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AFRICAN DEVELOPMENT BANK MANAGEMENT RESPONSE TO CRMU REQUEST FOR COMPLIANCE REVIEW AND MEDIATION FOR THE GIBE III HYDROLECTRIC POWER PROJECT, ETHIOPIA

April 2009

CONTENTS

ABBREVIATIONS AND ACRONYMS

ADF	African Development Fund
AfDB	African Development Bank
CRMU	Compliance Review and Mediation Unit
EEPCo	Ethiopian Electric and Power Company
EFTA	Economic, Financial and Technical Assessment
EIB	European Investment Bank
EMMP	Environmental Mitigation and Monitoring Plan
EPC	Engineering, Procurement and Construction
ESAP	Environmental and Social Assessment Procedures
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social management Plan
FoLT	Friends of Lake Turkana
GoE	Government of Ethiopia
HPP	Hydroelectric Power Project
IPCC	Intergovernmental Panel on Climate Change
IRM	Independent Review Mechanism
IRP	Independent Review Panel
m^3/s	Cubic meter(s) per second
NEMA	National Environmental Management Authority
NGO	Non-Governmental Organization
PAP	Project Affected Persons
PPA	Power Purchase Agreement
PCDP	Public Consultation and Disclosure Plan
RAP	Resettlement Action Plan
WBG	World Bank Group

MANAGEMENT RESPONSE TO REQUEST FOR COMPLIANCE REVIEW AND MEDIATION FOR THE GIBE III HYDROELECTRIC POWER PROJECT (HPP)

1. Introduction

1.1 The Compliance Review and Mediation Unit (CRMU) received on the 5th of March 2009 the Request for the review of Gibe III Hydroelectric Power Project in Ethiopia which is under consideration for financing by the African Development Bank (AfDB). The Request - dated 4 February 2009 - was submitted by the Friends of Lake Turkana (FoLT), a Kenya based non-governmental organization (NGO), representing some of the Lake Turkana communities: Turkana, Dassanach, Rendille, Gabbra and Elmolo. According to the CRMU, the Request fulfills the preliminary requirements for registration under the Independent Review Mechanism (IRM) Operating Rules and Procedures; and pursuant to paragraph 19 and 20 of these IRM Rules, CRMU Director notified the Bank's Board of Directors and the President that the Request has been registered in the IRM Register of Requests on 26 March 2009 for problem solving. The Register of Request is published on the AfDB website at www.afdb.org/irm.

1.2 According to the AfDB Environmental and Social Assessment Procedures (ESAP) screening criteria, the Gibe III project is a Category '1' project, for which a full scale environmental and social impact assessment (ESIA) is required. The preliminary ESIA study reports were completed in April 2008 and were reviewed by the Bank, the World Bank (WB), the European Investment Bank (EIB) and other interested parties. Subsequently, revised reports based on the comments made by the above mentioned entities were issued in January 2009. The full reports are available on the website of the State owned electricity utility, Ethiopian Electric Power Company (EEPCo) (**http://www.eepco.gov.et/**), and also in the AfDB's office in Tunis, and its field office in Addis Ababa. As required by the ESAP, interim Executive Summary of ESIA and Resettlement Action Plan (RAP) of the Gibe III Hydroelectric Power Project were disclosed in August 2008 and updated in April 2009.

1.3 The following AfDB safeguard policies dealing with environmental and social issues related to the project were taken into consideration for the preparation of the ESIA and Environmental and Social Management Plan (ESMP) reports:

- Bank Group's Policy on the Environment ✓
- Environment and social assessment procedures (ESAP) for Public Operations and Integrated Environmental and Social Impact Assessment guidelines
- Policy on Involuntary Resettlement ✓
- Policy on Gender ✓
- Policy and Guidelines on Cooperation with Civil Society Organizations (CSOs)

- Bank Group's Policy on Disclosure of Information

It should, however be noted that, AfDB safeguard policies were not applied on the Kenyan side since no resettlement is contemplated. On the other hand, all of these policies were invoked on the Ethiopian side leading to the revisions of the ESIA and RAP reports in March 2009. More light shall be shed once specific social-environmental impact studies have been carried out in Kenya.

1.4 The Requesters claim that their request is *"in response to threats to the viability of the world's largest permanent desert lake in northwestern Kenya and southwestern Ethiopia.* They furthermore argue that *"The Gibe III Dam would have a serious impact on the flow and volume of the Omo River, which provides some 80% of the Lake's [Lake Turkana] replenishing inflow"*.

1.5 With reference to the project's ESIA, including the additional study of the downstream area, approved by the Ethiopian Government in July 2008, the Requesters state that they *"find these documents seriously flawed"* and that *"the impact of Gibe III on Lake Turkana is barely acknowledged, and then only to be dismissed with spurious claims that the project will benefit the lake."* Furthermore, they argue that *"These documents provide little scientific analysis regarding potential changes in the river flow, volume, and chemical balance"* and that *"The economic devastation that would accompany such impacts would almost certainly mean a significant upswing in the violent conflicts that have often engulfed the region's people"*.

1.6 The Requesters believe that poor analysis and exclusion of the Turkana people in project preparation to date has violated multiple AfDB policies, including: the ESAP, Policy on Poverty Reduction, Resettlement Policy, Public Disclosure Policy, and Policy for Integrated Water Resources Management.

1.7 The Requesters say that they have been in contact with the AfDB's staff responsible for project preparations. They sent the staff a request to convene a conference call during which they would like to raise their questions and concerns. However, according to the Requesters, this conference call was delayed several times. Finally they received a note from the Bank on 30 January stating that *"we [the Bank staff] are unable to hold the teleconference involving various organizations as suggested"*. Instead of the teleconference, the Requesters claim that they received a written explanation to their questions which they found *"selective and grossly inadequate"*. In their conclusion, the Requesters demand that: *"CRMU undertake, with urgency, investigation and mediation efforts which will ensure that affected communities are consulted and their interests and welfare taken into account before the Gibe III project is submitted to the AfDB Executive Board for consideration"*.

1.8 On the basis of the preliminary review of this Request, CRMU has decided that, at the first instance it will pursue the matter through a problem-solving (mediation) exercise between the Bank's management and staff and the representatives of the Requesters. In accordance with paragraph 31 of the IRM Operating Rules and Procedures, the Bank's Management must provide CRMU by no later than 24 April, 2009 with a written evidence that it has, or intends to comply with the Bank Group's relevant policies and procedures.

1.9 This report is a management response to the CRMU request. It first gives a brief background on the project followed by the Management Response to the issues raised by the FoLT. Much of the management response is derived from the latest EEPCo's ESIA reports. The response also discusses other additional studies underway to validate and identify gaps in the existing studies. The Management will therefore update its response after finalizing the additional studies currently underway.

2. Project Background

2.1 The Gibe III HPP is proposed to be an 1870 MW hydropower project in the Omo-Gibe river basin in Ethiopia (the Project). The Project site is located about 80 km downstream from the confluence of the tributary Gilgel-Gibe and the Gibe River situated 503 km south of Addis Ababa, in Wolayta-Dawro province. At its completion, Gibe III will be the largest hydropower project in Ethiopia. This power plant will be the third project on the Omo-Gibe river basin, which has in operation Gigel Gibe I (184 MW) and currently under construction, Gilgel Gibe II (420 MW).

2.2 The proposed power plant is expected to generate on average 6,250 GWh/annum of energy[1]. For the construction of Gibe III, EEPCo has entered into an Engineering, Procurement and Construction turnkey contract (EPC contract) with Salini Costruttori S.p.A. (Italy) on a sole source basis with the understanding that the Electro-mechanical and Hydro-mechanical works will be undertaken by international competitive bidding. The EPC contract is estimated at Euro 1.45 Billion. Salini Costruttori S.p.A. also constructed Gilgel Gibe I[2] and is currently building Gilgel Gibe II.

2.3 The EPC contract also includes access roads and a new road from Chida to Sodo. The project also includes a power transmission component, to be executed in parallel to the EPC contract.

3. Primary Developmental Objectives of the Project

3.1 Ethiopia has one of the lowest electricity access rates in the world with only 12% of Ethiopians connected to electricity. The condition in rural areas is even more abysmal, with only 2% access rate. About 90% of the population depends on biomass energy because of lack of any alternative solutions for energy. Hydropower potential in Ethiopia is estimated to be one of the highest in Africa and over 300 sites have been identified for possible development.

3.2 To meet its increasing demand, Ethiopia has embarked on an accelerated electrification program to increase the rate of population access to electricity to 50% by 2010. In addition, the Government of Ethiopia ("GoE") would like to monetize their vast hydropower resources by exporting the power to the sub region, especially to Kenya. EEPCo is preparing itself to export about 100 MW to Djibouti, 200 MW to Sudan, and about 1000 MW to Kenya in the medium term. The proposed project supports these objectives of GoE by providing large amounts of primary and

[1] About 5,300 GWh/annum is expected to be generated on a firm basis.
[2] Selection of Salini Costruttori S.p.A was initially through International Competitive Bidding.

secondary energy to the grid to meet both the objectives, increasing supply to the domestic grid for increasing access and exporting excess electricity to the sub region, to meet the demands for electricity in neighboring countries in an environmentally and socially sustainable manner.

4. Management Response to CRMU Request

4.1 General response

- It should be recognized at the outset that as indicated in the FoLT's own request and associated concerns, their assessment is based on the information contained in the project's ESIA of July 2008, in particular the ***Additional Study of the Downstream Area.*** As a result of the due diligence carried out by the lenders during the third and fourth quarters of 2008, the ESIA studies were updated and the final reports have been made available on the EEPCo's website since March 2009. These studies address in detail several of the issues raised by the FoLT.
- The issues raised by the FoLT (full document attached in Annex 2) are grouped where they are interrelated, and the corresponding management response is provided below. It should be reiterated that this constitutes a preliminary response which will be updated when the EFTA and the Additional ESIA studies become available.

4.2 Management Response to the Issues raised by FoLT Based on the Available studies

4.2.1 Issues Raised by FoLT:

Issue No. 1a: *The Gibe III Dam would have a serious impact on the flow and volume of the Omo River*

Issue No. 1b: *potential changes to the chemical balance due to reservoir evaporation*

4.2.1.1 ***Issue No.1a:*** *The Gibe III Dam would have a serious impact on the flow and volume of the Omo River, which provides some 80% of the Lake's replenishing inflow. We (FoLT) have reviewed the Environmental & Social Impact Assessment, including the Additional Study of the Downstream Area, approved by the Ethiopian government in July 2008 and find these documents seriously flawed.*

Indeed, the impact of Gibe III on Lake Turkana is barely acknowledged, and then only to be dismissed with spurious claims that the project will benefit the lake. These documents provide little scientific analysis regarding potential changes to the ***river flow, volume, (and Issue 1b chemical balance – discussed in Management response No.1b below).*** *Analysis of the impacts of reservoir evaporation rates to downstream volumes also does not seem sound.*

4.2.1.2 No discussion of the ***duration or methodology of reservoir filling*** *is provided. This could result in a prolonged dry season downstream, where the suggested environmental flow of 25m3/second, a rate equal to the single lowest monthly flow recorded in nearly four decades, could be implemented for well over a year. Such a potential experience could devastate the level of Lake Turkana.*

4.2.1.3 A study by the Africa Resources Working group indicates that the completion of Gibe III could mean a drop in Lake Turkana's depth of between seven and ten meters. Resulting changes in the lake's chemical balance threaten the fish as well as other species (Nile crocodiles, hippopotamus, etc) that make Lake Turkana a valuable source of biodiversity.

Management response No.1a:

4.2.1.4 The FoLT concerns outlined above are highly exaggerated. EEPCo's work documented in detail in the ESIA Study for the Downstream Region (January 2009) and is summarized below containing comprehensive information and analysis to show that the lake hydrologic regime will in fact be improved.

4.2.1.5 The main beneficial impact of the project on the Omo-Gibe River Basin's water resources resides in its contribution to the regulation of the downstream hydrological regime, especially in the river delta. In broad terms, there will be an increase in the flows during the dry season and a reduction of the flows during the rainy season, when the water is retained to fill the reservoir. The most relevant beneficial effects will occur during the highly rainy and dry years. The current hydrological regime, modified by the deforestation of the upper watershed, shows frequent critical events in the river delta having:

- Large and sudden floods (peak flows up to 5200 m^3/s, return period 30 years, Gibe III site);
- Extended drought periods (August average flows down to 820 m^3/s, year 1987, Gibe III site);

4.2.1.6 Floods occurred in 2006 (with return period of less than 10 years) caused destructive effects on human and animal life, private assets and public infrastructure in the river delta, while the extended droughts period 1986-1987 originated a famine crisis for humans and wild life. The plant will allow the complete regulation of the river flows reducing the highest peak floods and avoiding extended drought periods by means of:

- The reservoir live capacity of 12300 Mm3 (Comparable to the mean annual inflow volume of 13800 M m^3);
- The large outlet works (Two middle outlet with Qmax = 1080 m^3/s each, one ecological outlet and nine spillway radial gates);

4.2.1.7 The outlet works are planned to guarantee a remarkable flexibility of the plant operation. The discharge rules can be adapted following the requirements both of the energy production and of the downstream environment.

4.2.1.8 The following graphs illustrate the comparison between the monthly flows (at the Gibe III site) before and after the dam construction based on the most significant operating scenario envisaged. The analysis considers the discharges recorded during a 38 years period (1964 - 2001) simulating the operation of the plant.

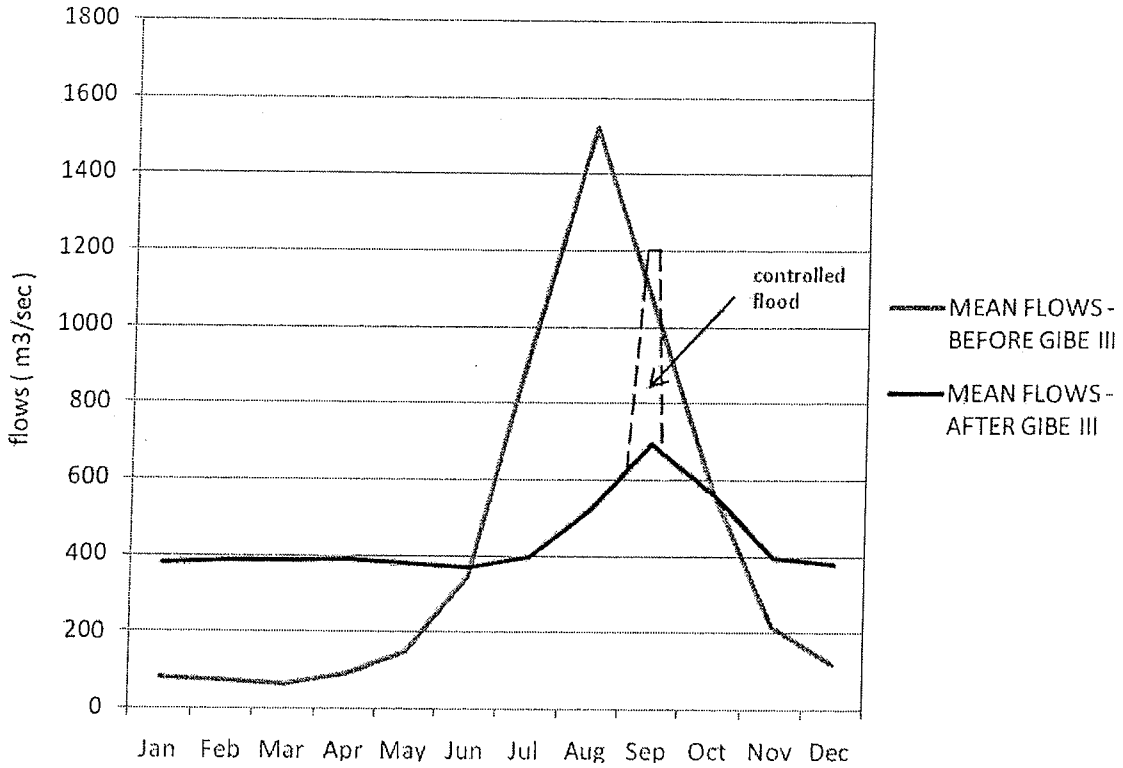


Figure 1: Monthly flows at Gibe III site: average 1964-2001

The graph below shows the average flows (38 years period). The subsequent graph shows the maximum discharges of a highly rainy year (year 1988).

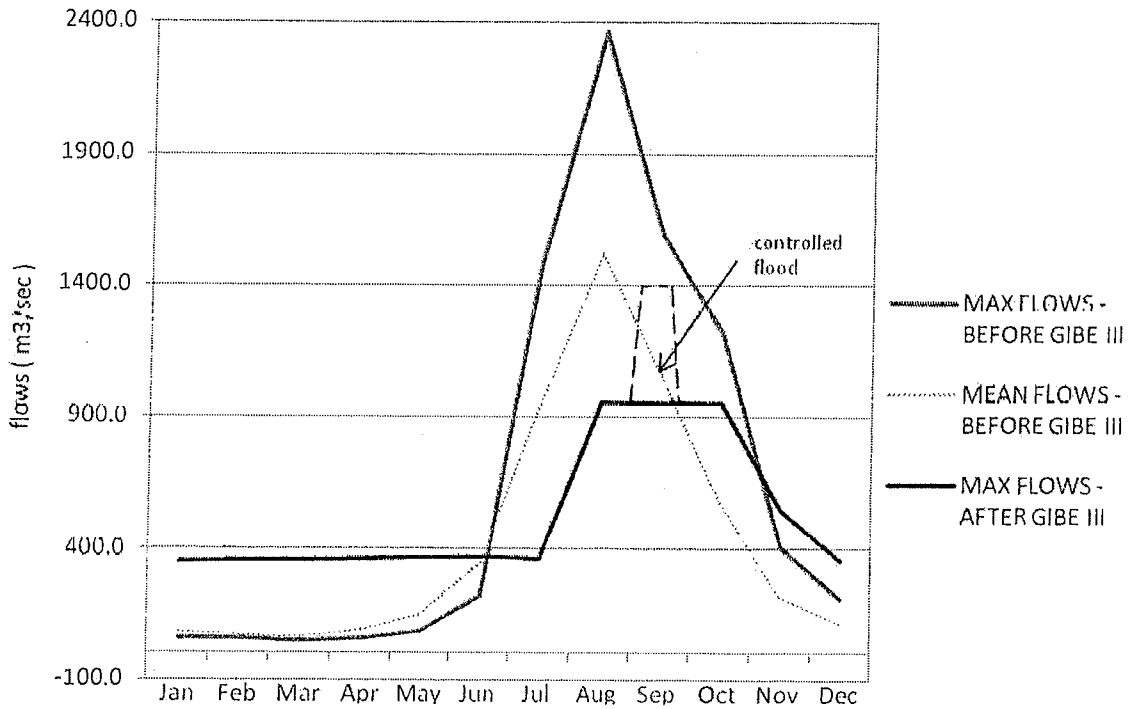


Figure 2: Monthly flows at Gibe III site: year 1988 (max flows)

4.2.1.9 Average flows during the month of August currently range from 820 m^3/s to 2360 m^3/s (Gibe III section, 38 years flow records). While operating the Gibe III plant the complete regulation of the downstream releases is allowed by the turbine outflows, up to a maximum of about 1000 m^3/s, together with the large outlet works discharges.

4.2.1.10 A controlled flood is foreseen from the reservoir during the months of August / September to coincide with the peak flows from the residual basin. This release is intended to limit the downstream flooding to the required extent, in duration and in areas, while reproducing the natural average flooding conditions. The planned discharge from Gibe III Hydroelectric facility will have the same magnitude of the average-year maximum flows on the Omo river downstream stretch. While moving downstream along the Omo River, towards Lake Turkana, a distance of over 700 km, the effects of the Gibe III flow regulation decrease following the contribution of the discharges from the residual basin.

4.2.1.11 The graph below shows the average flows of the Omo River at Lake Turkana (38 years mean). The subsequent graph shows the minimum discharges of a highly dry year (1988).

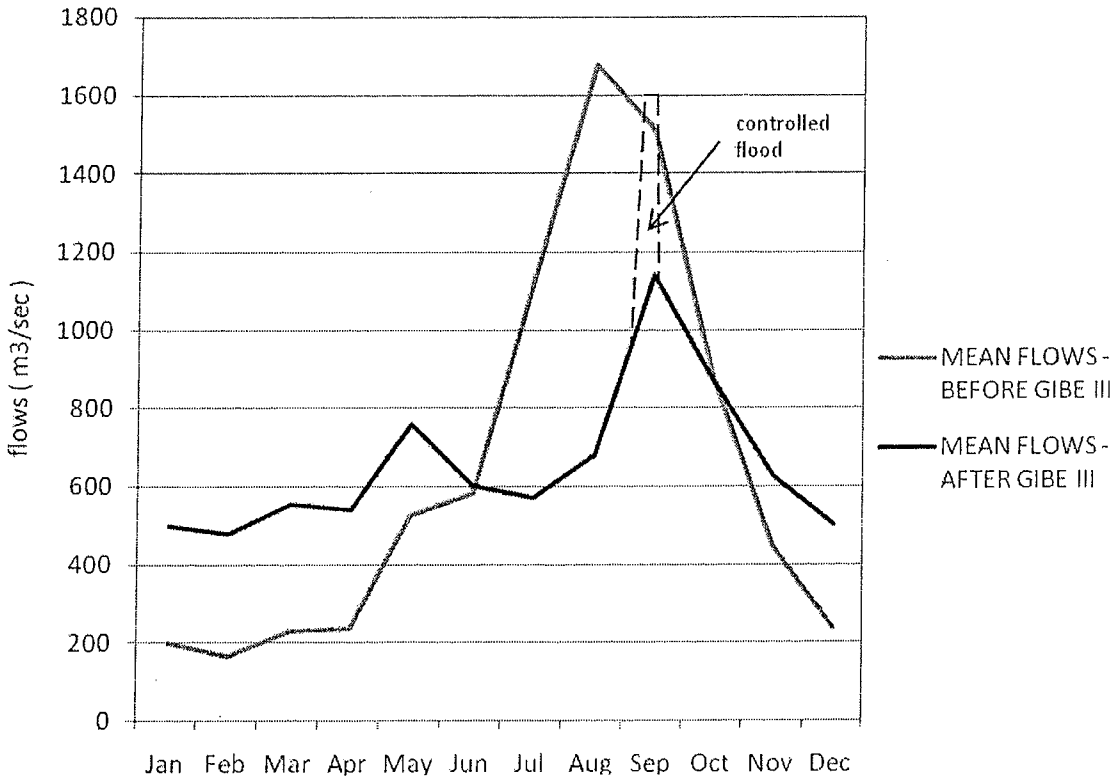


Figure 3: Monthly flows at Lake Turkana: average 1964-2001

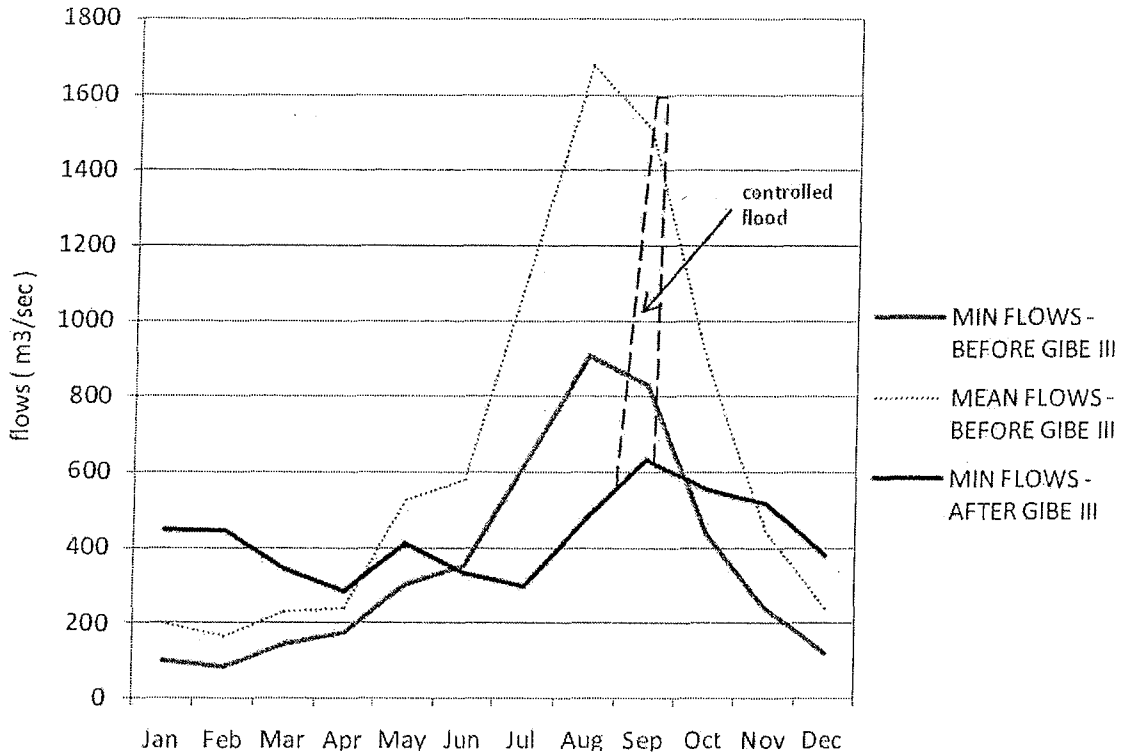


Figure 4: Monthly flows at Lake Turkana: year 1987 (min flows)

4.2.1.12 The long-term benefits will include the reduction of the unproductive evaporation losses taking place in the floodplains after the floods retreat. These losses largely exceed the expected total evaporation from the proposed Gibe-3 reservoir. The water surface when the reservoir is full is about 210 Km2 while average temperatures are about 20°C (annual mean), varying between 15°C and 30°C, with a rainfall in the range of 1300 mm. Compared with the total area of the Lower Omo River Valley's unproductive marshlands (about 80 square Km), and the extremely hot and arid climate of that region, with total rainfall less than 500 mm, the evaporation losses from the proposed reservoir appear negligible. Evaporation losses in the swampy depressions of the floodplains are particularly relevant in extreme high-flow years when the magnitude and duration of the floods also causes disastrous effects on the communities. In contrast, no appreciable evaporation losses take place in the low-flow years when the Lake Turkana system suffers however from serious hydrological deficits.

4.2.1.13 The regulation of the river flow will also induce a more efficient use of water resources, by providing reliable and timely water supply during the year, for the traditional flood-recession agriculture on the riverbanks. The increased average terminal runoff will therefore benefit the hydrological balance of Lake Turkana. The lake represents obviously a major asset in the region not only for evident environmental reasons but also for the fishery and tourist activities. Due to the decreasing inflow from the rivers feeding this inland-contained hydrological system, the levels of Lake Turkana show a worrying marked tendency to decrease with its surface area consequently gradually shrinking in the medium - long term. This results in the perceived progressive retreat of the shoreline that implies the reduction of the exploitable waters for the Ethiopian fishing boats fleets.

4.2.1.14 The regulation of the river flows induced by the Gibe III dam, reducing the evaporation losses, contributes to re-establish a positive hydrological balance in the Turkana transboundary system. This is in fact the long-term objective jointly pursued by the riparian countries through high-priority dialogue and negotiations, for the system to be restored to the equitable benefit of the people relying on lake resources. The main beneficial impacts of the Gibe III reservoir operation on the downstream hydrological regime are therefore as follows:

- Control of the large and sudden floods occurring during the wet years (up to 5200 m^3/s at Gibe III with a return period 30 years);
- Reduction of the extended drought periods (as the 1986-1987 ones);
- Reduction of the evaporation losses which contribute to the current recession of the Lake Turkana;

4.2.1.15 The large flexibility of the plant, due to the substantial live capacity and outlet works, allows modifying the operating rules of the reservoir following the requirements of the energy production and of the downstream environment.

River flow regulation for environmental protection

4.2.1.16 An environmental flow, meaning a necessary flow of water to keep the Gibe downstream aquatic and riverine environment healthy, is a prerequisite that has been kept into consideration within the present study. Such a planned water release is required in order to offset the impact of dam-induced changed flows on downstream aquatic ecosystems; as far as possible, planned environmental flow releases are designed to mimic the natural occurring flow regime. Under this concept, the Omo River flow resulting from the Gibe-3 Hydropower development, will consist of normal (operational) environmental base flow, as well as high-flow-season controlled flooding combined together with the normal flows from the lower Omo watershed.

Minimum Environmental Flow

4.2.1.17 During the first filling of the reservoir, a temporary environmental outlet is envisaged through the dam body to allow a small outflow of between 30 and 70 m3/sec during the first months of the rainy season; and the middle outlet with a maximum release of 800 m^3/s when the reservoir reaches 755 m a.s.l. In the unlikely event that the plant will not be in operation, a minimum ecological flow of about 25 m^3/s will be released by means of the outlet device in the powerhouse expressly designed for the purpose. The discharge of 25 m^3/s basically corresponds to the lowest monthly average dry season flows encountered during the period 1964-2001 (March 1973). This is considered more appropriate to guarantee the health status of downstream lacustrine environments beyond and above the existing minimum environmental discharge requirement of 15 m^3/s as prescribed by the Employer's Requirements of the EPC Contract. This proposed discharge, identified on the basis of existing hydrological records, is to be adopted as a provisional measure to ensure sustainability of riverine ecosystems pending more appropriate parameters as resulting from the foreseen activities on geomorphological and ecological river response (cfr. chapter 6) as elaborated within an appropriate hydraulic model (cfr. Para. 6.1.3), with gradual passage between purely hydrological to environmental techniques being considered as standard international practice. The intake of the ecological outlet is placed at about mid height of the reservoir (el 800 m a.s.l.). This is

being planned since water stratification is usually evident in deep reservoirs and such an arrangement will minimize the release of low O2 and low temperature water from the hypolimnion of the reservoir, thus avoiding damages to the downstream riverine environment as observed in several hydropower plants. The ecological flow will therefore maintain the minimum natural dry season conditions immediately downstream of the dam. The relevant discharges coming from the perennial effluents in the residual basin will substantially contribute towards restoring the natural conditions further downstream. Where the plant will be continuously inoperative for some days the large middle outlets will allow the full release of required downstream environmental flows. The required discharges vary during the year and the operating rules will be also established according to the duration of the required stop in energy production.

Wet -season controlled flooding

4.2.1.18 A controlled flood release is foreseen from the reservoir during the month of September (or end of August) to coincide with the peak flows from the residual basin.
This release is intended to reproduce the natural average floods conditions while limiting the downstream flooding to a required extent, in duration and in areas.

The envisaged characteristics of these floods (duration, outflows) are:
Period: September (or last two weeks of August)
Flows: 1000 – 1200 m^3/s (at Gibe III)
About : 1600 m^3/s (at Lake Turkana)
Duration: 10 days (peak flow)

The period corresponds to the last weeks of the natural hydrological floods and slightly varies each year depending on the contributions from the residual basin Gibe III - Turkana. The discharges are in the range of the monthly average natural flows at Turkana during the month of September (Q=1500 m^3/s) as illustrated in the Figure 3 above.

Daily Flow Variation Acoustic Warning System

4.2.1.19 The first section of the river downstream Gibe III dam will experience consistent fluctuation of water levels within the riverbed in the course of normal (24 hrs) hydroelectric operations. Although, due to local geomorphology, no permanent human settlement / activities are located in areas interested by the fluctuating water levels, this does not mean that humans, especially in the proximity of villages, may not approach the river for different usages or for crossing it. To this aim, a long-term warning system constituted by sirens will be placed and operated in river sections located in the immediate proximity of nearest villages and around major river crossing to signal in advance occurrence of rising waters in a number of priority spots (provisionally estimated in 50 – 100 locations) along the Omo river first 200 km downstream Gibe III Dam. The sirens will advise differently for *Large Water Releases* (Controlled Flooding) and *Ordinary Discharges* occurring daily as a result of Dam operations by mean of distinct warning signals to the understanding of which the residing population will be trained beforehand. The Warning Units will be remotely trigged by the Dam Control Station, on a pre-organized time sequence

according to the river water speed, possibly coupled with water level gauges systems reacting to rising water levels placed in the immediate proximity of warning units. Sonic Devices and water level gauges with ultrasonic sensors will be operated by solar panels.

Environmental Monitoring

4.2.1.20 Planning of downstream monitoring activities will also be EEPCO's responsibility and will include development and implementation of a Baseline Monitoring Program against which annual monitoring will later on be referred. This Program is to comprise the layout of a river hydrodynamic model, which will duly consider links between the present flow regime and all related ecosystem peculiarities for the different sections of the river and its surroundings, including biological aspects of the estuarine floodplains. Incoming /actualized data will help to evaluate appropriateness (effectiveness and efficacy) of the proposed mitigation actions including environmental water releases, thus providing elements to update its operational aspects and substantially contributing to adaptive environmental management.

4.2.1.21 EEPCO will set-up an environmental and social monitoring system at the lower Omo. This will be a first step to guide the establishment of a proper baseline information databank for the Lower Omo which needs to be laid out in detail at the feasibility level and subsequently executed by EEPCo, to include identification and monitoring methodologies for relevant:

- Physical aspects;
- Ecological aspects;
- Socio-economic and ethnographic aspects;

The cost of monitoring to establish baseline environment is estimated to be USD 1.5 million and will be covered by EEPCO.

4.2.2 **Management Response No.1 b***: **Chemicals***: Phosphorus, nitrogen, BOD (Biological Oxygen Demand) and COD (Chemical Oxygen Demand) have been measured upstream and downstream of the existing reservoir and at Gibe III site.

4.2.2.1 The following graphs (Figure 5) indicate that measured BOD and COD values, while possibly reduced by the Gibe reservoir, do not substantially vary along the Omo River. The phosphorus content upstream and downstream the Gibe I reservoir is substantially unvaried and is by far lower than 20 mg/l which could be roughly considered a limit to consider the lake as "eutrophic". The nitrogen -while probably relevantly increasing within the Gibe I reservoir, also remains unvaried along the Omo River. The lake is probably "nitrogen-limited" considering this common indicator of the tropic status.

4.2.2.2 Phosphorus, nitrogen, BOD (Biological Oxygen Demand) and COD (Chemical Oxygen Demand) have been measured upstream and downstream of the existing reservoir and at Gibe III site. The following graphs (Figures 6 and 7) indicate that measured BOD and COD values, while possibly reduced by the Gibe reservoir, do not substantially vary along the Omo River.

4.2.2.3 The phosphorus content upstream and downstream the Gibe I reservoir is substantially unvaried and is by far lower than 20 mg/l which could be roughly considered a limit to consider the lake as "eutrophic". The nitrogen -while probably relevantly increasing within the Gibe I reservoir, also remains unvaried along the Omo River. The lake is probably "nitrogen-limited" considering this common indicator of the tropic status.

4.2.2.4 The existing Gibe I reservoir operation, which well reflects the conditions of the envisaged Gibe III reservoir, indicates that: The most relevant mean water quality parameters (phosphorus, nitrogen, COB, BOD, etc) will probably not be greatly varied by the reservoir operation.

Figure 5: Nutrients upstream and downstream Gibe I and at Gibe III (March 2008)

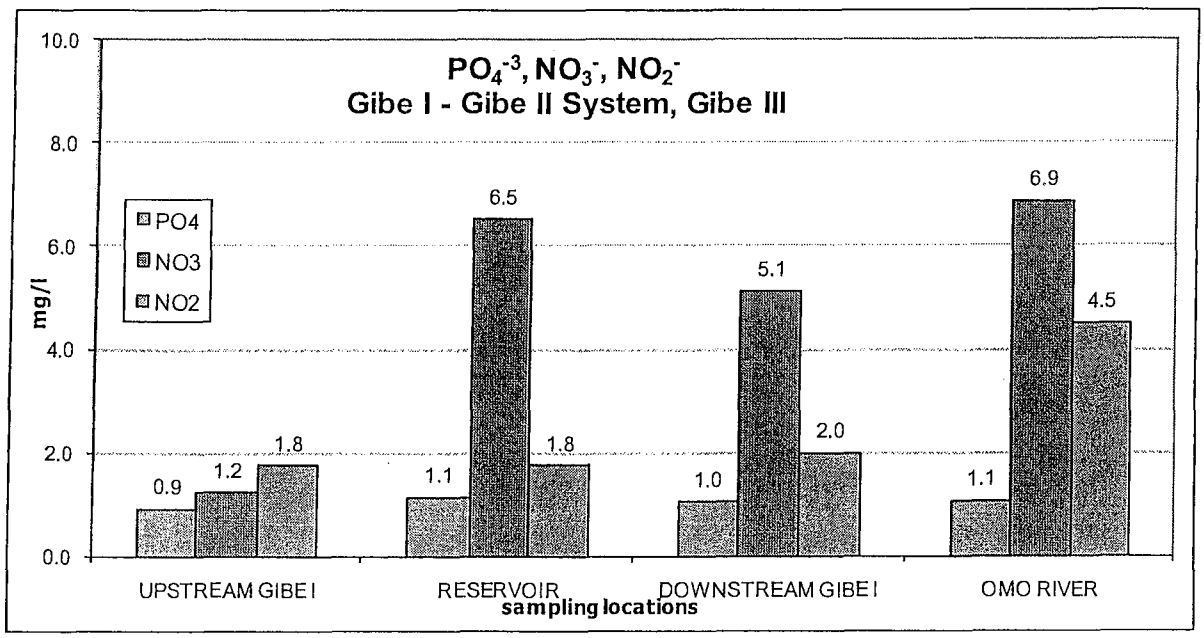


Figure 6: Biological oxygen demand upstream and downstream Gibe I and at Gibe III (March 2008)

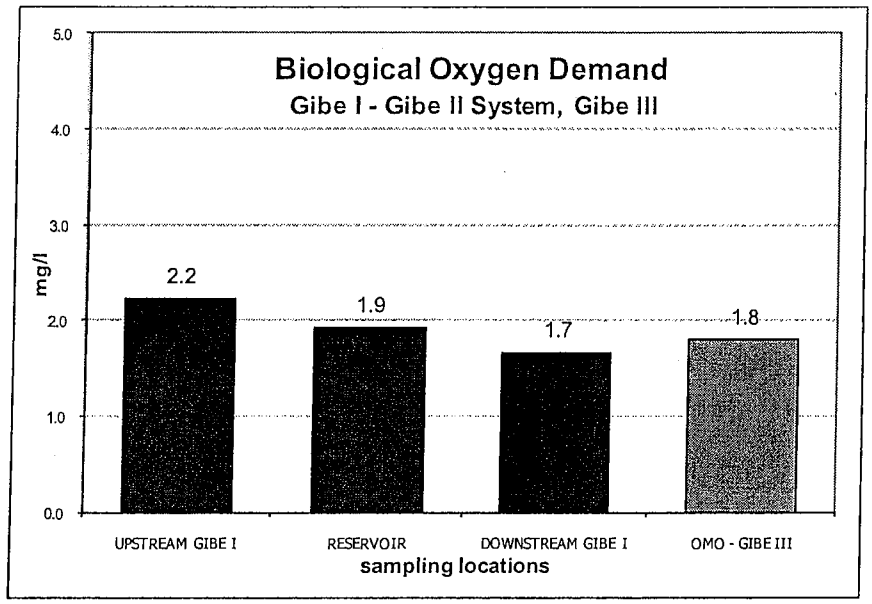
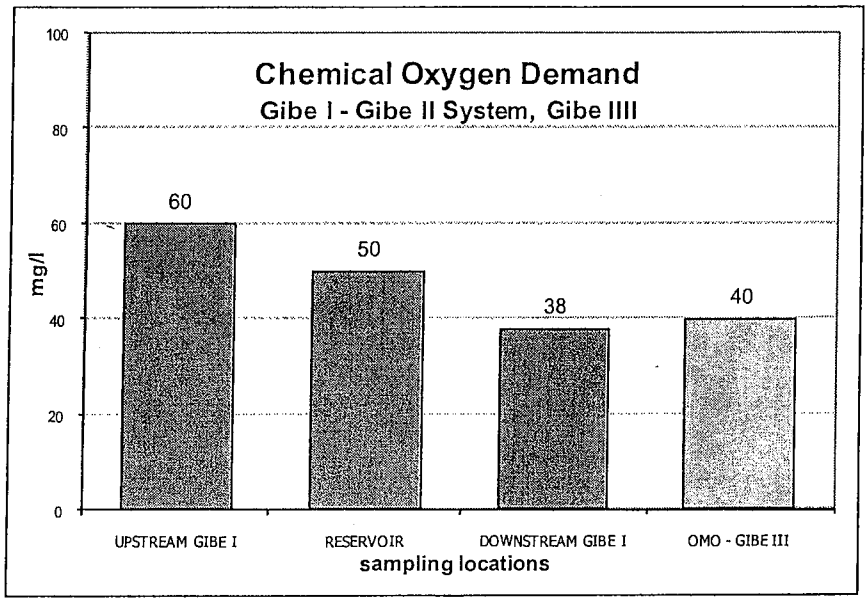


Figure 7: Chemical oxygen demand upstream and downstream Gibe I and at Gibe III (March 2008)



*4.2.3 **Issue No 2a:** There is no discussion of impacts from proposed **irrigation schemes** and 2b) two future large dams, **Gibe IV and Gibe V***

4.2.3.1 Management response 2a): There *are possible types of interventions in irrigated agriculture* to be implemented in case the envisaged annual release and the artificial floods from the reservoir prove insufficient to fully reproduce the current conditions for flood-recession agriculture. In this way the project is expected to provide alternative sources of survival at least in terms of food crops i.e. grains (maize and sorghum), beans and forage crops, and other cash crops. The envisaged potential scenarios for irrigation are mainly in three categories:

(i) ***Smallholder irrigated schemes*** *(totally financed by Public Developmental Authorities)*: After construction of the dam a number of families that will be interested in and capable of growing irrigated crops can only be estimated at this stage. However, based on the envisaged technical assistance measures, it can be assumed that 20% of those currently engaged in recession cropping i.e. 4,000 families would be involved. A phased development of 100 irrigated schemes of 20ha each (totaling 2,000 ha), settled by 80 families with 0.25 ha each, will eventually be developed. The 100 schemes will be divided over the four weredas, in proportion to the amount of flood recession crop area that has been lost. This relatively small size of scheme (20 ha) is proposed because it will have several advantages: **(a)** it will be small enough to be managed eventually by the smallholders themselves, **(b)** it will be easier to phase construction so that units are operational more quickly, **(c)** units could be more easily fitted into upstream areas where land levels may be more variable, and **(d)** should a pump break down it will affect fewer people and be less of a disaster.

(ii) ***Small Scale Commercial irrigated farms*** *(partially financed by Public Development Authorities)*: It is anticipated that the more ambitious individuals, with perhaps some management skills, capital and maybe an existing small farm, irrigated by windmill or small pump, would wish to have a small scale commercial unit. It is assumed that 100 such farmers would take advantage of the regulated water supply and that each will, on average, have 3 ha of land. These would mainly grow bananas and vegetables as high value cash crops, but also some food crops.

(iii) ***Large Scale Commercial Farms*** *(facilitated –not financed- within local development plans by Public Development Authorities):* Extensive areas of level land with a reliable, regulated water supply from the river should attract private investment in large scale irrigated commercial farms or plantations. Cotton and sugarcane, as well as beef feedlots growing maize for silage, are possibilities, depending on local and export market demand and prices. Omo Valley Agro-Industry Plc., situated not very far away from the lower Omo valley, at Biralle is successfully growing 2,700 ha of cotton, irrigated from the Weito River. Cotton and sugarcane both lend themselves to the contracting of out-growers, which will provide further opportunities for small-scale farmers. Feedlots will provide a market for surplus cattle, especially at times when grazing is scarce. It remains to be seen however if the traditional aversion of pastoralists to selling cattle is going to change, although, as mentioned earlier, a recently established livestock market in Omo Rate is attracting traders who buy cattle for sale in the highland urban areas. While cotton may sound plausible, sugarcane is probably the least likely to attract investment initially, because of the high costs associated with constructing a factory, roads etc. as well as the costs of developing a large enough area to justify such infrastructure and water requirements. The table below shows some idea of the water and labor requirements from such large-scale irrigated commercial farms:

Type	Water Requirements	Labor (employment potential)
2,000 ha cotton plantation	800 mm/annum over 5 months	125 m/days/ha = 250,000 man days
5,000 ha sugarcane plantation	1,500 mm/annum over 12 months	100 m/days/ha = 500,000 man days
200 ha Beef Feedlot	Maize silage: 600 mm/crop over 4 months – twice a year	300 m/days/ha = 60,000 man days

4.2.3.2 Locations and areas of interventions in irrigated agriculture: All the irrigation development will be situated in the Kebeles which rely on flood-recession cropping at present. Large commercial plantation schemes will almost certainly be situated in the lower reaches of the river, in Dasenech Wereda, where larger areas of level land are available and the banks are not too high for efficient pumping. Distribution of small-scale irrigation schemes will be by Weredas, roughly in proportion to the current amount of post flood cropping.

4.2.3.3 The anticipated development of commercial plantations will almost certainly be situated on the plains of Dasenech Wereda near the Omo River delta, where large areas of flat land are available. It is not possible at this stage to be exact, but for the sake of argument we can assume that at least 5,000 ha will be developed, with cotton plantations being the most likely cash crop. The proposed interventions in irrigated agriculture will benefit the people in terms of increased food, more cash income and better nutrition. These will include the creation of irrigation settlement schemes for smallholders, initially managed by the authorities and eventually by farmer associations, financial assistance to individual small scale commercial farmers, and an enabling environment for large-scale commercial farm development, which will provide employment.

4.2.3.4 Implementation and Follow-up Steps: The assumption made is that two years will be required for surveys, studies, construction drawings, cost estimates and tender documents preparation. The implementation phase will last 3 years, during which woreda and kebele officials, as well as beneficiary farmers will benefit from continuous capacity building and on-the-job training. Such assistance will start in the first year with training in project preparation and contract management, and will continue after implementation for one additional year, mainly on maintenance and irrigation management including financial aspects. The total duration for the envisaged measure to become fully operational will hence be 6 years.

4.2.4 **Management response 2b)** Gibe IV and V, if they materialize are too far away to be concerned about at this stage.

4.2.5 Issue No.3: *The economic devastation that would accompany such impacts would almost certainly mean a significant upswing in the violent conflicts that have often engulfed the region's peoples. We note that these oversights directly contradict the AfDB's Policy for Integrated Water Resources Management (see specifically Section 4.2.2, which calls for* ***assessment of transboundary waters*** *and steps to avoid conflicts resulting from project impacts).*

4.2.5.1 Management Response No.3: The economic devastation referred to in the Issue No. 3 in the Management's view is highly exaggerated, pessimistic and mischievous attitude of some of the NGOs. Management response No. 1 demonstrates that the Lake Turkana water level and its hydrologic regime will be maintained and also improved. There is a number of socio-economic benefit programs planned for the lower Omo River. E.g.:

- Agriculture (improved rain-fed and irrigation),
- Fish resources and biodiversity,
- Capacity building for extension services in agro-forestry, water conservation, improved crop variety, crop diversification, conservation farming, pest control, etc., and
- Other socio-economic development activities (Capacity Building for EMU, Woreda institutions strengthening, Conflict prevention and resolutions, training program, regular information meetings, coordination measures for food aid, community awareness programs, information system, cooperative support, agriculture in-Service, training Programs, etc.)

4.2.6 ***Issue No.4:*** *We (FoLT) wish to note at the outset that we are conscious that, in addition to its impact on the Kenyan environment and peoples, Gibe III will have serious negative impacts* ***within Ethiopia****. We regret that we have been unable to make concrete connections with our counterparts on the Ethiopian side of the border; the restrictive nature of the Ethiopian government and the isolated nature of the region have delayed effective interactions. We anticipate that our request will be followed shortly by a complementary request to the CRMU from a number of groups concerned about Gibe III's effects in Ethiopia.*

4.2.6.1 Management Response No.4: The Management is fully aware of the issues raised in the international media and issues that have been brought to the Bank's attention by a number of groups concerned with the Ethiopian side of the project. The management is confident that the findings of the additional studies mentioned above will help address any complementary requests to the CRMU. Both studies will also include and allow further consultations and dialogue with all the stakeholders including the civil society at large.

4.2.7 ***Issue No.5:*** *We (FoLT) are therefore requesting that CRMU undertake, with urgency, investigation and mediation efforts which will* ***ensure that affected communities are consulted and their interests and welfare taken into account*** *before the Gibe III project is submitted to the AfDB Executive Board for consideration. We make this request on behalf of the Kenyan communities living in the vicinity of Lake Turkana, but also strongly believe that* ***communities living in the Omo River delta region in Ethiopia have not been adequately consulted****, are inhibited from learning and speaking about the project, and should receive the same consideration we are now seeking from the AfDB.*

4.2.7.1 Management response No.5: The Management welcomes the opportunity to formally engage with the Lake Turkana communities in Kenya and other appropriate groups in Ethiopia through the mediation efforts planned by CRMU. While no formal consultations have taken place on the Kenyan side, the updated Public Consultation and Disclosure report (January 2009) and issued by EEPCo in March 2009 in our mind fulfills the consultation requirements in the Omo River Delta in Ethiopia.

4.3 Key Additional Studies and Information

The Management Response is largely based on the latest ESIA reports. Additionally, there are two other key studies that would also bear on the issues at hand: (i) the Economic, Financial and Technical Assessment (EFTA) which is currently underway with guidance of the AfDB and EIB; and (ii) a review and validation of the ESIA studies whose terms of reference (TOR) are under consideration by the AfDB and EIB. The purpose and the status of these two studies are summarized below. The Management would compliment its response when the studies are finalized.

EFTA Study

4.3.1 A joint venture consortium of Mott MacDonald of UK and Sogreah of France along with sub-consultant AG Consult of Ethiopia has been contracted by the AfDB and the EIB to undertake the EFTA Studies of the Gibe III Hydropower Project in Ethiopia. These studies will be used by the AfDB in their post-appraisal of the Project and are also intended to act as an independent review of the scheme as one indicator to private sector banks in assessing whether or not to provide funds for the civil works and hydro-mechanical plant contracts.

4.3.2 EEPCo and its EPC contractor have previously undertaken technical, financial, environmental, and social due diligence of the Project and the Project is at an advanced stage. The emphasis of the EFTA assessment will be to review work already completed by others, supplemented by any additional input, with objective of reviewing and finalizing the assessment of the environmental and social impact of the project, at the same time taking into account the comments made by Civil Society so far. Additional recommendations will be made, where necessary.

4.4 Relevant Contents of the TOR of the EFTA Study

4.4.1 Hydrology

1. Review the historic hydrological record for the Omo River at the Project site and analysis undertaken by the Owner's Engineer ("OE") to assess its adequacy and reliability when compared to the capacity of the reservoir and the operational requirements of the Project.

2. Review the impact of Gibe III to assure optimal operation of the hydropower projects (in a cascade or otherwise) already developed and to be developed on the Omo Gibe river basin.

3. Review the historic hydrological record for the Omo River to assess its propensity for flooding.

4. Review, if any, riparian release obligations proposed in the ESIA/ESMP which are deemed necessary to appropriately mitigate downstream impacts, both during reservoir impoundment and operation.

5. Review the quality of the water with regard to the potential effects it can have on the structure and equipment of the Project and as input to the EIA.

6. Review simulations based on historic hydrologic records with a weekly model (taking into account seasonal effects) of the reservoir, water inflow and outflow, and plant operations.

7. Review the potential impact that climate change in the region could have on the project based on latest available scientific information from the Intergovernmental Panel on Climate Change (IPCC) and others. To this extent, the Consultant will review the work undertaken by the World Bank regarding climate change assessment of the subject river basin in Ethiopia.

The hydrological risks are related to possible insufficient or non-representative measured data where no gauging station was available; changes in the water use in the basin or more regional changes, in relation to global warming; and variability of the annual inflow.

4.4.2 Cascading Effects fro Gibe I and II

Predicted energy generation for Gibe III is based on the monthly averages for the 38 year inflow period from 1964-2001. However, Gibe III will eventually be part of a cascade of power plants with different storage capacities, installed power and design discharges. The documentation that includes the influence of the upstream power plants, mainly Gibe II, on the power production of Gibe III will be reviewed.

Gibe II will become operational with live storage of 1.2 million m^3 and a rated discharge of 102 m^3/s. If this discharge was to be achieved at all times, the outflow of Gibe II and hence guaranteed inflow into Gibe III would be higher than the average inflow into the Gibe III during the dry season, especially from January to April. This could lead to a higher firm energy produced at Gibe III but would ultimately depend on the operation of Gibe II.

Likewise for the wet season, the inflow into Gibe III reservoir could be reduced due to upstream damming and lower average inflows than previously recorded might be experienced. However, it is assumed that the contribution from tributary rivers during the wet season is dominating the total inflow into Gibe III and this will be looked at during the following stages of the research.

4.4.3 Annual Flood Release

Part of the reservoir operating regime will include an annual flood release to maintain downstream flood plains for irrigation and farming. The review will examine when and for how long these flood release patterns will occur and be maintained, but it is obvious that during these periods energy generation from Gibe III will be limited. Again, the consultants will be able to provide the client with a clear analysis of the expected energy outage as well as the possible best time for flood release as part of our Power and Energy model of Gibe III.

4.4.4 Gibe III in a Cascade

Gibe III is the third hydro scheme to be built on the River Omo. From initial review of the documents supplied, there are tentative plans to built Gibe IV and Gibe V. The consultants will assess the significance of these schemes on Gibe IV. As an example, initial review indicates that a controlled flood will need to be created each year to enable the population downstream to continue their working practices. This requirement may change should one or more downstream schemes be developed. The assessment will also need to include the effect of Gibe I and II on the quantity and timing of the water to be passed to Gibe III.

4.4.5 Hydrological Assessment - Runoff and Floods

Studies regarding the hydrology of the Inflows and the floods are available in the Basic Design Reports Vol. 1 to 4 dated May 2006 and in the Level 1 reports related to the hydrology of extreme floods (June 2007) and the Sedimentation (April 2007).

These reports will be subject to thorough analysis to confirm the data used in the development of the scheme, to validate the methodology used, and better assess the hydrological risks. The review will include an assessment of whether appropriate allowance for any riparian release identified in the environmental and social documentation has been made.

4.4.6 Potential Climate Change

The work that has been undertaken by the World Bank on climate change in the river Omo region of Ethiopia will be reviewed and compared with available scientific research by the IPCC and others. As a hydro scheme does not give off heat any effect is likely to be due to the change in the flow pattern of the river and the consequential effect on habitat, crop and natural vegetation growth, and animal numbers.

4.4.7 Dam Safety and Panel of Experts

Although current procedures for EIB and AfDB do not require the establishment of a Dam Safety Review Panel as a pre-condition to financing, it is understood that this may be changed in the future. The requirements for the panel of experts are well established in other major hydro project around the world and the consultants will review these to establish our recommendations. The proposed dam at Gibe III with a height of 240 m is classed as a "large dam" in terms of the World Bank classification and the consultants will take account of the World Bank requirements when carrying out this review. The Panel would usually comprise experts in structures, hydrology, geology and geotechnics but the actual panel for Gibe III may be extended to cover aspects other than dam safety. The consultants will also comment on the monitoring procedures that should be in place, such as frequency of regular visits and whether ad hoc visits may be necessary at key milestones. The consultants will then discuss the concept with EEPCo and the Banks to try to reach a consensus.

4.5 Independent Review and Validation of ESIA Studies conducted for the Project

4.5.1 Terms of Reference (TOR) for the review and validation of the ESIA Studies for the Gibe III Project are under review by the AfDB and EIB to conduct an

independent review of the environmental and social impact assessments of the Project. The review will address issues considered or perceived as not adequately covered in the available studies, or where there is a need for a second opinion. This study will be carried out by a consortium of consultants with international experience in similar large infrastructure projects and with the adequate skills that match the key review parameters. The TOR is based on the Part 1 report 'Analysis of Gaps in ESIA studies', which was issued by the EIB on 22 March 2009 as draft, pending comments from EEPCo. It covers the Project with the following components: Dam and Reservoir Area, Downstream Area, Transmission lines to the existing electrical grid and the Chida-Sodo Road.

4.5.2 The expected report will present additional analysis of the Environmental and Social Impact of the Project and identify any areas of improvement, recommend potential additional mitigation measures for identified issues, and as a whole represent an independent view of the overall impact of the Project to the key stakeholders. Comments made by the civil society will be reviewed.

4.5.3 The study will be done concurrently with the EFTA Study. While the full TOR can only be disclosed after the approval of the Bank's legal Department, the study will contain the following key components which will complement the EFTA study and provide additional information some of which will address FoLT's concerns.

4.5.5 The overall objective of this Project ESIA assessment will be the following:

- Update the available ESIA studies to mitigate perceived weaknesses to give increased confidence to the GoE, EEPCo, and the Lenders,
- Provide second opinions on issues, including comments from Civil Society,
- Improve the links with analyses and assessments made in respect to the economic, financial and technical aspects of the project,
- Facilitate the communication processes and information dissemination to the Banks and the Public.

4.5.6 The study will specifically address but not limited to:

- Adequacy of compensation flow (environmental minimum flow, high pulse flow and artificial flooding), also during impoundment,
- Review of Omo river flow and downstream flood simulations, impact of geological situation, seismic risks and possible reservoir leakages; impact of climate change effects (this is already in the EFTA Study),
- Cumulative impact analysis (Gibe-Omo River Basin), in particular with respect to the downstream area and cross border impacts, (This is already in the EFTA Study)
- Impact on the Lower Omo Delta and Lake Turkana during construction, impoundment and operation; review with Kenyan Authorities and related agreements,
- Assess net impact on water level of Lake Turkana with and without project considering the large surface of lake and the evaporation rate currently being experienced,

- Impact on semi-nomadic households, Tribes, Indigenous People and other vulnerable groups, and related compensation measures; confirmation that free, prior and informed consent has been achieved,
- Impact on fishery aspects, compensation and community development aspects,
- Health Aspects and related GoE commitments for sustainable operation with provisions for funding,
- Impact of proposed irrigation schemes on the water flows,
- Impact on Tourism,

Impact on recessional agriculture,

5. Conclusions

Management has been taking all necessary actions to ensure that the Gibe III Hydropower project conforms to its environmental and social safeguards. The reports submitted by EEPCO have been meticulously reviewed and comments have been made on the reports. In response, EEPCO has undertaken or is undertaking additional studies to ensure full compliance. Management has requested EEPCO for details of the plan for dam filling and when the report is received, it will be analyzed to ensure that there Dam poses no serious risk to the down stream users. In the meantime, Management welcomes the opportunity for mediation as suggested.