crops. The posturing is often to extract settlement money and to keep alive their territorial claims over the farmland. A number of such incidents of harassment were directed at early investors in the Awash Valley under the current regime but these have become less regular occurrences in recent times. A new feature of this long running conflict is the engagement of prominent Afar families in commercial irrigated agriculture. Many of their ventures have failed for lacks of professional capacities and Afar violence against investments by their kinsfolk have not been recorded.

This is not the case in the Somali system. Hogg, describes how it is not uncommon for pastoralists to fight each other and relates how resource conflicts arose among closely related Somali pastoralist as a result of changes in land use pattern and spread of agriculture introduced by improved water harvesting and storage technologies - Birikas. The work further narrates the path of escalation of the conflict and the shifts in the balance of power amongst the clans including clans on the Somalia side of the border.

Pastoralist conflicts are too wide and varied for easy generalizations to be made. What has been evident in recent years is the proliferation of conflicts in pastoral areas both between and among pastoralists in the same group or other groups and between pastoralists and other livelihood systems. As a result of their proximity to the countries international borders and because of the security requirements of migration in the rangelands pastoral societies are much better armed in Ethiopia than sedentary farmers. Because of low population densities and shifting clan alliances pastoralist conflicts once ignited tend to spill insecurity over physically large spreads of land. One of the



most serious impediments to delivering food aid in Somali Region during the devastating drought of 1999/2000 was security for truck drivers and logistics staff. Security was so uncertain in so many of the vast territory that some aid agencies preferred to airlift supplies rather than risk the lives of their truck drivers and logistics staff. It was not uncommon for food aid trucks to be hijacked and robbed en route to their distribution destinations- some drivers died in the attacks. Pastoralists are market dependant for their grain needs and the isolation that resulted from disruptions to surface transport enhanced the vulnerability of hungry communities to profiteering by traders, especially food traders. The most widely applied indicator of pastoralist well-being, the grain-livestock terms of trade, is caused by conflict to tilt even more heavily against pastoralists as high grain prices tend to be even further exacerbated by conflicts and transport disruptions.

#### *Environmental Consequences of International Conflicts*

It is beyond the scope of this work to treat this huge issue in any significant detail. However in the interest of inciting debate, it must be acknowledged that conflicts in neighboring countries such as the Sudan and Somali have environmental consequences across the border in Ethiopia. The most vivid manifestation of the phenomena can be found in the frequent disputes between predominantly Anuak Ethiopians and a majority of Nuer refugees from the Sudan in Gambela National Regional State. The intricacies of the political dynamics of the conflict are beyond the scope of this work and require more research. However, a major consequence of the conflict and one of the issue that incites violence among the groups is the devastation wreaked on forest resources by the refugees on their trek to and at refugee camp sites.

#### *Environmental Conflicts in Urban Settings*

This topic too is raised mostly for the purposes of attracting future research interest. Conflict issues on urban waste disposal and treatment, industrial, air water and land pollution are but a few of the potential topics to be better studied by research. A mercifully

rare incident of violent conflict once arose when farmers whose lands had been expropriated for a mass housing project resisted eviction, even using guns to display their resolve on the matter, because they had not been fully compensated. More recently the city government has been forced to bulldoze the homes of many 'squatters' or more accurately homes built without appropriate building permits to enforce the prevailing lease based tenure system

#### *Conclusions*

The paper is meant to provoke debate so the conclusions are deliberately generic.

1. Violence against human beings is not a necessary feature of environmental conflicts in Ethiopia. Natural resources can and have been decimated without so much as a single injury to or loss of human life.
2. Decimation of natural resources, especially deforestation of roadside forests can occur in very narrow periods of time. It took millennia to exhaust the capacity of highland ecosystems to support crop livestock systems, in contrast the Rift Valley forest were transformed from forest to light woods in a matter of decades and from woodlands to grasslands in the space of months.
3. Peasant backlash against bad governance and unpopular environmental policies will be interpreted into violent acts against the environment if and when opportunity avails itself.
4. Peasants will use violent means if feasible and necessary to correct historical injustices or to simply enhance their natural resources endowments, even if this comes at the expense of their neighbors.
5. In volatile situations where the potential for violent conflict is high, the most mediocre acts even by social outcasts and undesirables, such as cattle thieves, can lead to flaring of conflicts.



6. High population densities and social integration of rural towns and farm communities combine to heighten the scope for rapid complexity in the escalation of conflicts in cropping systems.
7. Conflicts are not an uncommon feature of pastoral life. The incidence of conflicts between pastoralists and croppers appears to be on the rise.
8. Social differentiation in pastoral societies causes changing patterns of resource use, which in turn cause conflicts.
9. Conflicts should be acknowledged not concealed. Conflict management in Ethiopia will benefit from increased exposure and input from research.

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## Population Development and Environment in Ethiopia

*Sahilu Habte, Packard Foundation*

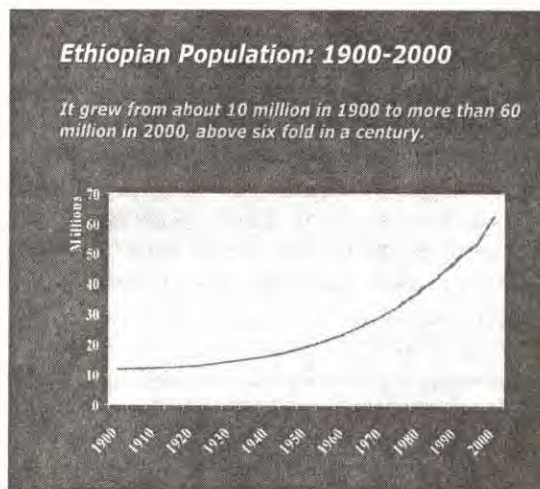
### **Introduction**

The Ethiopian population was estimated at 67 million in 2002 increasing by approximately 1.8 million a year. With an annual growth rate of approximately 3%, it is safe to assume that we will be around 70 million by mid next year. This in and by itself is neither positive nor a matter of concern. When population growth occurs in an environment of rapid economic development and major technological advance, it actually contributes to the national development effort. This unfortunately is not the case in our country. The population growth in Ethiopia is taking place in a context that is highly unfavorable to development:

- Out of the 1.8 million people that are born each year, over 70% are added to the high lands of Ethiopia where the population pressure is high, the per capita arable land is low, land erosion is a permanent feature and where the potential for alternative livelihood is the least available. The highlands of Ethiopia which cover 37% of the surface area, carry almost 80% of the population.
- The demographic momentum is at its highest. Almost half of the population is under 15 years of age. This segment of the population will enter into a reproductive life in the coming years, and, even at a much lower fertility rate, it will contribute to a major increment of the total population.
- This is happening at a time when the perspective for major economical uptake is dim. The country's industrial and agricultural output is low, income from export is minimal and the country is heavily dependent on foreign assistance.

- As a result, drought and famine are occurring at an ever increasing pace. We are currently experiencing the worst drought in the country's history affecting over a fifth of the population. While these man-made and natural disasters were occurring at a ten to fifteen years interval in the past, they are now becoming almost permanent features of the country. Ethiopia is becoming synonymous with famine and natural catastrophe.
- The government's policy on agriculture and the land tenure system have been seriously put into question by stakeholders both locally and internationally. This creates a climate of uncertainty that is detrimental to investment in the sector.

It is the combination of these factors and many more that should worry us when we think of the population situation and its impact on the development of the country. In the next few pages, I will try to highlight the relationship between population growth, development and environment in the context of our country.



### **Population and Development**

It has often been said that people are the causes and beneficiaries of development. Development is understood here as an



improvement in the quality of life of people as it relates to food, water, shelter, environment, health and education. Such improvement is dependent upon the resources that are available at various levels (individual, family, community and nations). Resources, by nature, are limited. The more people there are to share them, the less each person is likely to get. In a society where resources are abundant and the level of technology is advanced, the rate of population growth either does not matter or is considered as a positive input for development. The situation in our country is different.

We were 24 million in 1960. We are now almost 70 million, a three fold increase in 40 years. At the current growth rate, we will reach the 100 million bar in the next 12 years. Even if we take drastic measures to slow down the rate of growth, the population will continue to grow for the foreseeable future. This is because of the large young population, almost 40 million, that is entering in its reproductive life as we speak. To put the current rate of population growth in perspective, it took us over 60 years to pass from 11.8 million (in 1900) to 24 million in 1960, but only 27 years to reach 48 million. Currently the population is doubling every 23 years even though the population base is larger. Percentage wise, we were increasing at the rate of 1.5% in the 40's, 2.2 in the 60's and 3.1% in the 80's. According to the latest DHS, there is a slight decrease in the current growth rate but this remains to be confirmed. In other words, while the trend in world population growth is downwards, the Ethiopian population is growing not only in absolute number but also percentage wise.

There is no comparative growth in our economic and/or social indicators. In fact the opposite is true. The performance of the agricultural sector, which employs the vast majority of the population, is lower today than it was 20 years ago. The non-agriculture economy employs a very small proportion of the labor force. The

agricultural land is over crowded, over cultivated and under maintained. Besides an un-proportional number of people are living in the lands that are over 1500 meters above sea level. These are also lands that have been occupied by people since time immemorial, that have lost most of their organic matters, and that have been severely eroded. In other words, the most vulnerable lands are the most inhabited and cultivated lands. The population pressure exacerbates the situation. As a result, our country is condemned to perpetual food dependency and foreign aid.

All these factors contribute to a grim economic outlook. Our production capacity both in the agriculture and industrial sectors is very low. However, due to our large population base the majority of which is economically inactive (over half of the population is either too young or too old to work and among the working-age population, only half of them are working full time. Unemployment in urban areas and underemployment in the rural areas are chronic problems. Our consumption level is therefore comparatively high living little or nothing for investment in the future. Without investment, there is no meaningful development.

As mentioned above, our country depends on external aid for its basic needs (food, education and health). A country that can not feed its people but rather depends perpetually on outside assistance to do so, can not claim independence or sovereignty from its donors. Since this is happening as a result of asymmetry between the population growth and the production capacity of the country, the population issue becomes a question of national security.

The rapid population growth has also adverse impact in the country's health and education systems. According to the 2000 DHS, every Ethiopian woman will have an average of 5.9 children during her reproductive life. The number is significantly higher in the rural areas. Early



child bearing, short birth intervals and too many (more than four) children are considered health risks in and by themselves. In Ethiopia there are aggravating factors. The national health coverage (i.e. the percentage of people that can access a health facility within a ten kilometer radius of their residence) was estimated at 48% in 1998. The ratio of health professionals to the population is extremely low even by African standards, vector-borne diseases which are relatively easy to control are affecting over a tenth of the population and almost half of the children under five years of age are malnourished and underweight. And the HIV/AIDS pandemic is devastating the most productive sector of the society.

Maternal and child mortality, which are closely related to reproductive health, in Ethiopia are among the highest in the world. According to the National Office of Population, maternal mortality is 871 per 100,000 women of reproductive health and under five mortality is 166 per thousand. Children below five account for 46% of total death in the country. It is said that, in Ethiopia, one out of 11 women are likely to die from pregnancy related complications. The comparative figure for Europe and the United States is one out of five thousand. A recent assessment of maternal health around the world by Save the Children puts Ethiopia among the three worst countries in the world for mothers to be in. And yet access to basic reproductive health services especially family planning can decrease maternal mortality by as much as 40%.

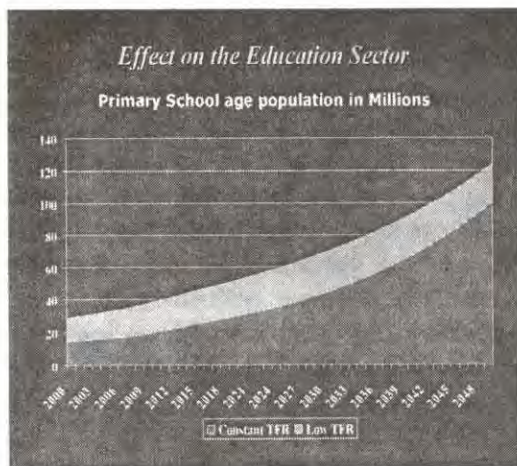
Children below five account for 46% of total death in the country. Malnutrition of children is a chronic problem: over half of children under 5 years of age are stunted while 47% of children. The calorie intake of the population is very low even when compared to the less developed countries: the average daily calorie intake in Ethiopia is around 1600 per person per day. This is far below the minimum recommended intake of 2100 calories. The over

generalization of poverty, the perpetual insecurity of access to food, lack of adequate nutritional information and the distribution of the meager available resources among large families are some of the causes of this situation. It has been documented that children that are born at reasonable intervals are usually better fed and in better health condition.

We are not faring better in the education sector. According to the 2000 DHS, a little more than a third of school-aged children have access to primary education. The rate for girls is only 17% High school attendance is limited to less than 12% of the age-specific group while higher education is limited to less than 2% of the youths. Because of the very high student to teacher ratio, lack of adequate educational materials and infrastructure, the quality of education in most of the country is very poor. The number of school age children (7 to 12) which was under 9 million in 1990 will grow to 22 million in 2020. This means, investment in the education sector will have to increase three fold in order to maintain the current dismal level of enrolment by the year 2020. Any improvement in the level of enrolment will require much larger resources, and these resources are not available.

Other social indicators including access to proper housing, electricity, potable water, are as bleak: Less than 27% of the population has access to potable water, less than 1% of households in rural areas have access to electricity compared to three quarters in urban household, the housing situation both in urban and rural areas is poor and energy consumption per capita is going down due to environmental deterioration





Again there are social, economical, cultural and historical causes to all these problems. The rapid population problem is the underlying cause of all the causes.

### *Population and Environment*

It is difficult to attribute direct causal relationship between population growth and the environmental situation. This is partly because while the population growth is immediate and observable, its impact on the environment happens during a rather long period of time. Also, although the relationship between population and environment has been extensively documented, there are a lot of other factors that can and do affect the environment. Be that as it may, in the case of Ethiopia, there are clear indications that population pressure is a major cause of environmental degradation especially in the high lands of the country where the majority of the population lives.

According to a recent report, the forest area of the country is only 2.5% and will be totally depleted in less than 20 years unless drastic measures are taken to restore the situation. Deforestation takes place at the alarming rate of over 75,000 hectares per year while soil erosion takes place at the rate of 2 billion tons annually. Due to prolonged cultivation, low technology and lack of appropriate input to improve the quality of soil, the country's agricultural and pastoral

land is losing its usefulness at an alarming rate. . Indications are that over 4% of the country's arable land has completely lost its ability to produce food while over 50% has been seriously eroded.

The immediate contributing factors to this situation include the total dependence of the population on forest wood for construction and fuel, the over cultivation and over grazing of land, the physical location of most of the arable land (most of the arable land in the north and north west is situated on a slop of almost 30%) and the internal migration from the environmentally degraded highlands to the more favorable low lands and the resultant destruction of forest land to prepare for the new arrivals. Internal migration has become a coping mechanism for environmental degradation. In fact this is being supported by the government since it has started resettling people from agriculturally poor areas to more fertile lands. This will definitely solve the immediate problem of drought and famine. In the long run, however, it will only serve to distribute the problem geographically. Car, the population of the more fertile lands of the South and South West is also growing at an alarming rate. It will not be long before we see shortage of arable land, social tension and return to the same old problems in these areas.

As indicated earlier, it is difficult to attribute the worsening situation of the environment to the rapid growth of the population only. However, it is obvious that this is a contributing factor in more than one way:

- Deforestation and land degradation occur in areas where there is the highest population concentration and where agriculture is the main stay of the local economy
- The ever decreasing per capita size of cultivable land, the worsening situation in per capita agricultural output and the environmental degradation occur in proportion to the population growth.



- Even in the more favorable low lands, internal migration and, as a result, the clearing of the wood and grazing lands for newly settled inhabitants coupled with inappropriate farming techniques are rapidly destroying the ecosystem
- Urbanization is not yet a major problem in Ethiopia. However, the rate of population growth in urban areas is much higher than in the rural areas. And, as often is the case, urban expansion occur at the expense of fertile and productive agricultural land. This in turn increases the pressure on the availability of agricultural land

### *So What Needs To Be Done*

The developmental and environmental challenges of the country are multi-faceted. They require multi-sectoral approaches. The over arching cause of the problem is however the rapid growth of the population. Addressing the population issue will not solve all our problems. However, without it, there will not be any meaningful development in the country. There are many ways of reducing the rapid population pressure. Some are long term and require major investment in terms of human, material and technology. Others are within our immediate reach.

Measure that can address the population problem include educating the young female population, reducing harmful traditional practices especially early marriage and family pressure for early child bearing and expanding family planning services.

There is no doubt that girls education will contribute greatly to reducing the rate of population growth. In fact girls' education is probably the single most important factor that may alter the developmental paradigm of the country. Educated women usually marry late, are economically active and are able to make independent reproductive health decisions. For example, the contraceptive utilization among illiterate women in Ethiopia is under 5% while 16%

of women with some primary education and 45% of women with secondary education use family planning methods. Educating young girls will also address the major gender gap that exists in most communities of the country. Such gender gaps include fair distribution of labor, access to resources, empowerment within the family and the society etc...However with the current rate of development in the educational sector, it is unlikely that we will have a critical mass of educated women before the population reaches an alarming level.

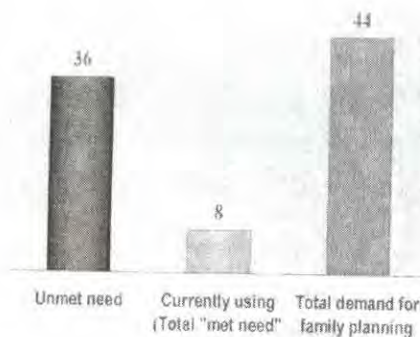
Some harmful traditional practices favor early marriage of girls and immediate child bearing after the marriage. Delaying girls, marriage by 3 to five years (the average age of marriage for girls is around 17. And over 40% of the girls aged 19 are already mothers) will have significant impact in the rate of growth of the population. Delaying the marriage age of girls will also have major role in improving maternal and child health in the country. It has been documented that one of the major causes of maternal mortality and morbidity is early child bearing before the body of the girl is properly developed. There have been some important gains in fighting harmful traditional practices in the past few years. Many non governmental organizations are involved in massive education of the population against some of the most harmful of our traditional practices, especially female genital cutting and defending the rights of young girls. The rapid urban development, the expansion of media campaign against these practices and the active involvement of communities in some parts of the country are contributing to the improvement of the condition of the girl child. However, the struggle to get rid of these practices is long and difficult. The population situation can not be ignored until these problems are resolved.

The easiest and most cost effective response to the population pressure is therefore making family planning services available as widely as possible. Obviously this action



needs to be combined with other complimentary and supportive measures. But there are enough experiences in this country and elsewhere that show that concerted effort to provide contraceptives to those who want and demand it will contribute significantly towards the stabilization of the population growth.

Today, less than eight percent of women in the reproductive age use modern family planning methods. Had the services been made available over 45% of them would like to use them either for the purpose of spacing or limiting their child bearing. Some recent experiences of non governmental organizations show that significant progress can be achieved if family planning when services are offered in a manner that is culturally and socially appropriate. In South Wollo, Jimma and parts of the Southern Region where non governmental organizations have been active in community based services, family planning use has significantly increased and there are signs of fertility decline. However these are few and far between. In most part of the country, services are unavailable or inaccessible to the majority of the population. Why?



Ethiopia has a population policy that is ten years old this year. The policy is very progressive and identifies the major obstacles to the country's development effort. It also proposes appropriate

measures intended at addressing these obstacles. The objectives of the policy include increasing contraceptive usage to 44% (from 4% at the time the policy was developed) and reducing fertility to 4 children per woman (from 7.7 children per woman) Had the policy been implemented as intended, there is no doubt that we would have made significant progress in reducing the rate of growth of the population. But it seems implementation is a major problem.

This is because although we do have explicit population policy and program, the national reproductive health and related programs seem to be managed by the actions (or lack of it) of senior government officials that are contrary to the policy. A recent evaluation of the health sector development program rightly identifies lack of commitment by government officials as being the major impediment for the proper implementation of the population policy. It has become a common feature of our leaders to compare our population problem with that of China or India to conclude that population growth is no problem for the country's development. They seem to forget or deliberately ignore that we are neither China nor India, although even these countries are facing serious problems as a result of their massive population size. For example, the number of Indians living under the poverty line is over 300 million. We do not have the level of education that the peoples of these countries have, we are far from acquiring the technological advancement of India which is the 10<sup>th</sup> biggest industrial country and the 2<sup>nd</sup> biggest producer of computer soft wares in the world. In other words, while China and India have much larger population, they also have an economic base that can support such population. Nothing in what we have or do indicate that we are heading that direction before the population size becomes unmanageable. We need strong commitment to family planning and reproductive health from our leaders at all levels. Without such commitments, we may make important progress locally, but won't make any dent in the overall population situation. No



population program has succeeded without a strong and proactive support from national governments.

Our leaders should support the expansion of family planning because, in addition to addressing the population growth problem, it contributes to the national development in many ways. The millennium development goal that has been adopted by the government identifies several targets to be achieved by the year 2015. These include: eradicating extreme poverty and hunger, achieving universal primary education, promoting gender equality, reducing child mortality, improving maternal health, combating HIV/AIDS, malaria and other diseases and ensuring environmental sustainability. There is no mention of expanding family planning or reproductive

health services. However, expansion of family planning services will contribute greatly to the achievement of every one of the goals mentioned above.

And there is one important reason for the expansion of family planning services: it is the basic right of each man and woman to decide the number and spacing of his/her child birth. It is ironic that those who oppose family planning (population) programs are those who are the well to do of the society, who earn by far higher wages than the national average and who have access to health and education facilities. And yet most of them choose to have two or three children. Shouldn't the rest of the population have the opportunity to have the same choice?





## Utilization of Transboundary Water Resources and Its Consequences

*Gulilat Birhane, Head Planning and Project Department of Ministry of Water Resources*

### Abstract

Water is one of the most important elements for human life. History has proved that old civilization was emanated along the river banks of the Nile Delta, Euphrates and Tigris. Even today, as population and development increase at a faster rate the demand for water increase at much higher rate. The per capita water consumption has also direct relation with the economic development of the nation or community. 50 liters per capita per day was accepted as a basic right to every body in 1992 at Dublin. The theoretical daily per capita demand in Ethiopian cities is in the range of 40-45 l/c/d and in rural is yet between 15-20l/c/d. The actual supply is much lower than 30 l/c/d for the cities and less than 15 l/c/d for only 24% of the rural community. The remaining 76% still doesn't have any sort of protected water supply. [Water sector Review, 2002]. These figures, by any standard, are much lower than international figures.

Irrigation is also one of the most water abstracting undertaking; more food has to be produced in order to feed the ever increasing population, renewable energy has to be also considered to meet the energy requirement. A natural flow has to be left for sustainable eco- system management.

Water is available in the form of gas, solid and liquid. All are equally resources; however, the liquid water is most commonly accessible for human consumption. In most cases, hydrological boundaries (Water shade boundaries) are not the same with the political boundaries, which cause conflict among the riparian countries. Based on the ever increasing demand for water, there are a lot of professional's who put water as a source of future conflict. Contrarily there are

other groups who believe water as a media of cooperation among states. Experience has, nevertheless, shown us a mix of all, local and international conflicts to capture the source of water heads. Off course, possession by force never remains a sustainable solution to bring wealth to any one.

Currently countries are recognizing the equitable water use right of all water sharing countries. Ethiopia, as well in its water policy recognized equitable water sharing among riparian countries, because of this and other reasons the policy got recognition by different international agencies. The recognition of this policy by different donors facilitates the smooth flow of investment to the sector, which is critical to increase the rate of utilization.

In this paper effort will be made to give highlights on general facts about water utilization, integrated water resource management, experience of international water course utilization, Ethiopian policy and strategy towards transboundary water utilization, The Nile Basin Initiative and concluding remarks.

### General facts: Water resource & its utilization

#### *a) International Experience*

Water, a gift of God, is one of the valuable resources upon which both economic and social development rely. It is an essential input for domestic use, agricultural production, hydropower generation, industrial consumption, and ecosystem management. According to recent world water resource estimate annually, about 100,000 KM<sup>3</sup> of water fall on earth's surface as precipitation, out of which only 40,000 KM<sup>3</sup> are listed as world's renewable resources, that is the amount of water that flows to river and ground water systems every year. Although, the rate of water resource utilization varies from country to country, it has been managed so far to divert



3800 KM<sup>3</sup> of water from its natural courses, of which 2500 KM<sup>3</sup> are diverted for irrigation.<sup>1</sup>

Regardless of the ability to abstract the above mentioned amount of water at the beginning of 2000, about 1.1 billion people (one-sixth) of the world's population were without access to safe drinking water and access to food was also difficult for more than a billion.

The daily water requirement is also highly dependant on the level of economic development. According to the Dublin 1992, conference, 50 liters of water per person per day have to be provided in order to meet daily water requirement. However, this is not possible for most of the developing countries. The per capita annual abstraction of water from the natural system for domestic purpose varies from 16.4 M<sup>3</sup> in low income countries to 146.5 M<sup>3</sup> in high income countries.<sup>2</sup> Because of natural and economic related reasons water storage in Ethiopia is very low. It is estimated that artificial reservoir storage in Ethiopia is about 40M<sup>3</sup> /capita, in contrast to 750 M<sup>3</sup>/ capita in South Africa and 6150 M<sup>3</sup>/ capita in North America.<sup>3</sup>

Table 1 gives us the international rate of water utilization in different wealth category and sector. As it has been shown in Table 1 the rate of water utilization in low income country is highly dominated by the agricultural sector ( 89%) while domestic &

<sup>1</sup> D.Molden, F.Rijsberman, Y.Matsuno & U.A. Amarasinghe, 2001, Increasing productivity of water: A requirement for food and environmental security, Dialogue working paper 1, Colombo, Sri Lanka: Dialogue Secretariat.

<sup>2</sup> Abernethy, C.L.(ed.) 2001. Intersectoral management of river basins: Proceedings of an international workshop on "Integrated water management in Water stressed River Basins in Developing Countries: Strategies for poverty alleviation and Agricultural Growth," Loskop Dam, South Africa, 16-21 October 2000. Sri Lanka: International Water Management Institute (IWMI) and German foundation for international Development (DSE).

<sup>3</sup> The World Bank ,2003 , Water Resources Assistance Strategy for Ethiopia [DRAFT],

industrial consumption take a share of 4% and 7% respectively. The situation in high income countries is completely different. Agriculture takes only 40% while domestic take 15% and industry 45%. The difference in Agriculture lies on the productivity per unit of water.

**Table 1: Sectoral consumption of water  
Unit % of annual fresh water abstractions**

	Sector		
	Agriculture	Domestic	Industrial
Low Income	89	4	7
Lower middle income	74	8	18
Upper middle income	73	12	15
High income	40	15	45

Source: Abernethy, C.L.(ed.) 2001. Intersectoral management of river basins PP: 121.

#### ***b) Ethiopian Water resource potential and level of utilization***

Ethiopia, the tower of East African water resource has got 12 major basins with a total flow of 122.19 BM<sup>3</sup> surface and 2.6 BM<sup>3</sup> ground water. The share of the major Nile tributaries Abay, Tekeze and Baro-Akobo is about 68.6% of the total surface water resource. On the contrary there are certain basins classified as "dry basins" because of the low water resource they hold with in the basins. Table 2 show the amount of water available in the basins and the possible annual discharge. Unlike the geophysical position of the country in the tropical zone, the high altitude of the country and other factors contribute towards high variability of rainfall in the country. According to Lemma, [1984] the rainfall variation rang from 10% in south western to 70 % in the north eastern.<sup>4</sup>

<sup>4</sup> Lemma, 1984, Ethiopian rainfall classification, National Meteorological Agency



**TABLE 2: ETHIOPIAN SURFACE WATER RESOURCES BY MAJOR RIVER BASINS**

No	River Basin	Catchments Area (km <sup>2</sup> )	Annual Run off (BM <sup>3</sup> )	Specific Discharge (l/s/km <sup>2</sup> )	Share Out of Total
1	Abbay	199,812	52.6	7.8	43.05/17.56
2	Awash	112,700	4.6	1.4	3.76/9.9
3	Baro-Akobo	74,100	23.6	9.7	19.31/6.51
4	Genale-Dawa	171,050	5.88	1.2	4.81/15.03
5	Mereb	5,900	0.26	3.2	.21/ .52
6	Omo-Ghibe	78,200	17.96	6.7	14.7/6.87
7	Rift-Valley	52,740	5.64	3.4	4.62/4.63
8	Tekeze	90,000	7.63	3.2	6.24/ 7.9
9	wabe-Shebele	200,214	3.16	0.5	2.59/ 17.59
10	Danakil	74,000	0.86	0	0.7/6.5
11	Ogaden	77,100	0	0	0/6.77
12	Aysha	2,200	0	0	0/.19
<b>Total</b>		<b>1,138,016</b>	<b>122.19</b>		

Source: Water works Design and Supervision Enterprise, Ministry of water resources, 2001, Sector Review

The aggregate abstraction of water from the natural system is not well recorded. Although the country has been able to develop not more than 200, 000 hectare of modern irrigation, agriculture is believed to claim more than 70 % of the total water abstracted. The water supply coverage is in the order of 32% for the whole nation, which might be the lowest even in case of African. The theoretical per capita daily demand is 40-45l/c/d (14.6 M<sup>3</sup>- 16.4 M<sup>3</sup>) for urban and 15-20l/c/d (5.5 M<sup>3</sup>-7.3 M<sup>3</sup>) for rural.

Nevertheless, as per the finding of the Ministry of water resources in 1999 the existing situation is much lower. The average urban per capita consumption is in order of 15 l/c/d, which is about 5.47 CM/year. This is less than 30 % of the low income countries and the target of the country.

***Integrated Water Resource Management a means towards an optimum utilization***

Water, as one of the cross cutting social & economic resource, need due attention

towards adopting efficient and equitable management. Experiences through out the world demonstrate wide options of managing the water. All management modalities have their own merits and demerits and no one brought a perfect module, which could be able to satisfy the institutional set up of all shared water.

Integrated Water Resource Management (IWRM) is, however, one of the newly developed and widely accepted water resource management modules. The module promotes the coordinated development and management of water, land and related resources. It intends to maximize the resultant economic & social welfare in an equitable manner without compromising the sustainability of vital ecosystems. Economic efficiency in water use, equity and environmental & ecological sustainability are the over riding criteria's in applying the IWRM.<sup>5</sup>

<sup>5</sup> .Global water partnership, Technical Advisory Committee, 2000, Integrated Water Resources Management, Background paper 4, Stockholm, Sweden.



Basin approach is also complementary part of IWRM, which might provide an opportunity to look in to the supply and demand aspects of water in a coherent manner.

Ethiopia in its Water resource Management policy and Ethiopian water resource strategy adopted both basin and integrated water resource management, basin actually used as a planning unit. To this effect a master plan had been prepared for, Mereb, Tekeze, Abay, Baro-Akobo & Omo-Ghibe basins. Study for the Wabie-Sheble and Genale\_Daw have been commenced last year and this year respectively. The main objectives of these studies are: -

- To identify and quantify the national available resource,
- To prepare a development plan which could be implemented in the coming 30-50 years,
- To allocate the available water resource for the most economically feasible & socially acceptable purposes.

The study mainly aims at identifying projects related to land utilization, water supply and sanitation, irrigation, hydropower, infrastructure, livestock and fishery. Generally, the bases for the preparation of the master plans are the demographic situation and a demand for water to sustain the livelihood of the people, the economic development and to sustain the natural eco system.

Proper institutional arrangement is quite important to implement the proposed interventions. This has been taken care of in the studies. The Ministry of Water Resources has started a project to establish an Authority for the management of Abbay Basin. This will continue to the other basins as well. Awash one of the relatively used basin, both in terms of irrigated agriculture, hydropower and industrial purpose has its basin development enterprise, which looks upon allocation of water, construction of

facilities, distribution of water, monitoring of water quality & flood protection.

### *Experience of transboundary water utilization*

The experience of transboundary water utilization has remained highly controversial among politicians, scholars and communities. Even today, there is no clear understanding among those who promote “water war”, “water peace” “water development” and other thoughts. In this brief article these three thoughts will be examined before looking into empirical experience of other countries.

There are a number of scholars who believe water could cause the war of the twenty-first century. To mention some of the most popular once Westing (1986) said that “competition for limited freshwater leads to severe political tensions & even to war”. Gleick (1993) describes water resources as military and political goals, using Jordan & Nile as examples. Remans (1995) use case studies from the middle East, South Asia, & South American as “... well known examples of water as a case of armed conflict.” Butts (1997) put forward his opinion saying that, “history is replete with examples of violence over water.” There are also others such as Starr & Stoll (1988), Bulloch & Darwish (1993), Biswas 1994 & Softer, 1994, 1999. <sup>6</sup> Mainly this group of scholars describes their thoughts based on the stress over the resource and hegemonism due to the population growth and its importance for livelihood. High level politicians also express their concern towards water war in different ways. J.Trotter (2003) quoted Mr. Kofi Annan speech delivered in March 2001, which say “...If we are not careful, future wars are going to be about water and not about oil (UNESCO, 2003). The ‘water war’ thought

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<sup>6</sup> UNESCO & Green Cross International, 2003, from potential conflict to cooperation potential, Water for peace, prevention & resolution of water related conflict. Paris France



is highly disseminated to even the community level.

Contrary to the water war scholars, the water peace advocates argue that, the historical record of acute conflict over international water resources is over whelmed by the record of cooperation. They base their argument on historical records of conflicts against those related to water. ( J.A.Allan, 1992 & Aaron Wolf, 1998.) On the same line, but basing its fact on economic analysis Baskin (1994) join the 'water peace'.<sup>7</sup> According to the first group the only recorded incident of an outright war over water was 4500 years ago between two Mesopotamian city states. According to Aaron Wolf's analysis of 412 crises among riparian states between 1918 and 1994 he identified seven cases where water issues contributed to the dispute. Contrarily, between the years 805 & 1984, countries had signed more than 3600 water related treaties.

Baskin one of 'water peace' promoter argues by taking the case of Israel. Israel spent to buy water only 0.67% of its GDP<sup>8</sup>, which is small compared to the country's economy. He argues then no country goes to war to loose more. These types of arguments are considered more likely to be the trend in the twenty first century.

The third approach is the water development approach which is much concerned about time and space of water availability. This group, including Turner & Durbourg (1999) and others believe and advocate the principle that, "water should be brought where it is needed".<sup>9</sup> They fully underline the availability of fresh water, if it is managed in the way it should, can serve the population of the globe.

As it was argued by the water peace group direct war might not be there but there were

a number of tensions which could hamper development and flow of investment. On the other hand, if sharing international water became a direct cause of war it could be difficult to manage the issue for the world that has more than 200 major transboundary rivers and lakes.

Africa, one of the driest regions of the world has more than 80 transboundary rivers, which even some of them shared by as many as ten countries.<sup>10</sup> These river and lake basins hold tremendous potentials for hydropower generation, large scale multi-country irrigation, inter and intra country navigation, inland fisheries, tourism and recreation, and water sources for domestic, industrial and mining operations. Integrated and well coordinated development and management of natural resources of these river basins will contribute significantly to the socio-economic development of millions of Africans living in a very poor situation. However, because of poor cooperation and regional unrest, opportunities have been missed. Although cooperation on few of the 80 basins started in the 1960 and 70s, much had not done towards this end. At the beginning of 2000 there were nearly ten basin cooperatives out of the 80 shared basins and about three are under discussion.<sup>11</sup> Some of the major rivers of the continent such as Congo, the Nile and Lake Victory are under negotiation to establish basin organizations. Compared to other continents this would be the lowest achievement in terms of cooperation.

### **Ethiopian policy and strategy towards transboundary water utilization**

Ethiopia releases about 75% of its available surface water to neighboring countries. However, the country has a very limited history of cooperation on the utilization and management of its transboundary rivers. The

<sup>7</sup> UNESCO,2003, Ditto

<sup>8</sup> UNESCO,2003, Ditto

<sup>9</sup> UNESCO,2003,Ditto

<sup>10</sup> UNECA, 2000, Transboundary Rivers/Lake Basin water development in Africa: Prospects, Problems, and Achievements, ECA/RCID/052/00, Addis Ababa, Ethiopia.

<sup>11</sup> UNECA, 2000, Ditto.



capacity to abstract its water resource is also very limited both in terms of human, financial and technical resources. The long lasting civil strife and hidden tensions with riparian countries had their own negative impact. Wondimneh (1979) has tried to forward his findings on the Egyptians aspiration over Lake Tana and the Blue Nile both during the colonial invasion and after independence.<sup>12</sup> All their efforts were targeted if possible to control the head waters of the basin; if not to hinder the water development under taking of upper riparian states mainly Ethiopia. Even after the cold war, the struggle was stiff through hindering international fund flow. Though, cooperation has the upper hand in the international water utilization multilaterals and bilateral will look forward to shake hands with those who have a clear policy and strategy towards transboundary water utilization.

Ethiopia has issued its water resource management policy in 1999 and the strategy in 2001. In all the documents the issue of transboundary water utilization has been well articulated. "EQUITABLE" water utilization is the guiding principle of the country. The question is logical for the country, which has highly variable precipitation and high growth of population.

To high light an example of Tefera's (1997) analysis *"the Ethiopian portion of the Nile (Mereb, Tekeze, Abay & Baro- Akobo ) has a population estimate of 25 million in 1997 and it is forecasted to be in order of 70 to 90 million in the coming forty years. The food requirement of the population is also estimated to be around 30 million tons annually of which about 11.5 million tons will be expected from irrigation. Sugar requirement alone will reach over 2.7 million tons and that of the seed cotton for fiber production will be about 1.13 Million tons. About 2.9 Million ha need to be*

<sup>12</sup> Wondimneh Tilahun, 1979, Egypt's imperial aspirations over Lake Tana and the Blue Nile, United Printers LTD, Addis Ababa, 1979.

*irrigated to meet this requirement. To satisfy the water demand based on the agricultural, water supply and other demand situation indicates that between 29 to 54 BCM of water will be required at the end of the projection period"*<sup>13</sup>

Although the analysis shows only the western part of the country, it gives us a good indication of future water demand of the country in order to sustain the livelihood of the population. To avail the required water to all those who need it badly, cooperation with riparian countries is vital. A number of Ethiopian professional have forwarded their strong position towards cooperation in sharing the Nile water with others especially Sudan & Egypt. [Dr. Dedjazmatch Zewde, 2000], [Girma Amare, 2000] [Dr. Kinfu Abraham, 2000].

The other challenge to utilize the water resources is lack of fund. Water undertakings need huge amount of fund which might be difficult to mobilize internally from the treasury of the country and that of the local market. This would by itself call for cooperation between countries. These arguments strengthened Ethiopia's position towards equitable water sharing and the position has become more logical and timely.

### **The Nile Basin Initiative**

Nile is one of the world greatest rivers that travel nearly 6700 Kilo Meters, draining an area over 3 million square kilo meters. The river Nile is shared by 10 countries: Burundi, Democratic Republic of Congo, Egypt, Eritrea, Ethiopia, Kenya, Rwanda, Sudan, Tanzania, and Uganda. The habitants of the basin is estimated to be around 160 million.

The basin is characterized by poverty, instability, rapid population growth, & high

<sup>13</sup> Tefera Woudneneh; 1997, Water Demand Scenario in the Ethiopian portion of the Nile Basin, V<sup>th</sup> Nile 2002 Conference, Comprehensive water resources development of the Nile Basin: Basis for cooperation,



environmental degradation. As a matter of fact four of the world poorest countries are the riparian countries of the Nile Basin.

The cooperation of Nile has a long history, which might take us some 30 years back to the age of Hydromet [1967]. Hydromet was established to foster the joint collection of hydro-meteorological data. There were also other cooperative frame works. However, Ethiopia was not involved as an active member of any of the former cooperative frameworks. However, since 1997 Ethiopia has taken a position to participate in the dialogue with other Ministers of water affairs and they have come up with a new vision, the Nile Basin Initiative [NBI], in 1999 in Dar Salaam, Tanzania.<sup>14</sup>

The common vision of NBI and its objective are stated as follows.

*"The vision is: to achieve sustainable socioeconomic development through the equitable utilization of, and benefit from, the common Nile Basin Water Resources."*

The objectives are:

- *"To develop the water resources of the Nile Basin in a sustainable and equitable way to ensure prosperity, security, and peace for all its peoples*
- *To ensure efficient water management and the optimal use of the resources*
- *To ensure cooperation and joint action between the riparian countries, seeking win-win gains*
- *To target poverty eradication and promote economic integration*
- *To ensure that the program results in a move from planning to action."*<sup>15</sup>

To some one who looks in to the vision and the objectives of NBI carefully, it is actually in line with that of the Ethiopian water policy and strategy. Integrated water

resource management is also the key approach adopted.

NBI as its strategic action program has adopted two programs, the **shared vision & subsidiary action programs** both programs have their own details, which is beyond the scope of this paper. However, to highlight some of the main features to the readers; there are seven projects which come under the shared vision with the objective of creating enabling environment for cooperative management and development. The projects are:

1. Nile transboundary environmental action
2. Nile basin regional power trade
3. Efficient water use for agricultural production
4. Water resources planning and management
5. Confidence building and stakeholder involvement
6. Applied training
7. Socioeconomic development and benefit sharing.

All these projects are hosted by different member countries. Ethiopia as one of the member countries has hosted the Water Resources Planning and Management project.

In parallel with the shared vision program the Subsidiary Action Programs, which translate the vision into action and realize transboundary development opportunities have been initiated & potential projects identified. To manage the program the Nile riparians has formed two subsidiary action programs – one is for the **Eastern Nile Region [ENSAP]** and the other is for the **Nile Equatorial Lakes region [ELSAP]**. Sudan and Egypt the down stream riparian countries belong to both regions because of their strategic geographical location. Ethiopia, Sudan, Egypt and Eritrea [observer status] belong to the Easter Nile Region. The regional office of ENSAP has started official

<sup>14</sup> The Nile Basin Initiative Secretariat, 2003, The Nile Basin Initiative: an overview, Entebbe, Uganda

<sup>15</sup> Ditto, 2003.



operation in September, 2002, in Addis Ababa, Ethiopia.

The ENSAP riparian countries have identified their first track projects under the objective of Integrated Development of the Eastern Nile. The projects consist of

- Eastern Nile Planning Model subproject
- Baro-Akobo Multipurpose Water Resources Development subproject
- Flood Preparedness and early Warning subproject
- Ethiopia-Sudan Transmission Interconnection subproject
- Eastern Nile power Trade Investment Program
- Irrigation and Drainage subproject
- Watershed Management subproject

Under the umbrella of Eastern Nile power Trade Investment Program and Irrigation & drainage subproject Ethiopia has submitted the following projects to be implemented in the coming fifteen years. The projects have been accepted by member countries and preparatory work has commenced. Tana Lake & Surrounding [87,795 ha.], Humera [42,965 ha.] and Dedessa-Nekempt [84,803 ha] totally 215,563 hectare of land has been included under the fast track irrigation and drainage project. The proposed power projects are indicated in Table 3.

**Table 3: Hydropower projects selected for NBI**

Ser.No	Site Name	Basin	Power plant Capacity MW	Energy generation capacity GWh/yr.
1	Birbir	Baro-Akobo	467	2459
2	Karadobi	Abbay	1580	65920
3	Mendaia	Abbay	1700	6750

Source: Ministry of Water Resources, 2000, NBI project profile.

## Conclusion

Water is one of the most important resources required to sustain livelihood however it is getting depleted or polluted due to the population pressure and environmental degradation. In order to feed the ever increasing population, a large quantity of water has to be abstracted for the purpose of food production, human consumption, energy production, industrial use and ecosystem sustainability.

Basin approach and integrated water resources management are important planning tools to manage the nation's water resources. The globe generally has more than 200 transboundary rivers, Africa alone take about 40% of the figure. Ethiopia provides more than 75% of its surface water to the west and south eastern neighboring countries.

Different schools of thoughts have emerged in relation to water. The main once are scholars who foster water as source of conflict on one side and peace on the other. Nevertheless, recent trends are in favor of cooperation rather than conflict.

Ethiopia has not been able to use its water resources in transboundary rivers because of highly interrelated socio-economical problems and political instability. The country has endorsed water resources management policy, strategy and program, which promote equitable water resource utilization & basin approach integrated water resource management.

The policy has given a direction for Ethiopia to join the riparian cooperation while simultaneously strengthens the confidence of others towards cooperation. Ethiopia should now mobilize internal and external resources to overcome the low level water abstraction and develop its water resources as per the master plan studies and its water sector program.



### Editor's Note

The following courses of actions have to be taken for the successful development of Ethiopia's water resources:

1. Development of national consensus on the water sector policy, strategy and program;
2. A commitment on the part of the government to allocate resources for the implementation of the water sector program;
3. Ensure all experienced professionals at home and in the Diaspora participate in the implementation of the sector program;
4. Ensure all disfunctioning and semi-finished water supply and irrigation projects are rehabilitated and made productive urgently;
5. Ensure the active participation of the private sector in irrigation and power development by urgently removing constraints and bureaucratic hurdles
6. Put in place sound strategies for mobilization of financial resources for the implementation of the water sector program.



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