



Ethiopia's Gibe 3 Dam: Sowing Hunger and Conflict

Three generations of Kwegu stand alongside the Omo River. The Omo's flow is the lifeblood of their food security. ©Alison M. Jones/www.nowater-nolife.org

The Omo River is a lifeline for hundreds of thousands of indigenous people in southwest Ethiopia and northern Kenya. The Gibe 3 Hydropower Dam, already under construction, will dramatically alter the Omo River's flood cycle, affecting ecosystems and livelihoods all the way down to the world's largest desert lake, Kenya's Lake Turkana. The Lower Omo Valley, a UNESCO World Heritage Site, is home to an estimated 200,000 agro-pastoralists from eight distinct indigenous groups who depend on the Omo River's annual flood to support riverbank cultivation and grazing lands for livestock.

The Gibe 3 Dam is Ethiopia's largest investment project. Flawed preparation has exacerbated the dam's economic and technical risks. In its rush to construction, the Ethiopian government neglected to properly assess virtually every aspect of the project,

violating domestic laws and international standards. The government is now seeking international financing to complete the Gibe 3 Dam. But evidence is mounting that the dam could be a development disaster for Ethiopia and the region.



Gibe 3 Dam Fast Facts

Location	300 km (190 miles) southwest of Addis Ababa, on the Omo River
Cost	€1.55 billion (at current exchange rate, US\$2.11 billion). Project costs have increased 11% since 2006.
Dam Design	Roller Compacted Concrete (RCC) gravity dam 240 meters (787 ft) tall – the tallest dam in Africa
Reservoir	Storage capacity: 11.75 billion m ³ (415 billion ft ³) Surface: 211 km ² (84 miles ²) Length: 151 km (94 miles)
Transmission Line	A 65 km (40 mile) 400 KV transmission line; a new substation will be built.
Electricity	1,870 MW (6,500 GWh/yr), more than doubling the country’s current installed capacity.
Time Line	2006: construction began 2011: first power 2012: fully completed

Ethiopia’s Project Rationale

Land-locked, densely populated and poor, Ethiopia is by and large an agricultural economy in which 85% of the people are small-scale farmers. Much of the country’s forests, land and soil resources have suffered long-term degradation, reducing agricultural productivity, but also degrading the health of its rivers, which suffer from erosion and heavy sedimentation.

Foreign aid accounts for 90% of Ethiopia’s national budget. In order to diversify and develop its economy, the government of Ethiopia has initiated an aggressive plan to develop hydropower for export, long seen as one of the country’s few exploitable resources. The plan calls for over US\$7 billion in electricity sector investments by 2015, of which 90% will be financed by debt. By 2012, when Gibe 3 is expected to be fully completed, Ethiopia predicts a domestic peak demand of 1,418 MW and dependable capacity of 3,759 MW. Although the government has given equal priority to expanding domestic electricity access and developing electricity for regional export, virtually all of Gibe 3’s power could possibly be sold for export.

DOMESTIC ELECTRICITY

Ethiopia has one of the lowest rates of electricity access in the world. An aggressive grid expansion across the country is underway, but only social services, not households, will be connected for many rural towns. Rural households that are connected generally receive a limited quantity of power for their most basic needs. For most Ethiopians, electricity will remain out of reach for decades.

More importantly, electricity won’t support cooking and heating, the most energy-intensive needs of Ethiopian households. Project developers have argued that the Gibe 3 Dam will reduce fuelwood dependency, but most Ethiopians continue to rely on charcoal or wood, regardless of whether or not they have access to electricity.

ELECTRICITY FOR EXPORT

Ethiopia predicts that power exports could bring in €300 million (\$407m) annually, surpassing coffee as the country’s most valuable export. By 2012, Ethiopia anticipates that it could export up to 6,159 GWh/yr (almost equivalent to Gibe 3’s 6,500 GWh/yr). Foreign buyers would need to pay more than \$0.066 per kWh to meet Ethiopia’s revenue goals.

Ethiopia plans to export a total of 900 MW to Djibouti, Sudan and Kenya, and would like to export power even further, to Egypt, Eritrea and Yemen, as well as other eastern and southern African countries via planned grid interconnections. However, no power purchase agreements have yet been signed. Investments in an \$800 million high-voltage transmission line to Kenya still need to be secured.

GIBE 3 KEY PLAYERS

Ethiopian Electric Power Corporation (EEPCo): The state-owned utility responsible for development of the Gibe 3 Dam, including project oversight. EEPCo awarded the project's no-bid construction contract in July 2006. EEPCo is currently investing in five large hydro dams, which will stretch the utility's financial situation and capacity for project monitoring and oversight.

Salini Costruttori S.p.A.: Italian firm and primary project contractor. Salini was awarded a no-bid construction contract worth €1.55b (\$2.11b) by EEPCo. Salini also worked on the Gilgel Gibe Dam, which was commissioned in 2004. Salini is currently constructing two additional hydro projects for EEPCo, the €390m Gilgel Gibe 2 (a tunnel scheme near the original dam), and the €467m Tana Beles Dam; both are no-bid contracts. SACE, the Italian export credit agency, rejected Salini's applications for an export guarantee for both Gilgel Gibe 2 and 3.

African Development Bank: Considering financing Gibe 3 for an undisclosed amount. The project violates numerous Bank safeguard policies as well as its procurement policy. In March and April 2009, respectively, two requests were submitted to the Bank's Compliance Review Mechanism Unit to investigate Bank compliance in project preparation.

European Investment Bank: Considering financing Gibe 3, with up to €250 million (\$341m). The Bank has yet to officially begin project appraisal, but is conducting a pre-assessment of the project and co-financing the Economic, Financial and Technical Assessment currently underway. In April 2009, Kenyan NGO Friends of Lake Turkana submitted a request for investigation to the EIB investigation unit. The Bank also supported Gilgel Gibe Dam with €41m (\$56m) and Gilgel Gibe 2 with a €50m (\$68m) loan.

Government of Italy: Considering financing Gibe 3, with up to €250m (\$341m). In 2004, the Italian Development Cooperation (IDC) provided €220m (\$300m) in aid, its largest credit ever, for Gilgel Gibe 2. The controversial operation triggered a criminal investigation against IDC, but was subsequently closed in 2008 without any legal action. The loan came just after the Italian government agreed to cancel all of the €332m debt owed by Ethiopia.

Government of Kenya: Although the Omo-Turkana River Basin is shared by Ethiopia and Kenya, no agreement has been reached on Gibe 3's impact to Kenya's customary water rights. An estimated 300,000 Kenyans rely on Lake Turkana, which is annually replenished by the Omo River. In 2006, a Memorandum of Understanding (MoU) was signed between Ethiopia and Kenya for the purchase of 500 MW from Gibe 3. An \$800m grid connection between Kenya and Ethiopia is also planned, but has yet to be financed.

Ethiopian Diaspora: The Ethiopian Diaspora is an important source of financial support for the country's development. The government of Ethiopia has issued the Millennium Bond, marketed to the Ethiopian Diaspora, to support EEPCo's development of the Gibe 3 Dam and other hydro development projects. Due to the bond's market limitations, this financing mechanism may not provide significant funding. The Diaspora has been increasingly vocal on both sides of the Gibe 3 debate.

East African Power Pool (EAPP): A regional power pool launched in 2005 to facilitate the trade of electricity between countries. Although an EAPP regional master plan has not been finalized, the Gibe 3 Dam has been on the list of EAPP projects since at least 2006. The EAPP includes Burundi, DRC, Egypt, Ethiopia, Kenya, Rwanda, Sudan, Tanzania, and Uganda; its Permanent Secretariat is based in Addis Ababa.



Key Issues

FAST-TRACKING DISASTER

Gibe 3 construction began in 2006. In its rush to construction, the government of Ethiopia neglected to properly assess economic, technical, environmental and social risks, violating domestic laws and international standards. It also neglected to study the effects of climate change, which could dramatically affect the dam’s performance over its lifespan. Today, post-construction analyses are being written to provide supporting evidence for a decision made years ago.

In July 2006, the government of Ethiopia directly awarded a no-bid **Engineering, Procurement & Construction (EPC) contract** for Gibe 3 to Italian construction company Salini. According to Transparency International, large public works projects are one of the world’s most corrupt sectors, and no-bid contracts are an open invitation to corruption. The contract, worth €1.55b (\$2.11b), violates Ethiopia’s Federal Public Procurement Directive, which requires international competitive bidding. The **World Bank** declined to consider project funding because the contract also violated the Bank’s own procurement policy. (However, the Bank has not ruled out providing an investment guarantee, should the government of Ethiopia request such support.)

A forthcoming, but belated, **Economic, Financial and Technical Assessment** is intended to attract additional investors. The study is supported by the African Development Bank and the European Investment Bank, both of which have refused to disclose the assessment’s Terms of Reference. An independent desk study of Gibe 3’s economic, financial and technical feasibility, released in April 2009, identified significant concerns about the dam’s design and location, which could increase the probability of a cata-

strophic dam failure. Other concerns include unaffordable electricity and limited capacity of Ethiopian agencies tasked with project oversight.

In July 2008, Ethiopia’s Environmental Protection Authority approved the Gibe 3 **Environmental and Social Impact Assessment (ESIA)** documents. In January 2009, EEPCo released a final version of the documents. These documents have been criticized for their poor preparation and belated release two years after construction began – a flagrant violation of Ethiopian environmental law, which requires an impact assessment be approved prior to construction.

The ESIA is largely based on **insufficient scientific analysis and a lack of evidence**. It quickly concludes that numerous impacts, including to local communities and protected areas, are negligible. Risks to health and livelihoods of affected communities are particularly poorly addressed. Mitigation measures are inadequate, unrealistic and do not acknowledge the failure of similar mitigation measures at other dams in Ethiopia. The January 2009 ESIA includes new sections on project alternatives and basin-wide cumulative impacts, which further demonstrate simplistic analysis and an attempt to provide supporting evidence for the dam.

In a critique of the Gibe 3 ESIA, the African Resources Working Group (ARWG), a group of international academics with ties to Ethiopia, wrote that “The quantitative [and qualitative] data included in virtually all major sections of the report were clearly selected for their consistence with the predetermined objective of validating the completion of the Gibe 3 hydro-dam.”

Gibe III ESIA documents	Prepared by:
Environmental Social Impact Assessment	CESI & Mid Day International Consulting (MDI)
Additional Study on Downstream Impacts	Agriconsulting & MDI
Environmental & Social Management Plan	Salini & MDI
Public Consultation & Disclosure Plan	Salini & MDI
Resettlement Action Plan (vols 1 & 2)	MDI
Chida-Sodo Road Realignment	MDI
Gibe III – Sodo 400kv Transmission Lines Project	EEPCo’s Environmental Monitoring Unit (EMU)
Gibe III – Sodo 400kv Transmission Lines Project Resettlement Action Plan	EEPCo’s EMU

Downstream Affected Peoples	Population	Indigenous and other Ethnic Groups
Indigenous peoples in Ethiopia's Lower Omo Valley directly engaged in flood-retreat cultivation	100,000	Bodi, Daasanach, Kara (Karo), Muguji (Kwegu), Mursi, Nyangatom
Indigenous peoples in Ethiopia's Lower Omo Valley who also depend on the floods (for grazing lands or trade with farmers for flood-retreat produced agriculture)	100,000	Bashada, Bodi, Hamar, Mursi, and Nyangatom
South Omo administrative zone in Ethiopia, including the Lower Omo Valley (90% rural)	500,000	Amhara (Ethiopia's dominant ethnic group), Arbore (Hor), Ari, Atse, Banna, Basketo, Birale (Ongota), Bodi, Daasanach (Galeb), Dime, Hamar, Kara (Karo), Konso resettled in Sala Mago Wereda, Maale, Muguji (Kwegu), Murile, Mursi, Nyangatom (Bume), Tsamai, Tsemako
Population supported by Kenya's Lake Turkana	300,000	Dassanach, Elmolo, Gabbra, Rendille, and Turkana

LACK OF CONSULTATION WITH DOWNSTREAM AFFECTED PEOPLES

The majority of project-affected people (500,000) are located downstream of the dam site in the Lower Omo Valley and around Kenya's Lake Turkana. According to the project's Public Consultation and Disclosure Plan, only 93 members from four downstream indigenous communities were consulted. All downstream consultations occurred in 2007, after construction had already commenced.

The downstream population who will be most directly affected by the project is made up of indigenous peoples who are geographically remote and politically vulnerable. The region has virtually no modern infrastructure, such as roads, electricity, and phones. Few members of these communities speak Amharic, Ethiopia's national language, and even fewer speak English, the language in which the ESIA project documents have been produced.

Consultations with project-affected people in Kenya have never taken place.

ETHIOPIA'S MUZZLED DISSENT

Project affected people, NGOs and academics perceived as critical of Gibe 3 risk government-sanctioned retaliation. The poor consultation process, coupled with extreme marginalization of many affected groups, has greatly reduced the chance for critical concerns to be raised and addressed. Project developers have made virtually no information publicly available in Ethiopia to date, leaving Ethiopian civil society uninformed about the project's potential risks and

impacts. Local media coverage has only recently emerged after critical international coverage appeared in March 2009.

The political atmosphere in Ethiopia has further restrained public debate. A Gibe 3 field investigation report released by USAID in March 2009 noted:

The current political landscape for civil society/NGOs remains difficult in the aftermath of the May 2005 parliamentary elections. This political environment discourages public discourse on development issues, including both energy policy and projects to implement the policy. An NGO law passed in early January 2009 is the most recent attempt to weaken civil society's voice and disengage civil society from the policy-making process. The new law heavily restricts the thematic areas where civil society organizations can operate and places funding restrictions on local NGOs by international NGOs. The areas that are compromised include governance, civil society, and human rights issues.

UNRAVELING ETHIOPIA'S LOWER OMO VALLEY: SOCIAL RISKS

Indigenous peoples in the Lower Omo Valley are placed at great risk due to the dam's regulation of the river flow, which will lead to the elimination of the river's natural flood cycle. Downstream farmers cultivate the river's banks after the annual flood, a practice known as flood retreat cultivation. The annual flood also supports the renewal of grazing lands for herders, and signals migratory fish species to begin spawning. Without adequate mitigation, the

dam will cause food insecurity, chronic hunger, poor health, food aid dependence, and a general unraveling of the region's economy and social safety net.

The project proposes an artificial flood to mitigate these impacts. However, the proposed flood would last only 10 days, while the natural flood builds gradually over several months, until it peaks in August or September. A truncated 10-day flood would not reach all the areas now nurtured by annual flooding, and would likely fall far short of supporting current agricultural productivity. The artificial flood would also depend on the goodwill of the dam operator. This would create a conflict of interest, since the artificial flood would eat into the operator's profits. Even if implemented, the artificial flood is so inadequate that it would fail to maintain the local ecology, livelihoods and economy.

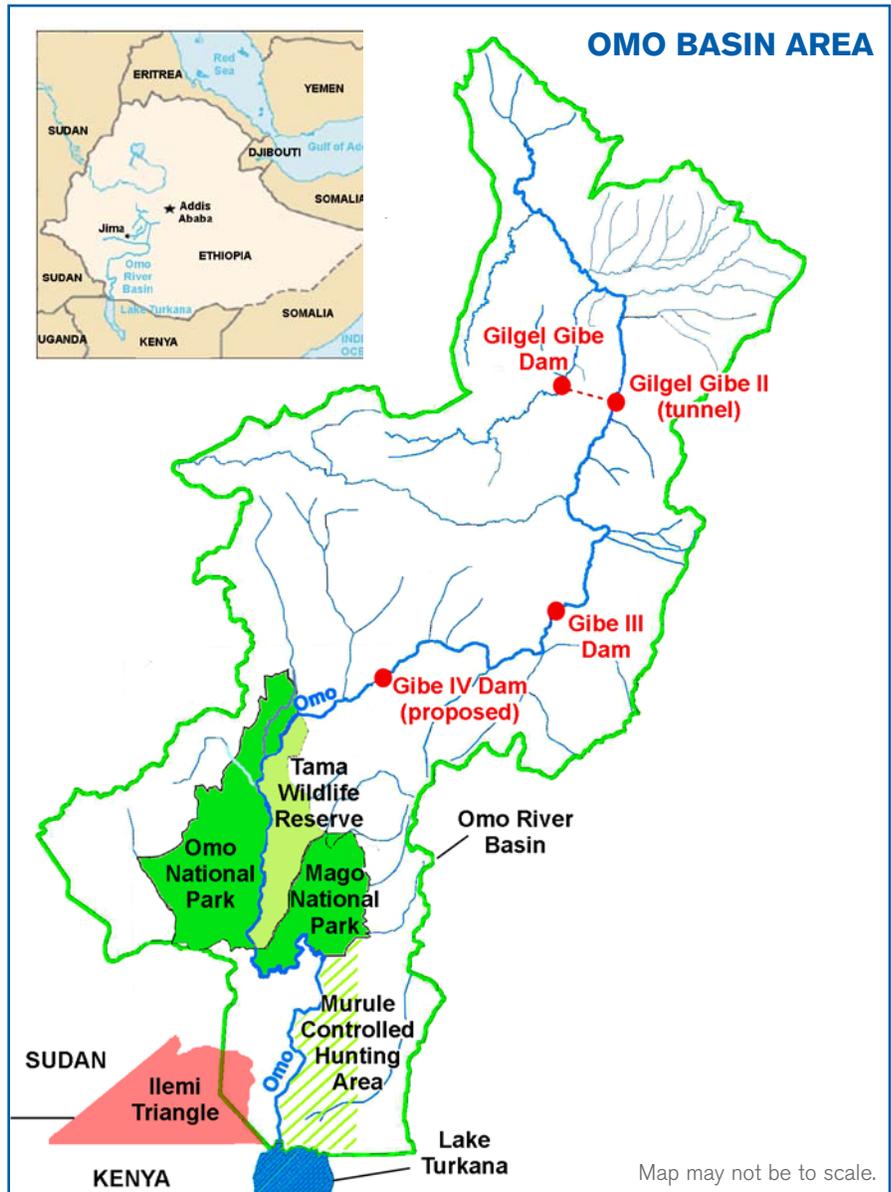
The dwindling of resources caused by the dam would increase conflicts between local ethnic groups. Firearms are already omnipresent amongst the region's communities. But the dam is just one factor in a perfect storm rapidly descending on the Lower Omo Valley. The government of Ethiopia is exploring the area for oil and minerals and planning large-scale agricultural and biofuel schemes, which could further fuel conflicts over traditional land and water resources. The area is also home to the Ilemi Triangle, a volatile area of disputed national borders between Ethiopia, Kenya and Sudan. As traditional resources diminish and government land use increases, latent tensions could erupt.

DRAINING KENYA'S LAKE TURKANA: TRANSBOUNDARY IMPACTS

The Omo River and Lake Turkana constitute the Omo-Turkana Basin, shared by Ethiopia and Kenya. The Gibe 3 Dam poses serious hydrological risks to Lake Turkana, which receives up to 90% of its water from the Omo River. An oasis of biodiversity in a harsh desert, **Lake Turkana** supports 300,000 people and rich animal life. Hundreds of thousands of fisherfolk and pastoralists will be affected if the lake's fragile ecosystem is stressed to the brink of collapse. Over

recent years, the lake has been shrinking and becoming progressively more salty, leaving the region highly vulnerable to climate change impacts. If the water level continues to fall, the lake's fragile balance could be destroyed.

Gibe 3 Dam will reduce the available river flow to Lake Turkana in several important ways. First, the lake will be particularly vulnerable during the filling of Gibe 3's reservoir, whose storage capacity (11.75b m³) will likely take two years or more to fill. The Omo River's inflow to Lake Turkana is predicted to be cut by 50% or more during reservoir filling. While the ESIA has identified an alarmingly low minimum flow release of 25 m³/sec, Salini is contractually required to only release 15 m³/sec during reservoir filling, far below the



average flow during the driest month (61 m³/sec) and only a fraction of the average annual flow (438 m³/sec).

After reservoir filling, Lake Turkana will remain vulnerable as inflow from the Omo River is reduced by three factors. First, the ARWG study predicts that 50–75% of the reservoir water could be lost due to underground cracks in geological rock formations. Additional water will be lost to evaporation in the massive reservoir. Finally, the government of Ethiopia hopes to attract large-scale irrigation schemes to the Omo Valley, which would require further abstraction of waters available to Lake Turkana.

The ARWG study indicates that Gibe 3 could lead to a drop in Lake Turkana's depth of 7–10 meters (23–33 feet). Yet the impact of Gibe 3 on Lake Turkana is barely acknowledged in the project's impact assessment, and is dismissed with claims that the project will benefit, not harm, the lake. Project preparation has fully ignored Kenya's customary downstream water rights in this shared river basin. No documentation indicates that the government of Kenya was informed of the dam's impacts to Lake Turkana.

ETHIOPIA'S HYDRO DEPENDENCE

If Ethiopia carries out its current energy development plans, the country will soon be more than 95% dependent on hydropower. Extreme hydro dependence leaves Ethiopia's

power sector vulnerable to drought, an increasingly risky scenario due to climate change. Falling reservoir levels will affect Ethiopian electricity consumers and export revenues. In 2003, Ethiopia's power supply was held hostage by severe drought, forcing sudden and severe power cuts that lasted six months. Power cuts of 15 hours twice a week were estimated to cost \$200m in economic output. In May and September 2008, Ethiopia again experienced costly power cuts due to low water levels – an experience that will likely become more frequent and pronounced in the future. The low levels were exacerbated by increased evaporation rates, something that could become more worrisome across Ethiopia due to climate change.

“The diversification of energy sources is essential in order to ensure a sustainable energy supply,” wrote one EEPCo expert. If Ethiopia wants to protect its energy investments, it should do all it can to minimize risks. Energy projects that are more resilient to hydrological changes should be prioritized. Hydrological modeling of drought risks and predicted climate change impacts would help the government understand whether hydro investments today will be cost-effective 20 years from now and beyond. No analyses of drought and climate change impacts have been undertaken for the Gibe 3 project, nor for Ethiopia's electricity sector.

SOLUTIONS

MORATORIUM ON GIBE 3 DAM

The Gibe 3 Dam project should be halted until:

1. The project's design, costs and impacts have been properly reviewed and addressed (including contract terms and project-related studies);
2. Thorough consultations have been conducted with downstream Ethiopian and Kenyan affected communities, to their satisfaction; and
3. A public debate about the country's energy sector planning has taken place.

Taking these steps would result in a more transparent and objective consideration of whether the Gibe 3 project is the best choice for Ethiopia's electricity sector. Without taking these steps, the Gibe 3 Dam remains too risky for Ethiopia's consumers, economy and affected people.

SOUND PREPARATION OF ELECTRICITY PROJECTS

It's hard to imagine that Ethiopia would completely abandon large hydro. In order to attract international funders, the government of Ethiopia should follow international standards and best practices in the preparation of its large-scale electricity projects. In 2000, the World Commission on Dams published its recommendations for best practice, which promotes a “rights and risks” approach to stakeholder participation, transparency, and comprehensive consideration of project options. Adherence to the safeguard policies of international development banks will also improve protection of affected people. Sound project preparation should always follow domestic laws and regulations, and allow sufficient time for project preparation before construction.

DEVELOPING ETHIOPIA'S CLEAN, NO-REGRETS GRID SUPPLY

Hydropower dependence is particularly risky in the face of climate change impacts on rivers. Developing renewable

energy supplies that are less vulnerable to climate change will diversify the national energy supply and reduce its vulnerability. Ethiopian energy experts, EEPCo and independent studies have all confirmed that Ethiopia has immense solar, wind and geothermal energy resources that have yet to be exploited. At least 700 MWe of geothermal potential exists within the country's Rift Valley. A 2006 EEPCo presentation called wind power "the best solution to overcome power deficit ahead in the next years." In 2008, EEPCo awarded a \$300m contract for a wind farm in northern Ethiopia.

RESOURCES FOR DOMESTIC ENERGY NEEDS AND RIVER BASIN HEALTH

Ethiopia is investing to expand its domestic grid. It has also taken some steps to address the overuse of wood and charcoal, which contributes to deforestation, respiratory problems and river basin degradation. But sufficient resources should be allocated to ensure modern energy services (besides electricity) benefit Ethiopia's rural communities. Programs that can distribute improved cooking stoves would be particularly beneficial. The government should also increase afforestation and other investments to improve watershed health and prolong the life of dam reservoirs.

RESOURCES

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ORGANIZATIONS

Bank Information Center www.bicusa.org

Campagna per la Riforma della Banca Mondiale www.crbm.org

Friends of Lake Turkana www.friendsoflaketurkana.org

International Rivers www.internationalrivers.org

Indigenous Peoples of Africa Coordinating Committee www.ipacc.org.za

Solidarity Movement for a New Ethiopia www.solidaritymovement.org

Survival International www.survival-international.org