

**Proposal for organizing a
National Roundtable on Sustainable Consumption and
Production in Akaki River Basin**

Ethiopian Science and Technology Commission



Ethiopian Cleaner Production Center



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National Roundtable on Sustainable Consumption and Production in Akaki River Basin

Background

1. Ethiopia, which is often referred to as the 'water tower' of Northeast Africa, has a number of rivers that originate in the highlands. Rivers originating in the western part of the country (including the Nile) drain into the Mediterranean Sea Basin while those originating from the eastern part drain into the Indian Ocean. Despite the huge potential that the country's rivers may provide, the Awash River Basin is the most developed basin so far. The Awash River is consisted of numerous tributaries that flow from the central and south eastern part of the country.
2. The Akaki River is a part of the Awash River catchment, which drains the central and eastern part of the country. The river consists of two main branches, the confluence of which is at the Aba-Samuel reservoir. The western branch of the river, the Little Akaki, rises north-west of Addis Ababa on the flanks of Wechacha mountain and flows for 40 km before it reaches the reservoir. The eastern branch of the river, the Great Akaki, rises north-east of Addis Ababa and flows into Aba-Samuel reservoir after 53 km.
3. Most of the industries in Ethiopia are located in Addis Ababa and the nearby town of Akaki, a region where the Akaki River drains. According to a study by Mebratu D. in 1990 and 2000, only 6 and 20% of the industries in and around Addis Ababa had treatment plants, respectively. The rest of the industries have been discharging their effluents into the Akaki River without any form of treatment. These include effluents discharged from textiles, metal, food, beverage and tanneries. Most of these industries discharge their waste directly into these rivers, the volume of liquid waste generated from each industry varying from 1-1000 m³/day (Benoist, 2002).
4. Domestic waste is another major source of pollution for the Akaki River. According to the Health Bureau of Addis Ababa Administration, the collection of waste during the year 1996 was 54% of the total waste generated (Adane B, 1999; Enda Ethiopia and Preceup, 1999). The lack of inadequate sanitation and human waste disposal facilities have led to the dumping of household waste in the vicinity of the rivers or open space of land (Gebre Emmauel, 1999). Especially when considering the dramatic increase in population in these urban centers this obviously becomes a major threat. The population of Addis for example has increased by 60% in the past decade alone (from 1.4 million in 1984 to 2.3 in 1997) (Enda Ethiopia and Preceup, 1999).
5. Apart from the leachate from solid waste, sewage waters also flow directly or indirectly into the Akaki River, due to a limited sewerage system present in the cities. Estimation on domestic waste water produced in Addis is approximately 100,000 m³ per day (Beoist 2002). Hydrological investigation carried out in the Akaki area by AAWSA-TAHAL have shown that from the total amount of water supplied to Addis Ababa city 70% return as sewage, of which 60% flows into the Akaki River (Teklehaimanot 2003).

6. Apart from its unfortunate use as open waste disposal site the river is also used as a source of drinking water for the rural population living outside Addis Ababa and Akaki. Furthermore vegetables consumed in the cities are also produced using polluted waters from the river. The region, especially the Akaki–Aba-Samuel wetlands, is also of particular ecological use. According to Bird life International the Akaki-Aba Samuel wetlands, is important for supporting wintering waterbirds, over 20,000 being present occasionally (http://www.birdlife.org/datazone/search/sites_search.html).
7. Currently the Akaki River is extremely polluted. BOD measurements show that the river is anaerobic for most of its parts. Assessment of the fauna also reveals the only species to be found are worms that could survive under low oxygen conditions (Tubifex Tubifex i.e. red worms). Apart from the low oxygen level the elevated level of nitrite, some trace elements (Pb and Mn) and some toxic compounds (dioxin-like and estrogen-like compounds) observed in the little Akaki River indicates there is a threat to the ecosystem. In these locations the high levels of Cr, Pb, NO₂ and dioxin-like compounds also indicate risks to human health (Teklehaimanot RR, 2003). High build up metals i.e. arsenic in Swiss chard (*Beta Vulgaris* Var *Circa* L.) and chromium in lettuce (*Allium Cepa* L.) observed in a number of farms in the Akaki area suggest possible human health risks via food consumption. The observed level of iron and lead is also a reason for concern (Fisseha I, 2002).
8. Litters of plastic bags and household waste along the banks are also a common sight. Although there has not been a consolidated study, the socio-economic impact caused by the continuous environmental degradation of the Akaki River is expected to be significant due to the large number of people that depend on the river for their livelihood.
9. As a consequence of the above, the Akaki River is one of the most polluted river systems in the country. In particular the little Akaki River has a characteristic greenish-dark colour, pitch dark sediment and a peculiar pungent odour which is associated to the industrial and domestic waste discharged to the system (Tekelhaimanot 2003). The negative impact on human health and the ecosystem as a result of the elevated level of a number of pollutants will ultimately affect the livelihood of population that depend on the river water.
10. This has provided the basis to initiate a multi-stakeholder project on 'Integrated management of the Akaki River Basin'. This concept note is prepared to serve as a background to organize a multi stakeholder consultative forum that will deliberate on the existing situation and define the modalities for the 'way forward'.

Past and Present Activities

11. Several researches regarding the pollution of the Akaki River have been conducted by universities and research institutes in the country. All these studies indicate that there is a substantial pollution of the River. A summary of some of the studies undertaken are indicated below.

Water quality research reports concerning pollution in the Akaki River

Period	Aim of research	Authors
1974	Study towards the impact of industrial pollution, 22 streams sites, 11 within and 11 outside Addis.	Zawide and Komolrit
1976	A follow-up survey on the 1974 study involving analysis of industrial waste effluents.	Zawide F.
1987	A water pollution assessment in the upper reaches of River Awash including bacteriological examination	-
1989	Master Plan for the Development of Surface Water Resources in the Awash Basin Vol. 9	EDVSA and Halcrow.
1994	Chemical constituent of selected water sources in Addis Ababa and Ambo	Yesehak W and Sinkenesh I
1998	Soil pollution with toxic compounds on farm lands close to the old and new industrial sites in Ethiopia.	Fisseha I.
1998	Metal concentration of some vegetables irrigated with industrial liquid waste at Akaki.	Fisseha I.
1999	Surface and groundwater pollution problems in the Upper Awash River Basin (MSc thesis)	Adane B.
1999	EPA survey on industrial discharge quality	EPA Ethiopia
1999-2000	ESID (EPA/UNIDO) reported in a Situation analysis report on the effect of industrial discharges	Mebratu D.
2003	Toxic risk evaluation of the Awash River Basin (MSc thesis)	Teklehaimanot R.R.

12. Programs and projects designed to alleviate this problem include:
- a. The monitoring and follow-up program of the pollution status of the Akaki River by the EPA and
 - b. The introduction and promotion of cleaner production techniques and technologies by the Ethiopia Cleaner Production Centre (ECPC) to several industries in the vicinity of the Akaki River.
13. The EPA has taken a comprehensive follow up of the pollution status of the Akaki River. According to the EPA a monitoring network will be in operation for the next 3 to 4 years at 36 locations along the Awash River. In total 12 runs will be made. Thirty-four monitoring stations in the Addis Ababa region (great and little Akaki River) have already been sampled. This monitoring aims at identifying problematic areas, tracking down the most serious polluting industries, and determining the effect of mitigating measures undertaken (Benoist, 2002).
14. The Ethiopian Cleaner Production Center (ECPC) has also been actively involved in the introduction and promotion of cleaner production approach and environmental management system in the Ethiopian industries towards the enhancement of their productivity, competitiveness, and improved environmental performance. The center's program is supported by UNIDO and UNEP.

15. The Need

- Studies conducted on the Great and Little Akaki Rivers have clearly shown that these are the most polluted rivers in the country due to the different kinds of waste that are discharged into their system.
- While being the most polluted, the rivers still continue to be used for different purposes including irrigation and household utilities thereby leading to significant adverse socio-economic impacts.
- Different activities are being undertaken in terms of improving the industrial and domestic waste management practices within the Country. Nevertheless, the effect of these activities could be significantly enhanced by launching an integrated management programme on Akaki River.
- Such an approach would facilitate the possibility of building upon the experience of similar initiatives implemented in other countries such as the Nairobi River Basin project.

16. The Objectives

The main objective of the Initiative would be to develop an "Integrated Management Programme of the Akaki River Basin" that would be implemented through a broad-based stakeholder's participation. The specific objectives would be:

- To assess the existing situation of the Akaki River based on the outcomes of the studies that have been conducted by different institutions and researchers.
- To learn the lessons from the implementation of other similar initiatives such as the Nairobi River project which has been implemented by UNEP, UN-Habitat and UNDP in collaboration with the Government of Kenya.
- To identify the key area of focus for improving the state of the Akaki River through the adoption of sustainable consumption and production principles and develop a consensus on the way forward.
- To identify the principal partners that could be involved in the development and implementation of the project and the modalities of cooperation.
- To lay the foundation for the launching of a project on 'Integrated Management of the Akaki River Basin'.

17. The Activities

The following are the major activities that are going to be undertaken with the purpose of organizing the consultative forum on improving the state of the Akaki River.

- Mobilize the resource that is required for the organization of the consultative forum and enter into an agreement with the key supporting organizations.
- Establish an organizing committee having representatives of the key stakeholders from government agencies, industries and businesses, non-governmental organizations and technical support institutions.

- Identify the most relevant national institutions and development partners that could potentially contribute to the initiative and seek their contribution to the development of a project document.
- Organize a consultative forum for the development of the initiative and provide the basis for developing a full-scale project document.
- Conduct a community-based clean-up and awareness programmes in conjunction with the consultative forum on the development of the Initiative.
- Prepare a project document for the integrated management of Akaki River Basin based on the inputs to be provided during the consultative forum and the experience of other similar initiatives including the Nairobi River Project.

18. The expected results

- The scope of the problem associated with the continued deterioration of the Akaki River will be better understood and a consensus for a coordinated action will be reached.
- Broader community awareness would be created on sustainable consumption and production approaches and principles through community-focussed activities to be carried out during the meeting.
- The specific areas where the coordinated effort should focus will be identified and the basis for broad-stakeholders participation will be created. The focal areas of activities may include:
 - Voluntary-industry initiatives on improving the environment of the Akaki River through promotion of cleaner production methods;
 - Community-based sustainable production and consumption programmes within Akaki River Basin;
 - Environmentally sustainable utilization of the Akaki River for employment generation and poverty reduction.
- The document for a project on 'Integrated Management of Akaki River' will be developed and the basis for its subsequent implementation through broad-based partnership would be created.

19. Resource required

Local component	in Birr	in USD
One National Expert (1 m/m)	15,000	1,735
Honorarium to National Resource persons.....	5,000	580
Conference facilities and refreshment.....	15,000	1,735
Document preparation and photocopying	5,000	580
Community clean-up and awareness	15,000	1,735
Sub Total	55,000	6,365
External component (in USD)		
Technical expertise support (in kind).....		3,000
UNEP's Experts travel and DSA.....		2,500
Sub total.....		5,500

20. Modalities of implementation

The activities are proposed to be conducted in conjunction with this year World Environment Day which is going to be celebrated under the theme 'Green Cities: Plan for the Planet'. At the national level, the activities shall be coordinated with the 'Clean and Green Addis Ababa Initiative' which is currently being implemented under the patron ship of His Excellency Girma Wolde Ghiorgis, President of the Federal Democratic Republic of Ethiopia. The following are suggested as the modalities of implementation.

- The Steering Committee to be formed with members from the principal stake holders such as the: Environmental Protection Authority, Addis Ababa Administration, Oromiya Regional State, Ministry of Water Resources, Ethiopian Science and Technology Commission, Clean and Green Addis Ababa Initiative, ENDA Ethiopia and the Ethiopian Cleaner Production Centre will provide the general guidance for the initiative.
- The Ethiopian Science and Technology Commission through the Ethiopian Cleaner Production Centre would serve as the secretariat for organizing the consultative forum that would develop the initiative.
- The United Nations Environment Programme (UNEP) will be requested to provide the required financial and technical support through the Ethiopian Cleaner Production Centre for the implementation of this initiative.
- Other development partners such as UNDP and UN-Habitat will be requested to assist in undertaking the follow-up activities that would be implemented under the institutional framework that will be developed by the consultative forum.

21. Implementation plan

Signing of the MOU between ECPC and UNEP	28 February 2005
Establishment of the organizing committee	10 March 2005
Production of the discussion materials	20 May 2005
Holding of the Consultative forum (2 days)	2-3 June 2005
Undertaking clean-up activities	4-5 June 2005
Final Project Document	30 June 2005

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