



# KEEPING THE NILE FLOWING AND BOOSTING LIVELIHOODS

A Success Story of the Tana-Beles Integrated  
Watershed Management Project

December 2014



**Nile Basin Initiative**

# The situation

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230 million

**People for whom River Nile is a source of livelihood**

3.2 million sq km

**Area covered by the Nile Basin**

86%

**Proportion of River Nile's flow that originates from the Ethiopian catchment**

200 million tons

**Volume of the Nile watershed's top soil washed away annually**

USD 67 million

**Economic Cost of watershed degradation**

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As the world's longest river, the Nile is a source of livelihood for over 230 million people who live within its basin that covers 3.2 million square kilometers (about 10 per cent of Africa's land area).

Yet, for all its economic potential and natural endowments, the Nile Basin is threatened by scarcity of water and degradation of its ecosystems. It is estimated that from the Ethiopian catchments alone where 86 per cent of the river flow originates, up to 200 million tons of top soil are washed away every year. Downstream in the delta area, salt water infiltration into the Nile is an acute problem.

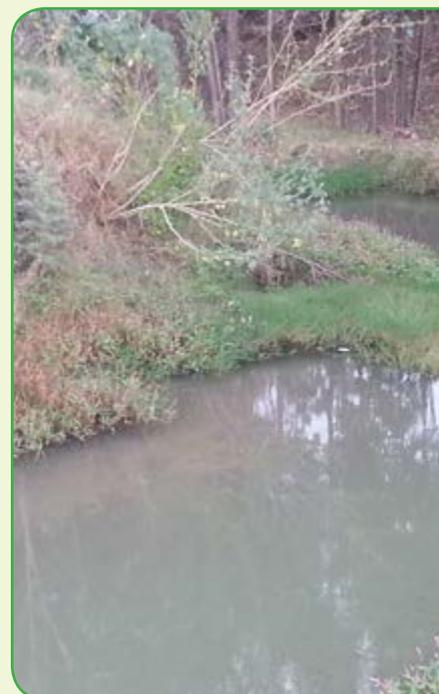
This massive soil erosion has led to economic losses by shortening the life span of reservoirs, adding to the siltation of irrigation channels, and damaging hydropower infrastructure. Vital wetlands in the midstream are shrinking too; yet they are essential in regulating the hydrological balance and river flow, hosting endangered flora and fauna, and providing environmental services to local communities.

The present economic costs of degradation are valued at USD 670 million USD and are estimated to rise to USD 2.5 billion over the next 25 years if not addressed urgently.

To deal with these challenges, the Nile Basin Initiative (NBI) is supporting Member States by focusing on watershed management and livelihood development projects to restore degraded water catchments and to improve economic productivity. These catchments are critical for sustaining the flow of the Nile's major tributaries and for enhancing and diversifying productivity in rain-fed farming.

Remarkable examples of the watershed improvement efforts that the NBI is supporting include:

- The Tana-Beles Integrated Watershed Management Project which is part of the Eastern Nile Watershed Management Project;
- The Eastern Nile Flood Preparedness and Early Warning Project;
- The river basin management projects of Mara, Sio-Malaba-Malakisi, and Kagera.



# NBI confronts the challenge through community watersheds

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USD 2 million

**Cost of the Tana-Beles Integrated  
Watershed Management Project**

USD 80 million

**Total value of projects fast-tracked  
between 2009 and 2014**

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The NBI's approach to the problem of watershed degradation is comprehensive as it combines a range of appropriate solutions; it is multi-sectoral as it brings agencies with different mandates to work together; and it is integrated as it is aligned with the needs of the beneficiaries.

The Eastern Nile Watershed Management Project is designed to address the root causes of the economic losses due to land degradation and to forestall and contain their effects. The objective of the project is to increase the adoption of sustainable land and water management practices in selected watershed communities of the Eastern Nile Basin. The regional knowledge base the project has created has been used to prepare and fast-track projects worth about USD 80 million from 2009 to 2014.

One of these fast-tracked projects, the USD 2 million Tana-Beles Integrated Watershed Management Project - named after Lake Tana and Beles River - stands out for blazing the trail. It is located in the upper Blue Nile region of Ethiopia and is part of the wider Eastern Nile watershed. NBI's Eastern Nile Technical Regional Office (ENTRO) has played a leading role in the conception and preparation of the project.

To work efficiently, the 85,026 ha Tana-Beles watershed project area was clustered into 163 community-level watersheds of manageable size. Since 2009 when work started, watershed development plans for all the clusters have been implemented through a range of activities, namely:

- Treatment of 821 ha of gully;
- Rehabilitation of 16,000 ha of degraded hillside;
- Development of 4,000 ha of community woodlot forestry;
- Construction of 14 small-scale irrigation schemes of a combined 1,000 ha.

This integrated approach to watershed management has reduced the loss of top soil and increased crop yields at the farm level. These advances are expected to bring about more benefits further downstream, such as better water quality and less silting of the Nile waters in Sudan and Egypt.



## Community action leads to change

“Farmers are now using improved varieties of crops and getting more healthy animals. The land is more productive and there is less soil erosion.”

The Aleket Wonze Community Watershed Project, located in the South Gonder Zone of Farta District, supports about 360 people who live off the communal grazing land that has now got a new lease of life from activities undertaken through the Tana-Beles Integrated Watershed Management Project.

During the five years that 29-year-old Delelegn Adugne has worked with this community in the Amhara Region of Ethiopia, he has acquired a reputation for his role in the transformation of the area's farmland. In appreciation of his commitment, the locals have nicknamed him *Workneh*, which is Amharic for 'our gold.' As a community facilitator, Adugne has worked with a 12-member watershed committee to galvanise the locals to beat back an ecological disaster.

Until then, the destructive direct grazing method had stripped the land in Aleket Wonze of its green cover and the soil of its vital nutrients. In what had become a race to grab whatever they could for their animals, competitive grazing practices on communal land had undercut the very foundation of the community's livelihood.

Yale Lakew, leader of the Aleket Wonze Community Watershed Committee, says that living on the land had become a grave challenge. The effects of ill-advised land use activities were gradually manifesting themselves

for all to see. Faced with a bleak future, the community eventually came together to find a solution.

Under the committee's leadership, the farming community forged a consensus to set aside 19 of the 533 ha of community land and to close them off to all grazing activities as a way to demonstrate the impact that one specific measure could bring about. Over time, the land was rejuvenated and the vegetation blossomed. Through persuasion, an arrangement was devised that kept the earmarked acreage

fenced off and out of bounds to livestock, while allowing all farmers to harvest the grass to feed their animals under a controlled system. And there was something in it for everybody. Those who had no animals could also harvest the grass and sell it for a personal income.





L-R: Deres Fekadie of the Amhara Region Bureau of Agriculture in Bahir Dar and members of the Aleket Wonze Community Watershed Committee

What used to be a bare and barren surface is now a lush green teeming with *gaja* and *bana* grass, interspersed with shrubs that provide forage for livestock.

Indeed the results of the effort and investment that have been expended to rehabilitate the 533 ha of communal grazing land that was severely degraded only a few short years ago are dramatic. What used to be a bare and barren surface is now a lush green teeming with *gaja* and *bana* grass, interspersed with shrubs that provide forage for livestock.

On one chilly afternoon, Lakew and three other watershed committee members - Demelagh Melege, Negusie Semegn, and Terefe Deres - stand proudly in the middle of the Aleket Wonze communal grazing reserve. They speak with supreme satisfaction about the boost in the community's collective fortunes.

Casting an expansive gaze over the gently sloping landscape, Lakew shares his own impression of the changes he has witnessed: "Farmers are now using improved varieties of crops and getting more healthy animals. The land is more productive and there is less soil erosion."

## Focusing on livelihoods

“Good watershed management has to be people-centred, not about protecting forests for its sake. The watershed is a key meeting point for water and land management. It’s a livelihood problem, not a technical or engineering problem.”

Improving livelihoods is central to the vision of NBI as well as the mission of the Tana-Beles Integrated Watershed Management Project. As Dr. Wubalem Fekade, the Head of Social Development and Communication at ENTRO, says: “Good watershed management has to be people-centred, not about protecting forests for its sake. The watershed is a key meeting point for water and land management. It’s a livelihood problem, not a technical or engineering problem.”

One of NBI’s most valuable contributions has been to popularise the idea that watershed management is first and foremost a livelihood rather than technical issue. In the Tana-Beles watershed project area, people had to be convinced that managing the watershed was as vital to sustaining the common water resources as to adapting to and mitigating the effects of climate change.

NBI’s livelihood-based approach to watershed management involves local communities from inception to execution. The starting point when designing the watershed development plans for each of the 163 communities in the Tana-Beles Integrated Watershed Management Project was to understand the needs and constraints that the population to be served faced. Baseline socio-economic surveys were conducted, problems and options identified, multi-year plans designed, and annual action plans agreed during the preparation phase.

However, to bring the communities on board, it was crucial to involve them in diagnosing their problems and deciding the appropriate solutions, to motivate them to take ownership of their decisions, and to demonstrate to them that tangible results lay ahead. These were critical elements of the planning process because the Tana-Beles Integrated Watershed Management Project was attempting to change perceptions, values, and traditions that had endured through generations.

## Planning ahead

In designing the Tana-Beles watershed project, a significant portion of the time was spent planning prior to implementation. As a result of this dedication to planning, there is a robust monitoring and evaluation system in place. With this system, evidence is constantly being generated to ascertain that the support the communities are getting is changing people’s lives and the ecosystem as expected.

For instance, a hydrological monitoring programme, comprising a network of monitoring stations installed at the outlets of 15 micro watersheds, collects and analyses data to evaluate hydrological changes in the project areas. A substantial data bank on sediment, rain, and flow data is in operation at the Amhara Region Bureau of Water Resources Development. About 50 individuals including regional and local administration officials have been trained to use the monitoring system, and the data is shared with students and research groups.



## Impact on livelihoods

The Tana-Beles Integrated Watershed Management project has promoted the adoption of constructive land use practices. This has happened through knowledge transfer and by providing communities with the means to practice what they have learnt. Indeed, examples of the impact of these efforts abound:



**CROP DEVELOPMENT:** Many farmers who have participated in crop development activities – such as crop demonstrations conducted on individual plots and at farmer training centres – have embraced the recommended practices on their own fields. The Amhara Regional Agriculture Research Institute runs demonstrations on the use of particular crop, livestock, forestry, and post-harvest technologies.

**DIVERSIFICATION:** In efforts to diversify income sources for communities in the project areas, 132 business groups have been organised and more than 2,000 farmers (at least 180 of them female) trained in how to generate income from off-farm activities. The business training provided has inspired some of the groups to branch out into activities like bee-keeping, craft-making, tailoring, and production of forest seedlings. For instance, the project has distributed over 1,900 modern beehives, at least 1,100 bee colonies, more than 130 units of apiculture equipment, and over 2,300 kg of bee wax to organised farmer groups. This is one way of linking livelihood improvement outcomes to watershed management. Over 180 farmers (nearly half of whom are women) have benefitted.

**ALTERNATIVE ENERGY:** By introducing alternative energy sources that are not dependent on wood fuel, the project has strengthened the linkages between community watershed management and tree conservation. Over 3,000 energy-saving stoves have been produced and handed out to farmers and 95 model biogas plants constructed to demonstrate alternative energy technologies.

**AGRICULTURAL EXTENSION SERVICES:** There is now a farmer training centre in each of the 35 *kebeles* in the project area. The *kebele*, a localised community, is the smallest administrative unit in Ethiopia's local government system. Nine of these centres were constructed or upgraded during the project life span while others were equipped to enable them function properly. In all, over 3,500 farmers (about 30 per cent of them women) have been trained in crop and livestock management.

**ANIMAL PRODUCTIVITY:** With the construction of nine, renovation of three, and upgrading of 11 animal health posts, communities in the Tana-Beles watershed project today have access to vastly improved veterinary services. Twenty-six technicians trained at the regional animal health laboratory are available to help the farmers. Other support focused on improving the quality of sheep, poultry, and cattle breeds.



## Impact on the ecosystem

**SOIL AND WATER CONSERVATION:** A number of physical and biological soil and water conservation measures have been carried out on 46,276 ha of cultivated land using a combination of technologies. In fact, in communities like Aleket Wonze, the practice of free animal grazing has largely ended as farmers have been persuaded to adopt stall feeding and zero grazing.

Under the watershed management project, more than 19,000 ha of previously degraded land, including hillsides as well as grazing and bush lands, have been treated and protected through measures like construction of enclosures, hillside terraces, and trenches, and planting new while enriching existing plantations.

In almost all cases, the success rate has been phenomenal and exceeded the target. The communities have taken ownership of the developments carried out on their land and have instituted by-laws to protect them. Besides, the fodder and grass products grown on the treated land and the enclosed areas are now shared among community members including vulnerable women and landless households.

The project has rehabilitated over 1,000 ha of gully land (108% against the target) through construction of gabion, loose stone,

and brush wood check dams, as well as gully reshaping and levelling. Physical soil and water conservation structures have been reinforced with biological techniques. All told, hundreds of check dams of various specifications have been completed. And consequently:

- Gully land is healing or rejuvenating faster and benefitting the watershed communities;
- Community watershed committees and the beneficiaries are leading the follow-up, maintenance, and protection of the rehabilitated land;
- The treated gully lands have become more productive and the communities are realising tangible results;
- The capacity of local watershed communities and experts to rehabilitate gully land has improved appreciably.

**In almost all cases, the success rate has been phenomenal and exceeded the target.**



**FORESTRY:** Over 5,000 ha of new community, private woodlot, and backyard forests have been planted under the Tana-Beles Integrated Watershed Management project. Considering that the plan was to bring 4,000 ha of land under forest cover, the target has been exceeded by a good margin.

Among the achievements, for example: 42 forest and five forage seedling nursery sites are fully operational; a number of private and group nurseries are producing a substantial amount of seedlings that are planted in project areas every year; more than 460 farmers working in these nursery sites are benefitting from the jobs created; and about 46 million seedlings on private and project-funded nursery sites have been produced and planted.

**SMALL-SCALE IRRIGATION:** The project has exceeded the set target of 1,000 ha of new areas covered by irrigation, with 14 newly developed small-scale irrigation schemes serving more than 2,800 households. In addition, over 70 motor pumps have been provided to organised groups while almost 650 hand-dug wells have been excavated.

As a result, nearly 300 ha of land have been irrigated with over 1,200 farmers as beneficiaries. Fourteen irrigation cooperatives have been established and committee members

elected and trained through exposure visits. Similarly, locally-based agronomists have been trained in irrigation water and crop management practices.

**INTEGRATED WATERSHED DEVELOPMENT:** Linkages between community watershed development and livelihoods have been strengthened by investing in basic physical and social infrastructure: water supply, sanitation, education, and health services.

For instance, at least 680 safe water points have been constructed and have provided access to potable water for at least 75,000 people. Water and sanitation committee members have been trained in water and sanitation management.

Furthermore, 18 primary schools have been renovated and 91 furnished and supplied with scholastic materials like desks, chairs, tables, blackboards, and textbooks. Overall, the investments in educational services have benefitted close to 80,000 students. In the health domain, services have been improved by having 15 health posts rehabilitated and 36 equipped. It is estimated that 122,000 people are now served by these health posts. Improvements to the transport network include the rehabilitation and upgrade of rural roads and access paths, foot bridges, and culverts.

# Benefits

Growing up and living his entire adult life in Aleket Wonze, 65-year-old Mr. Assefa Altaseb is a successful barley farmer whose fortunes have improved with investments in the community watershed. "When I plant my crops these days," he says, "I'm sure they will survive until they are ready to harvest."

Across the project areas, communities and individuals have participated voluntarily, fully convinced of the benefits of taking part. These undoubtedly commendable benefits include:

- Reduction in soil erosion has led to an increase in soil fertility;
- Reduction in rain water run-off has led to increases in ground water recharging, river/stream bed flow rate, water flow time, and water volume;
- New springs have emerged, leading to a noticeable rise in availability of water for domestic use and for irrigation;
- Land vegetation cover in the protected areas has increased, and indigenous plant species have regenerated;
- Community awareness and participation in watershed development have improved, and watershed committees have started to take charge;
- Formerly degraded land that has been treated and closed off has become productive again;
- Landless youths and women who have participated in watershed development activities like gully treatment and seedling production now earn better incomes;
- Improvements in soil and water conservation, agricultural practices, and access to extension services have led to increases in land productivity.
- With the end of free animal grazing:
  - Fodder and livestock productivity have improved;
  - Conflicts among farmers due to free animal movements have de-escalated;
  - Animal health has improved;
  - Most children are able to attend school.

By the end of the Tana-Beles Integrated Watershed Management project in mid 2014, close to 200,000 people (or about 40,000 households) had benefitted from the numerous investments, employment, and income generation opportunities created. Hundreds of youths provided the labour for the construction of check dams and tens of farmer groups were introduced to agro-business as a way of adding value to their farm output.

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According to Mr. Fekahmed Negash, the Executive Director of ENTRO, the Tana-Beles Integrated Watershed Management project was fast-tracked considering the multiplier effects that its benefits would generate. And why was a livelihood component included? "Because poverty is a major cause of land degradation," says Mr. Negash.

Growing up and living his entire adult life in Aleket Wonze, 65-year-old Mr. Assefa Altaseb is a successful barley farmer whose fortunes have improved with investments in the community watershed. "When I plant my crops these days," he says, "I'm sure they will survive until they are ready to harvest."

That has guaranteed Mr. Altaseb a secure income from his farm and, if the value of his home is anything to go by, a standard of living that must be the envy of his neighbours. With role models such as Mr. Altaseb present to inspire younger generations, the long-term future of the Tana-Beles Integrated Watershed Management Project is in safe hands.





#### **Nile Basin Initiative Secretariat**

Plot 12 Mpigi Road, Entebbe

P. O. Box 192 Entebbe - Uganda

Tel: +256 414 321 424

+256 414 321 329

+256 417 705 000

Fax: +256 414 320 971

Email: [nbisec@nilebasin.org](mailto:nbisec@nilebasin.org)

Website: <http://www.nilebasin.org>

Facebook: /Nile Basin Initiative

Twitter: @nbiweb



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#### **PROJECT INFORMATION:**

**Name:** Eastern Nile Watershed Management Project

**Contact person:** Mr. Fekahmed Negash, Executive Director, ENTRO

**Contact details:** P.O. Box 27173 1000, Tel: +251 (011) 646 1130/32,

**Fax:** +251 (011) 645 9407, Addis Ababa, Ethiopia

**Email:** [fnegash@nilebasin.org](mailto:fnegash@nilebasin.org),

**Website:** <http://ensap.nilebasin.org>

**Budget:** USD 2 million

**Funding source:** World Bank & Global Environment Facility

**Stakeholders:** Egypt, Ethiopia, Sudan

**Geographic location:** Ethiopia

**Period:** 2009 - 2014

**Thematic area:** Watershed Management