Project Update: August 2016

Conservation Awareness and Monitoring:

Following establishment of School Environmental Clubs in Doromoni Primary school and Tulya Secondary school, club members were involved in various conservation activities including tree planting. During July and August 2016 fieldwork, a total of 68 and 210 trees were planted in areas around the Lake in the premises of Doromoni primary and Tulya secondary schools, respectively. The campaign on ongoing environmental education and conservation of degraded forest and catchment areas around Lake Kitangiri is proceeding. Meeting with school club members and teachers were conducted to strengthen the capacity of the club toward involvement in environmental protection around Lake Kitangiri.

Plate 1: Four months aged trees planted in a bare land at Tulya secondary school. This kind of tree housing is to reduce the effect of livestock grazed in school compounds.

Plate 2: A team member elaborating to the Doromoni Primary school club members adopt drip irrigation techniques for the better growth of the planted trees.

Plate 3: Land shading technique (right), among the techniques were instructed to the schools to reduce evaporation rate.

In addition to the efforts made the well being of the trees planted was used as one among the criterion to increase environmental conservation awareness to the youth, their families and community in large. Thus, students whose trees grown well and fully participating on leading her/his fellows on raising the trees was given gift to mobilize more participation of the student in environmental conservation.

On the other hand, games competition (football and netball) and key note speech from the invited guest of honor and one of the country environmental conservationist (Dr. Mshana, front right _Plate 1) was used to mobilize the youth/fishers and the rest of the community to participate on Lake Kitangiri environmental conservation. For the purpose of raising awareness to the community and students, both netball and football competition for both schools were conducted under the theme **'Conserve Lake Kitangiri Ecosystem for Our Better Life'**.

Plate 4: A Guest of Honor, Dr. Mshana (Biodiversity Conservationist-front right) providing the balls to a Second Master (front left) at Tulya Secondary school as a sign to open game competition

Plate 5: Form One Football Club members & Plate 6: Form two and three football club members at Tulya Secondary school before competition (principal investigator SQUAT at the right front line)

Plate 7: Form two (with white shirts) and form three (with green shorts) netball team at Tulya secondary school

Social economic survey:

Social economic survey was conducted in March during rainy season. Data analysis indicated that fishing pressure in the Lake is high during rainy season, a period that coincides with migratory fishers from Lake Jipe, Nyumba ya Mungu Dam, Mtera Dam and Lake Babati. Fishing supports the livelihood of the people for 91%, therefore the lake stands as a social security of the Kitangiri community. The survey indicated that Lake Kitangiri ecosystem is suffering from the following major environmental problems that make the survival of the Endangered Tilapia *Oreochromis amphimelas* uncertain:

- Heavy illegal fishing and overfishing *i.e*. rampant use of beach seine, use of small sized fish nets, fencing and adopted trap fishing through feeding of fish.
- Destruction of fish breeding and nursery habitats as a result of vegetation clearing.
- Illegal establishment of fish ranching and housing within the lake.
- Destruction of the forest catchment areas that increases Lake siltation. This is caused by higher demand of fuel wood for fish smoking and frying.
- Unsustainable agricultural and livestock keeping practices in areas around the Lake.
- Water diversion for agricultural purposes.

Boat survey:

Observations made during boat survey showed that more than 3Km between off and inner shores from the South-East through to the South-West part of the Lake where during rainy season was covered by water is now remained dry. This led to some difficulties of researchers using a boat to reach some of the areas. There after a car was used to access dried areas.

This area covered with water during rainy season (March 2016) where a boat was used as a means of transport to access those areas.

This is the Eastern part of the Lake where on March 2016 the areas was accessed by the boat but the area become dry in July-August 2016.

These observations agree that serious siltation is the results of heavy destructive activities and unsustainable use of resources that take place on the mountainous areas. Through observation, not less than 2000 Meters of the shore is covered with shallow water of not more than 60 cm. This means

that water level has been reduced and few days to come the Lake shores are expected to disappear due to the high siltation rate.

Also there is the serious destructive fishing activities and overfishing of young fish in the pelagic zone. This was confirmed during survey where beach seines were observed to be the only technique adopted by large number of fishermen in the lake. Furthermore, large number of the fish caught was in immature stage of its growth.

Plate 8: A beach seine (major used illegal fishing gear) with young *Oreochromis amphimelas* caught in one of a main breeding site during boat survey.

Plate 9: Few sexually matured *Oreochromis amphimelas* illegally harvested using a beach seine net. Further, anthropogenic activities such as processing of the fish while in water (in the landing sites) and clearing of aquatic vegetation in the pelagic zone lead to the serious eutrophication.

Daily activities take place in Doromoni landing site.

Plate 10: Illegal housing established within the lake which involves clearing of weeds and destruction of fish breeding sites and nursery habitats.

Environmental education and conservation awareness:
During this reporting period, team of researchers continued campaigning on environmental education and conservation awareness through discussion during formal meetings and workshop training. The workshop involved participants from different areas such as:

- The leaders from governmental authorities (including District Executive Director; District Heads of natural resources departments; Agriculture, livestock and fisheries department; public health department; district treasurer as well as the officers from respective departments)
- Representatives from Non Governmental Organizations (NGOs) which deal with natural resources use and managements, namely; Sustainable Environmental Management (SEMA), World vision, PEML and YAZA investment;
- Ward and village leaders as well as Beach Management Unit (BMU) leaders.

During workshop, team members presented key facts based on the Lake historical background, its ecological components, its importance, threats and challenges and the solution for sustainable management. Participants suggested the following as important agenda in the Lake ecosystem conservation:

- Continuous provision of environmental education and involving community in conservation of Lake ecosystems.
- Training and strengthen of natural resources conserver groups like Beach Management Units (BMUs).
- Enforcement of laws in the use of fisheries, agriculture, forestry and other resources and implementation of sustainable resource uses.
- Establishment of alternative economic activities aiming to reduce fishing pressure.
- Strictly prohibiting open access to the fish breeding sites and nursery grounds to ensure proper growth of fish to spawning stage.
- Restoration of degraded breeding sites and nursery grounds through tree/vegetation planting in the degraded shore areas.
- Establishment of resource use authorities on conservation and management of L. Kitangiri and all rivers inters to the Lake.
- Reduce siltation through tree planting in the degraded catchment areas.
- Develop alternative sources of energy for fish smoking and frying.