



Securing Watershed Services through Sustainable Land Management in the Ruvu and Zigi Catchments Project (Eastern Arc Region), Tanzania

Brief project description:

The project implemented in the Uluguru and East Usambara Mountains of Tanzania. These mountains, which give rise to the Ruvu and Zigi Rivers respectively, form part of the Eastern Arc chain, and are amongst the most important catchment areas in the country. The forests in these catchments are recognised as globally important stores of carbon and centres of species diversity and endemism. They also provide critical watershed services, the continued functioning of which is being compromised by a host of human-induced pressures and poor land-use practices that are causing rapid land use change and land degradation. The situation is made worse by high levels of poverty and population growth; inadequate infrastructure for providing clean water to communities, low levels of compliance with water-use regulations and a lack of co-ordination amongst the various institutions and programmes operating in the catchments. The combined results of this are that both the quantity and quality of water in the Ruvu and Zigi river catchments is declining, undermining ecosystem services and functions and resulting in water shortages for people and the environment.

Despite an impressive baseline of existing interventions, the rate of deforestation and severity of land degradation in the Ruvu and Zigi catchments is unacceptably high. Sustainable Land Management (SLM) offers a comprehensive approach to management and governance of land and water resources and holds the potential to make significant and lasting differences both in the short and long term. Although the Government of Tanzania is committed to addressing the interconnected issues of land degradation, water security and poverty, its ability to resolve these problems by integrating SLM into watershed management is limited by: (i) lack of a collaborative institutional framework that enables water basin authorities and stakeholders to effectively plan, monitor and adapt land management and leverage investments for SLM; ii) staff, resource and technical capacity deficits; and (iii) inadequate demonstrated experiences in integrated watershed management approaches at the landscape level. It is these barriers that this Project will address.

This project has been organised under ***two components***, the first focussed on building institutional capacity and strengthening co-ordination amongst Water Basin Authorities and other relevant stakeholders, and the second on implementing practical Sustainable Land Management (SLM) interventions to address land degradation in forests, rangelands and farmlands, with the overall purpose of securing watershed services and improving livelihoods.

Component 1 provides for several areas of project support, including:



- (i) development and implementation of Integrated Land Use Management Plans (ILUMPS) and Village Land Use Plans;
- (ii) establishing or strengthening multi-sectoral stakeholder committees whose role will be to co-ordinate dialogue and action amongst stakeholders, and raise awareness about SLM;
- (iii) forming and strengthening Water User Associations and capacitating them to perform their roles effectively;
- (iv) improving compliance and enforcement; and
- (v) increasing the funds available for SLM.

Component 2 will target the widespread adoption of SLM practices within agricultural and livestock production systems and the conservation and rehabilitation of degraded forests in the two river basins. Key areas of project support will include working with selected communities and relevant basin management authorities to:

- (i) reduce human-induced pressures (e.g. illegal harvesting and mining and unwise use of fire) and promote sustainable forest management and forest restoration both within and outside of protected areas;
- (ii) develop and test sustainable livestock management technologies; and
- (iii) increase household food production and incomes through uptake of SLM and Sustainable Rangeland Management practices, and the development of diversified, alternative sustainable livelihoods.

The total cost of investment in this project is estimated at **US\$ 27,648,858**, of which **US\$3,648,858** constitutes funding from the GEF, **US\$ 2,000,000** represents co-financing from the UNDP, and a further **US\$ 22,000,000** represents co-financing from the Government of Tanzania (GoT).

The project now are in the fourth year of implementation stage in which the current work plan of 2019 has been prepared to adhere with current Government of Tanzania (GoT) motto drawn with his Excellency Hon. President Dr. John Magufuli's speech aims to promote the efforts of achieving the SIDP goal of bringing an economy to a state of accelerating industrialisation and to provide concrete strategies to implement SIDP 2020 that will also support the vision of 2025. The country to become a semi-industrialized by 2025, for which the contribution of manufacturing to the national economy must reach a minimum of 40% of the GDP (<https://www.tanzaniainvest.com/industrialisation>) by enabling utilization of land in sustainable manner that will ensure water security and availability that will facilitate improved production.

However, the issue of Water is Global issue, hence this work have adhered to the UN sustainable development goals (SDGs) like the SDG number one which address the issue of poverty reduction and SDG number 6 that address the issue of clean water and sanitations.



Furthermore, other cross cutting issue like gender and innovation have been addressed and applied in different aspects of livestock, land use planning, strengthening of water user associations, formation of environmental clubs and demarcation of 60 meter along the rivers to ensure effectively and efficient protection of the watershed in the Ruvu and Zigi catchment.

Contact Address:

**Permanent Secretary,
Ministry of Water and Irrigation,
P.O.Box 456, 40473 Dodoma, Tanzania
Tel: 026-2450838/40-41
E-mail: psmw@maji.go.tz**

**The Project Coordinator,
Securing Watershed Services through Sustainable Land Management in Ruvu
and Zigi Catchments,
Ministry of Water and Irrigation,
P.O.Box 456 Dodoma, Tanzania
Tel: +255 (0) 755 981 396
Email: sereka.maximillian@maji.go.tz , maximiliansereka@gmail.com**

Project Beneficiaries:

Beneficiaries of this project are the communities involving in direct interventions in the two river catchments (Ruvu and Zigi) and all communities in the riparian zone with attention to gender. Other beneficiaries include line ministries and institutions responsible for water, forest, land, livestock and agriculture.

Project Objective:

The project objective is that: '***Sustainable land management alleviates land degradation, maintains ecosystem services and improves livelihoods in the Ruvu and Zigi Catchments of the Eastern Arc Mountains in Tanzania.*** The specific ecosystems services to be targeted include regulation of hydrological flows (reducing or buffering runoff, improving soil infiltration and maintaining base flows), securing fresh water supply (quantity and quality of water); soil protection and control of erosion and sedimentation; natural hazard mitigation (flood prevention, peak flow regulation and reduction of landslides) and crop and livestock production. The Project activities have been designed to implement an optimal mix of land and water management measures that should secure the targeted watershed services, thus



strengthening water security and facilitating more sustainable planning and allocation of water use.

Summary of overall achievements of Project Development Objectives (PDOs): see below in matrix.



Hierarchy of Objectives	Indicator	Baseline level (2014/2015)	Target at End of Project (Dec. 2020)	Level at February, 2019
<p>Project Objective: Sustainable land and natural resource management alleviates land degradation, maintains ecosystem services and improves livelihoods in the Ruvu and Zigi sub-catchments of the Eastern Arc Mountains in Tanzania.</p>	<p>Reduction in land degradation in the Ruvu and Zigi catchments as measured by at least a 25% increase in land cover in forests and rangelands</p>	<p>See GEF LD Tracking Tool (land degradation within the project area is significant and the current land use practices and management approaches lack integration and targeted financing to promote INRM and SLM)</p>	<p>A 10% reduction in soil erosion, improved soil organic matter as reflected in the GEF LD Tracking Tool. 20,000 ha under direct SLM practices</p> <p>A 10% improvement in water quality and quantity in rivers at intervention sites as measured by water flows, annual rainfall, sediment load, using methods including analysis of flow, rainfall and sediment loads measured during low, mid and high flows at selected.</p> <p>At least 10,000 ha of degraded</p>	<p>A total of 22,143 ha is restored/directly under SLM good practises through various project interventions as per details below: 4727 ha - Agriculture land, 15,452 ha - Rangeland, 917 ha - forest land outside the protected forest and 1047 ha - protected forest.</p> <p>Ruvu Catchment: Through interventions including enhanced law enforcement, awareness raising through land use planning, WUA formation and operations, strengthening of Village Natural Resources/Environmental Committees; Monitoring of sediment loads established some decrease in sediments in Ruvu catchment from 42.5 tons/Km²/year of last reporting period to 40.2 tons/Km²/year (a reduction of 20% from a baseline of 50 tons/Km²/year at project inception) measured in 11 stations at Mbezi/Kihole, Ruvu/Kibungo, Ruvu/ Morogoro Road Bridge, Mgeta/Duthumi, Mlali/Mlali, Mgeta/Mgeta, Ngerengere/Mgude, Matombo/Matombo, Mfzigo/Kibangile, Ruvu/Kidunda and Ngerengere/Kingorwira.</p> <p>The reduction has been contributed by reduced human activities within the 60m river buffer, i.e. 2,622 legal notice to illegal land users within the protected 60m buffer were issued in the previous reporting period, some land users have complied leaving a total land of 120ha which is being restored through tree planting and natural regeneration is taking place. Further, uncontrolled large herds of livestock invaded forests outside the protected areas and affecting riverbanks were evicted from the catchment areas to rescue about 1,000 ha of forest land and 4600 ha of rangeland in Morogoro District. 395 fields were surveyed out of which 382 successfully plotted covering an area of 824 ha, priority SLM practices have been determined and established</p> <p>In Zigi catchment: Flow measurements and monitoring of sediment load was carried at 6 stations (Zigi/Kisiwani, Zigi/Miembeni, Zigi/Lancon, Zigi/Longuza, Muzi/Msakazi and Kihuhwi). Results have shown that sediment loads have been reduced from 2.31 tons/Km²/year at project inception to 1.49 tons/Km²/year, a reduction of 35 %. The reduction is</p>



			<p>forest restored (5,000 in protected forest and 5,000 ha outside of protected areas)</p> <p>At least 25 % improvement in household welfare and 10% increase in annual food production for at least 40% of the households in pilot villages, measured as a percentage increase in household incomes, percentage reduction in the number of food insecure days per year, and production level of main crops (tons/ha)</p> <p>At least 30% of livestock keepers adopt sustainable rangeland management</p>	<p>contributed by controlled illegal mining and other illegal activities upstream in 14 degraded sites within the protected forest land, which have been restored, enhanced WUA operations e.g. Kihuhwi WUA in collaboration with the government authorities in Kihuhwi stopped quarrying activities within Kihuhwi river which was degrading riverbanks and contributing to sediment loads.</p> <p>On livelihood improvement production levels for participating farming households in Morogoro District Council in Ruvu catchment has improved from 2.5 tons/ha at project inception to 3.8 ton/ha for maize crop, household incomes for the households has also increased from TZS 480,000/- to TZS 550,000/- per year. The improvement is a result of improved farming practices and extension services to farmers; the adoption and scaling up of alternative income generating activities, particularly fish farming at Tawa, Tununguo and Mbalagwe Villages where production of up to 27 tonnes of fish per year is guaranteed to benefit up to 1000 families. In Zigi catchment production levels for cereals in Muheza District has increased slightly for participating farmers from 2.0 tons/ha at project inception to 2.2 tons/ha</p> <p>Three (3) cattle water troughs have been constructed in Zigi catchment at Mabayani in Tanga City, Darajani in Muheza District and Mianzeni in Mkinga District to serve 88 families of livestock keeper with a livestock population of 4,600 which were impacting riverbanks and 60m protected area of about 150ha. This activity has provided a platform for the project technical team from relevant departments to negotiate sustainable Rangeland Management Practices in the area to reduce degradation of liver banks and water pollution.</p> <p>Biophysical resource assessment for both Zigi and Ruvu catchment was completed; established status of biophysical resources confirming degradation trends due to population pressure and unsustainable land use practices; recommended firm actions of priority to counteract the degradation trend. A biophysical resource data collection tool using open data kit (ODK) was also developed to strengthen data collection and monitoring accessed at https://ona.io/slmmaji/58033.</p>
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			practices, with a 25% improvement in land cover over 2,000 ha of rangeland	
Outcome 1:	Number of land use management plans integrating SLM	Formal integration of SLM is currently limited or non-existent	SLM integrated into 7 District Land Use Plans in the Ruvu and Zigi catchments	
Enabling institutional arrangements are in place to support mainstreaming of SLM into Integrated Water Resource Management in the Ruvu and Zigi catchments	Planning/budgeting guidelines for integrating SLM into water resource management developed and adapted		Develop planning guideline for mainstreaming SLM into IWRM in Ruvu and Zigi	<p>Four (4) District Land Use Management Planning Framework have been developed for districts of Morogoro, Mvomero, Mkinga and Muheza. Twenty (20) village land use management plans in stage 4 have been developed and approved by village and district authorities (4 in Mkinga, 5 in Muheza, 6 in Morogoro DC, 1 Korogwe DC and 4 in Mvomero District). The plans are being used as guide for catchment management plans. The villages include Mikwinini, Mlesa, Mbomole and Sakale (Muheza District Council); Tandai, Amini, Ludewa, Lung'ala, Tawa and Kitungwa (Morogoro District Council); Vinile, Bunduki, Tandali and Maguruwe (Mvomero District Council); Kuze Kibago and Boshwa Kwemtindi (Mkinga District Council). In this FY 2019 the NLUPC has been started to complete on stage 5 and 6 of 10 villages (2 Muheza, 3 in Morogoro DC, 2 Mkinga DC, 1 Korogwe DC and 2 in Mvomero District)</p> <p>The land use Planning process has strengthened legal institutions and officials who according to the Land legislation, have key roles in the land management and administration. The institutions include 5 District PLUM teams, 6 Ward Councils, 16 Village Councils and 16 Village Land Councils; 511 persons (359 male, 152 female) from these institutions have been trained and participated fully in the processes; A total of 5,895 community members (4,119 male, 1776 female) were reached representing their communities in the planning processes, their understanding and capacity to support management and administration of the developed integrated land use plans has increased significantly and they are now leading the community in implementing the proposed land use plans.</p> <p>2-stakeholder database in place and use. 1 for Zigi Catchment and 1 for Ruvu catchment. Twenty-one (21) stakeholders consulted have reached an agreement to jointly collaborate and contribute to Sustainable Land</p>



Management (SLM) initiatives in the catchment as it also affects the reputation and business of their institution. The areas of mutual interests include tree planting, protecting the river buffer zone, awareness raising and monitoring of illegal water abstraction; METL and Lunguza Forest Reserve are ready to collaborate with WUAs in tree planting, guarding buffer zone of the river and awareness rising programs and Goland Shutashuta Irrigation Scheme is willing to assist monitoring of illegal abstractions. In Zigi catchment two stakeholders' workshop were conducted, in these workshops, roles and responsibilities of WUAs to relevant stakeholder were clarified; one of the workshops involved village government Chairpersons, Water User Association, Representatives from Korogwe, Mkinga, Tanga and Muheza district councils, Amani Nature reserve and security/law enforcement agents (OCCD and TAKUKURU Muheza). Clarity and lines of responsibilities of WUAs relative to UWAMAKIZI have been well stipulated. Key themes, main issues/ point of discussion was **IWRM** in Tanzania and particularly in Pangani Basin. The workshop also helped consolidate integrated efforts to combat illegal mining and other illegal practices leading to degradation of water resources, 107 participants (85 M and 22 F) were involved. The second workshop involved a team of experts, 74 participants (61 Males and 13 Females) from District Executive Director Offices representing Korogwe, Muheza, Mkinga and Tanga City, Existing Non- governmental organization, water users, small and big water users and in Zigi catchment, legal officers, Pangani Basin Water Board staff, 3 existing WUAs, selected catchment committee members as well as other relevant institutions such as the office of Regional Commissioner, Zonal Mining, Amani Nature Reserve and Misozwe irrigation scheme. The workshops together with other measures taken at regional and national level have helped control the persistent challenge of illegal mining at Kihara, the source of Zigi river and to a large extent enhanced the cooperation and coordination through the recognition of the role of each stakeholder in the management of Zigi catchment.

In Ruvu catchment; Ngerengere Sub-catchment forum was established; the sub-catchment committee is being used as a forum for coordinating IWRM efforts within the Ngerengere sub-catchment.



The project has developed different communication messages targeting community members; In Ruvu Catchment 20 sign boards have been produced and installed. In collaboration with WARIDI 200 posters and 50 booklets with messages on protecting water sources and the environment were distributed to communities living within Mvuha and Mbezi river sub-catchments. In Zigi Catchment, a traditional dance by Jahazi Asilia Art Group from UWAMAKIZI, Cinema Shows and local media (TK FM 88.5 Tanga, and Voice of Africa 98.5 Korogwe) were used to raise awareness on integrated water resources management, the activity reached out 10 villages in upstream through traditional dances (estimated population of 5,000), the local drama reach the entire catchment by the use of Media through the media landscape identified in the communication strategy (two media named above).

Seven (7) new Water Users Associations (WUAs) have been established; 4 in Ruvu Catchment (Mgolole, Mbezi, Mvuha Juu and Mvuha Chini), 3 WUAs in Zigi (Zigi Juu, Zigi Chini and Kihuhwi). Institution capacity development is in progress based on capacity assessment results for the 7 new WUAs and 4 existing WUAs in Ruvu Catchment (Ngerengere Juu A, Ngerengere Juu B, Ngerengere Chini and Mfzigo); 66 members of WUA management committees (41 male, 25 female) have received relevant trainings on issues including organization development, leadership skills, record keeping, conflict resolution, requirement of the water resources management legislations, financial management and stock taking, integrated water resources management, report writing, Water use permits and registration of water uses, establishment of IGAs & Entrepreneurship, enforcement and compliance in Water Resources Management. Other areas of training particularly for WUAs in Zigi catchment included Knowledge and skills on how to read the manual staff gauges, Simple river flow measurement technics, Water use billing process, Drilling process, Filling application forms for water use permits and Physical water quality measurement (turbidity). WUAs have been provided with equipment including; 2 pairs of low cost brick making Machines and Mixers one for each of the two catchments to help the WUAs make bricks for construction of offices to address lack of office space/physical address. Seven (7) motorcycles 3 for WUAs in Zigi and 4 for WUAs in Ruvu catchment have been delivered, the transport facilities



have enabled the WUAs to improve delivering of awareness communication messages and reaching out community members and water users within their area of operation. As a result, the WUAs have been able to reach out more water users and community members, in Ruvu catchment for example WUAs have helped the Basin authority to identify 488 illegal water abstractors and to register 62 new water users, which is three times the number registered in the previous reporting period. The illegal small and medium scale water abstractors have been sensitised to form groups in order to minimize number of abstraction points and cover the cost of water use permit application and water use fees to comply with the WRMA no. 11 of 2009. Twenty-one (21) groups have been formed and processed their water use permits.

In Ruvu catchment; 18 Village Natural Resources/Environmental Committees have been established and trained to support WUAs on issues of water resources management guided by the Environmental Management Act; include 4 committees in Morogoro Municipality (2 at Mkundi and other 2 at Mlimani) and 16 committees in Morogoro District Council at Kibangile, Tegetero, Mvuha, Dala, Bwakira Juu, Ngerengere, Sinyaulimi and Tawa villages. 13 village forest management plans have been developed for villages surrounding Uluguru Forest Nature Reserve (Nyachiro, Kibogwa, Mambani, Kaloni Kifuru in Kibogwa Ward; Lusange, Baga, Lugeni, Ngweme in Mtombozi ward; and Dimilo village in Kibungo Juu Ward); village By-laws and Management agreements for implementation of the 10 Village Management plans have been developed, agreements signed between Uluguru Nature Forest Reserve and the 13 villages and bylaws for implementation of management plans enacted and in force. The process to develop the management plans and the bylaws involved 430 members of the Village Government Councils, Ward Councils, Morogoro District Council and Morogoro Municipal Council (280 men and 150 women) and community members from the villages through participatory processes which have raised awareness on IWRM.

Detailed EFA conducted in Zigi river, findings indicate that the minimum allowable limit of water for river health has been reached. This information has been communicated to the Tanga Regional Authorities to lobby for consented efforts to invest in SLM for watershed management



				and the regional authorities are very supportive in preparing a bigger stakeholders dialogue in the next reporting period.
<p>Output 1.1 Integrated Land Use Management Plans and Village Land Use Management Plans are developed and implemented in 7 districts (Morogoro, and Mvomero (in Morogoro Region) and Muheza, Mkinga, Korogwe and Tanga (in Tanga Region), ensuring optimal allocation of land to generate critical environmental and development benefits.</p>	<p>Number of District Land Use Plans developed and operationalised</p>	<p>9 Village Land Use Plans developed but not operational in Zigi Basin</p> <p>5 Village Land Use Plans developed but not operational in Ruvu Catchment</p>	<p>District Land Use Plans developed and operationalised in at 7 Districts</p> <p>20 villages (10 from each catchment of Zigi and Ruvu)</p> <p>GIS-based LD/SLM database and land-use decision support-tool/system is in place and at least 50% of land use planning officers, front line extension workers and community associations are trained in the use of the decision-support tool to strengthen land use planning and develop</p>	<p>Four (4) District Land Use Management Planning Framework have been developed for districts of Morogoro, Mvomero, Mkinga and Muheza. Twenty (20) village land use management plans in stage 4 have been developed and approved by village and district authorities (4 in Mkinga, 5 in Muheza, 6 in Morogoro DC, 1 Korogwe DC and 4 in Mvomero District). The plans are being used as guide for catchment management plans. The villages include Mikwinini, Mlesa, Mbomole and Sakale (Muheza District Council); Tandai, Amini, Ludewa, Lung'ala, Tawa and Kitungwa (Morogoro District Council); Vinile, Bunduki, Tandali and Maguruwe (Mvomero District Council); Kuze Kibago and Boshwa Kwemtindi (Mkinga District Council). In this FY 2019 the NLUPC has been started to complete on stage 5 and 6 of 10 villages (2 Muheza, 3 in Morogoro DC, 2 Mkinga DC, 1 Korogwe DC and 2 in Mvomero District).</p> <p>A total of 16 staff (14 male and 2 female) from NLUPC, Ministry of Minerals, Basin Water Boards, Ministry of Water and Irrigation and LGAs were trained on GIS skills and decision support tools; the training also established tools for monitoring land cover changes resulting from SLM interventions</p>



			land use maps	
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<p>Output 1.2 Multi-stakeholder committees are established (or strengthened) and are active in promoting co-ordination and dialogue in support of mainstreaming SLM into other sectors, programmes and policies</p>	<p>Number of multi-sectoral stakeholder landscape co-ordination committees (Catchment Forums) formed and operational in each Basin with committee members segregated by gender</p>	<p>Interagency co-operation is currently very weak or non-existent, no joint vision for SLM in place</p> <p>2 Environmental Committees – Mabayani Dam</p> <p>1 Community Association - Uwamakizi</p> <p>1 Community Association - Wakuakuyama</p>	<p>At least one multi-stakeholder committee established and operating effectively in each basin as a result of the project</p> <p>At least 75% of District Officers (Participatory Land Use Management teams) and Village land use committees trained in participatory land-use planning, monitoring and implementation of land use plans</p>	<p>Joint vision for SLM set through participatory land use planning processes and multi-stakeholders workshop conducted in Zigi catchment</p> <p>All District officers who are members of the four (4) District Land Use Management teams (36 officers) and members of the 16 Village land use management committee members trained in participatory land-use planning, monitoring and implementation of land use plans. This is 57% for the District officers for the planned 7 Districts and 80% for village committee members from 20 target villages</p>
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<p>Output 1.3 Water User Associations (WUAs) and River Committees are established and capacitated to perform their roles effectively in all key sub-catchments within the two river basins</p>	<p>Number of registered, operational Water User Associations and Sub-Catchment Committees in each catchment with members segregated by gender</p>	<p>Zigi: 1 WUA- Zigi-Mkulumuzi (functional, but requires strengthening)</p> <p>Ruvu: 4 WUAs– Mfizigo Sub-catchment; Lower Ngerengere and Upper Ngerengere A & B (all are non-functional)</p>	<p>At least 5 new Water User Associations and 2 new sub-catchment committees established, registered and operational and with a plan for upscaling in place</p> <p>All Water User Associations and Sub-Catchment Committees trained in the principles of SLM and the role of SLM in protection of water resources, provisions of all relevant land and water-use legislation; financial management and the development of funding proposals; entrepreneurship skills; the costs and benefits of alternative</p>	<p>A Total of 11 WUAs trained and made operational (3 in Zigi – all new, 8 in Ruvu catchment – 4 new + 4 existing). 8 out of 11 WUAs have been provided with one motorcycle each (7 from the project, 1 from a project partner – WARIDI). Through NLUPC there are plans to upscale development of plans in the district because capacity building of the district participatory land use management planning teams is well done 1 sub-catchment committee established in Ruvu catchment.</p> <p>All 11 WUAs and 1 sub-catchment committee have been trained in relevant Acts and all were supported to produce copies of constitutions of WUAs as well as translated and simple version of Water Resources Management Act No. 11 of 2009.</p> <p>In Ruvu Catchment the project facilitated the formation and training of District Facilitation Team for five districts of Bagamoyo, Chalinze, Kisarawe, Kibaha DC and Kibaha Town, which are part of Ruvu catchment but the project has not been active in establishing project sites. Each District was represented by six staff in the discipline of Community Development, Environment, Water, Agriculture, Livestock, Land and Natural resources. Training covered the following topics Introduction to WRB, NAWAPO 2002, WRM Act No. 11 of 2009 and IWRM. The total number of participants were 30 (18 male and 13 female).</p>
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			<p>sustainable livelihoods</p> <p>Up-to-date database of stakeholders and projects established for each Basin Water Office</p>	
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<p>Output 1.4 Wami-Ruvu and Pangani River Water Basin Authorities and water users understand water basin regulations and are capacitated to identify and prosecute water and land-use infringements and harness greater compliance.</p>	<p>% increase in rates of compliance with water basin regulations</p> <p>Number of staff and members of community associations trained in provisions of land and water-use legislation</p>	<p>In Ruvu Catchment 301 out of 1500 identified water users are complying. In Zigi only 11 users out of 350 are complying</p> <p>226 (Ruvu) and 162 (Zigi) people trained in basic provisions of water-use legislation</p> <p>No people trained in provisions of relevant land-use legislation</p>	<p>50 - 75% of all staff in target institutions, all WUAs and VNRCs trained in provisions of water and land-use legislation</p> <p>At least 50% of water users issued with water use permits and 60% of industries and commercial farming operators complying with water discharge permits</p> <p>Gender-sensitive communications strategy developed and operationalised</p>	<p>23 VNRCs trained in provision of land use and water use legislation (10 Mkinga DC, 8 Morogoro DC, 4 in Morogoro MC and 1 in Korogwe DC)</p> <p>Out of a total of 1059 water users identified in Ruvu and Zigi Catchment 703 (66%) have been issued water permits. There has been an increase in the number of water users identified and those issued water use permits because of improved functions of WUAs who are playing a key role assisting basin authorities in persuading the water users to register and apply for water use permits. Industries complying with water discharge permits not yet measured.</p> <p>Communication strategy for Wami-Ruvu Basin developed in collaboration with GIZ and development of communication messages is in progress</p>
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<p>Outcome 2: Finances available for SLM investments are increased by accessing new streams of public finance and more effective alignment of existing sectoral contributions</p>	<p>% increase in public funds allocated to SLM interventions in the Ruvu and Zigi catchments</p>	<p>Some sectoral funds available for SLM but not coordinated to finance SLM strategy for Integrated Natural Resources Management</p>	<p>15% increase in fund earmarked for SLM interventions in the Ruvu and Zigi catchments</p>	<p>The Wami/Ruvu Basin Water Board has developed two project proposals and submitted to different stakeholders to access local funding. One (1) proposal is focusing on Protection and Conservation of Upper Ruvu catchment to ensure sustainability of water supply for Dar es salaam City. The total fund needed to implement the project is TZS 1,811,272,500.00. The proposal has been submitted to MoWI (Water Fund), DAWASA and DAWASCO. The other proposal is aiming at conserving Mindu dam Catchment to increase the dam life time. The total fund requested is TZS 2,517,470,022.00, the proposal has been submitted to MoWI (Water Fund) and MORUWASA. All these efforts will significantly complement SLM project interventions.</p> <p>In Zigi Catchment a two (2) days training/ capacity building on proposal writing was conducted to WUAs. The training proceedings included one draft proposal of WUA for a a project titled "Sustainable Environmental Protection and Conservation Project through Sustainable Bee Keeping Project in Zigi catchment" the proposal is being processed for submission to MOWI (water fund and other potential stakeholders)</p> <p>20 staff from Basins, line Ministries, Institutional and LGAs who direct involves in the project interventions attended the training on fundable project proposal write-up</p>
<p>Output 2.1 New streams of public finance are identified and accessed</p>	<p>Amount of funding accessed for SLM through new streams of public finance and other financing mechanisms</p>	<p>The key organisations do not have adequate resources for integrating SLM into watershed management and the financing requirements have not been comprehensively assessed</p> <p>As per UNDP Capacity Scorecard</p>	<p>At least 2 new streams of funding for SLM accessed via sources such as Incentive and Market Based Mechanisms (IMBMs), Public Private Partnerships (PPP)s</p>	<p>A total of four (4) proposals developed and submitted to potential funding sources (one for Wami/Ruvu Basin) and the other three for WUAs in Zigi Catchment. One (1) proposal is focusing on Protection and Conservation of Upper Ruvu catchment to ensure sustainability of water supply for Dar es salaam City. The total fund needed to implement the project is TZS 1,811,272,500.00. The proposal has been submitted to MoWI (Water Fund), DAWASA and DAWASCO.</p> <p>The other proposal is aiming at conserving Mindu dam Catchment to increase the dam life time. The total fund requested is TZS 2,517,470,022.00, the proposal has been submitted to MoWI (Water Fund) and MORUWASA. All these efforts will significantly complement SLM project interventions.</p>



<p>Output 2.2 Sectoral (forestry, agriculture, land, livestock, environment and water) allocations to SLM are re-aligned</p>	<p>Amount of sectoral allocations aligned to SLM strategies</p>	<p>1 - The resource requirements for integrating SLM into watershed management are known but are not being addressed</p> <p>As per UNDP Capacity Scorecard</p>	<p>Resource allocation criteria and to inform allocation of resources to SLM</p>	<p>SLM investment study was completed detailing possible criteria for allocation of resources for SLM financing and challenges</p>
<p>Output 2.3 The effectiveness of SLM investments is improved</p>	<p>Increase in the targeted SLM investments</p>	<p>No effective SLM investment strategy in place</p>	<p>Integrated SLM investment strategy and M&E system in place to track the effectiveness and impact of SLM investments</p>	<p>The project has demonstrated key SLM practices and investment costs necessary to bring about significant positive changes. This has formed a good basis for basin authorities to develop proposal for tendering to potential funding sources including Water Fund at the Ministry of Water.</p>
<p>Outcome 3: Institutional capacity is built for promoting sustainable land and forest management in support of IWRM in the Ruvu and Zigi Catchments</p>	<p>Increase in awareness and capacity of local communities and institutions (e.g. extensions services, district authorities, Basin Water Offices) for integration of SLM into resource use and management practices (measured as per UNDP Capacity Scorecard).</p>	<p>1 – The required skills and technologies are identified, as well as their sources but are only partially developed</p> <p>As per UNDP Capacity Scorecard</p>	<p>3 -The required skills and technologies are available and there is a nationally-based mechanism for updating the required skills and upgrading technology</p> <p>As per UNDP Capacity Scorecard</p>	<p><i>In Zigi Catchment:</i> Two mini automated weather station (measuring Temperature, rainfall, relative humidity, wind speed and wind direction) have been installed, one in the upstream at the National Institute Malaria Research (NIMR) and the other station installed downstream at Mabayani Dam. The equipment have improved availability of weather data which are accessed by basin authority and used to provide appropriate weather information to communities through WUAs for decision making</p> <p>The National Land Use Planning Commission (NLUPC) has been strengthened through provision of equipment including GIS software licences for 3 users, 2 GIS processing heavy duty computers and 1 Map/Graphic printer (with capacity of printing A3 size). NLUPC and other relevant stakeholders participating in the project implementation of the land use planning, implementation and management aspect had their GIS related experts trained in GIS skills and decision making support tool; the training also established tools for monitoring land cover changes resulting from SLM interventions, a total of 16 staff (14 male and 2 female) from</p>



				<p>NLUPC, Ministry of Minerals, Basin Water Boards, Ministry of Water and Irrigation and LGAs were trained.</p> <p>Wami/Ruvu basin has improved data collection and processing and managed to develop rating curves for six monitoring/measurement stations consistently; no rating curve for any of the 18 stations had been developed at project inception due to lack of consistence in data collection and capacity to collect sufficient amount of data for doing the analysis.</p> <p>The number of staff with knowledge and skills for integration of SLM into resource use and management practices has increase from 104 at project inception to 242 (165 male and 77 female), an increase of 43%. This was achieved through practical training during land use planning processes, demonstration of demarcation of 60m river buffer, 500m dam radius, development 4 integrated district land use management framework for Muheza,, Mkinga, Morogoro and Mvomero District Councils, 16 village management plans, their agreements, bylaws and processing/approval of the plans and bylaws, establishment of community water projects including Mashewa-Shebomeza-Kimbo (MASHEWA) water supply project that benefits 3,600 peoples with 15 domestic points and a total of 6.2 km length of water network in place, three (3) cattle water troughs in Muheza, Mkinga and Tanga City, GIS training and land use decision making support tool for technical staff, study visit to Lake Victoria Environmental Management Project and through other relevant activities as reported under outcome 1 above.</p>
<p>Output 3.1 The institutional capacity (staff and resource requirements for promoting SLM) is strengthened in the Wami-Ruvu and Pangani Water</p>	<p>Staffing and resources development plans developed and implemented for Basin Water Office, District Authorities and WUAs</p>	<p>1 – The required skills and technologies are identified, as well as their sources but are only partially developed</p> <p>As per UNDP Capacity Scorecard</p>	<p>Staff and resource deficits for integrating SLM into watershed management decreased by at least 75% in water basin management agencies and other targeted</p>	<p>The project has provided training to members of community based institutions including 16 VLUM teams (72 members trained), 11 WUAs (66 members trained), 23 VNRCs (144 members trained) and 87 ToT farmers, 300 Village Council members and 12 Village Executive Officers. The trained individuals are used to bridge the gap of SLM extension delivery within their functions</p>



<p>Basin Offices and regional offices of line ministries and local government institutions</p>			<p>institutions</p>	
<p>Output 3.2 The technical knowledge and skills for integrating SLM into IWRM are increased amongst relevant staff of Water Basin Offices, relevant line ministries, and local government institutions</p>	<p>Number of technical staff in Water Basin Offices, District and local government institutions, WUAs and Village structures completing skills and knowledge improvement training programmes</p>	<p>1 – The required skills and technologies are identified, as well as their sources but are only partially developed</p> <p>As per UNDP Capacity Scorecard</p>	<p>At least 50% of technical officers in Water Basin Management Agencies, extension services and other targeted institutions have received training to enhance their knowledge and skills for integrating SLM into watershed management</p>	<p>A total of 242 technical officers in Water Basin Management Agencies, extension services have received training to enhance their knowledge and skills for integrating SLM into watershed management as compared to 75 officers at project inception</p>
<p>Output 3.3 Extension services are capacitated to promote adoption of SLM and promote</p>	<p>% of population in targeted villages aware of SLM and SLM-related activities in their area (as a result of the project) and satisfied with</p>	<p>Ruvu Basin: 36 extension officers with fair levels of technical skill, but not enough officers in each ward and lack knowledge of</p>	<p>At least 50 % of land users in the target areas report an improvement in the extension services provided and</p>	<p>Total number extension staff with knowledge and skills and are available to provide SLM messages in agricultural, forestry and livestock extension services in Ruvu and Zigi Catchments has increased from 104 (69 male, 35 female) at project inception to 242 (165 male, 77 female), which is 57% of the targeted 424 at project end. Distributed is as follows: In Ruvu catchment 148 (95 male, 53 female); Zigi Catchment 94 (70 male, 24 female)</p>



alternative sustainable livelihoods	extension services Number of trained extension officers available to provide SLM messages in agricultural and livestock extension services	modern SLM and current water and land-use legislation Zigi (Muheza): 12 extension officers; Technical capacity and knowledge is outdated and there are not enough officers in each ward	number of trained extension personnel increased by 50% Increase of 25% in number of community members trained to serve as 'para professional' extension officers, with equal focus on men and women At least 75% of land-users in targeted areas aware of the benefits of SLM as a result of improved extensions services	Percentage of land uses in targeted areas aware of the benefits of SLM as a result of improved extensions services was not measured
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<p>Outcome 4: Landscape-level adoption of SLM measures in the Ruvu and Zigi catchments promoted to reduce the effects of land degradation on watershed services and to improve livelihoods</p>	<p>Reduction in extent of degradation in the Ruvu and Zigi catchments and improvement in the livelihoods of basin communities due to increased benefits from adoption of SLM practices</p>	<p>Over 80% of land area under forest, rangeland and agricultural production is being degraded through unsustainable land use practices</p> <p>Limited viable businesses as an avenue for emerging local economic development complementing SLM</p>	<p>Over 15,000 - 20,000 ha under direct SLM as a result of this project in the target areas in the Ruvu and Zigi catchments</p> <p>Household incomes increased by at least 25% in at least 40% of the households in participating villages, as a result of uptake of SLM practices introduced through the project, with special focus on most vulnerable households</p>	<p>A total of 8,000 Seedlings were planted over an area of 207 ha to encourage and catalyze natural regeneration; 7,000 in Zigi catchment in five villages (Mwarimba, Kiwanda, Mangubu, Kambai and Kwatango) and 1,000 in Ruvu catchment in upstream Mgeta area in Bunduki and Nyandira wards.</p> <p>The project demonstrated demarcation of 60 meter river buffer with 300 permanent/concrete beacons installed in strategic areas covering 152 hectares (101 ha in Zigi and 51 ha in Ruvu) of secured river buffer with about 31,830 surrounding community members sensitized on protection of reserved land. The sites include 16 Villages in Zigi Catchment (Kiwanda, Mangubu, Kisiwani, Mwarimba, Mkwajuni, Misozwe, Kwatango, Kwemingoji, Darajani, Kambai, Kwaboha, Mlesa, Mnyenzani, Kwangena, Bamba and Segoma); 7 villages in Ruvu catchment (Mvuha, Uponda, Kilemela, Kibangile, Nige, Matopo and Dalla). The demonstration of demarcation with concrete beacon has encouraged development of proposals for accessing further funding; in Ruvu catchment the basin has developed proposals amounting TZS 436,640,000.00 for scaling up the initiative including fabrication and installation of 1200 Concrete beacons with dimension of (150 X 150 X 1500) mm and 100 Sign board with different messages that will cover the total area of 720ha. The proposals have been submitted and presented to Water Fund. This will enable the restoration of buffer zones as well as Reduction of sediment load and Restoration of natural vegetation along Ruvu River</p> <p>In Zigi Catchment, the project demonstrated use of alternative energy sources and fuelwood efficient stoves; One (1) Biogas plant constructed at household level in Shebomeza village and 80 energy saving stoves in 7 villages (Kisiwani, Mlesa, Sakale, Kisiwani, Shebomeza, Mbomole and Ubiri). The 80 demo stoves constructed by trained artisans who emerged from the training of 45 villagers (14 male, 31 female) have catalysed construction of over 950 stoves on demand from inspired households in the villages and surrounding communities in the villages of . The stoves has efficiency of 50 to 65% (basing on research findings from TaTEDO and wPOWER); in some cases efficiency can reach up to 80% depending on use practice/kitchen management. A woman (Hadija Hamad) in Mlesa Village who made her case informed the project monitoring team that with</p>
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				<p>effective use of the stoves he can now use a head load of firewood for up to 3 weeks instead of the previous 3-4 days with a traditional three stone stove. She is therefore able to comply with regulations set by Amani Nature Forest Reserve to allow dried fuelwood collection once every two weeks.</p> <p>36 school environmental clubs have been established across the project area to steer environmental education in schools (11 in Ruvu and 25 in Zigi), distributed as follows; In Ruvu Catchment (at Mvuha, Dala, Ngerengere, Kibangile, Tawa and Tegetero Primary schools; Tawa, Bwakira Juu, Tegetero, Ngerengere and Mvuha Secondary Schools) all in Morogoro District Council. In Zigi Catchment, 10 clubs in Muheza District, 5 clubs in Tanga City and 10 in Mkinga District. The clubs are demonstrating tree nursery establishment for learning while contributing to tree planting in the villages.</p> <p>In Zigi catchment, identification of badly disturbed forest and water sources was carried out and 36 sites were identified. Field excursion to verify the sites was conducted. About 30 sites in 8 villages have been replanted with 5,400 tree seedlings of natural species including <i>Allanblackia</i> spp, <i>Newtonia</i> spp, <i>Tabana</i>, spp, <i>Beilchmedia</i> spp and <i>Draceana</i> spp. Covering an area of 225 ha outside the protected forests.</p> <p>In Ruvu catchment 350 members (266 male, 124 female) from 9 groups and 5 WUAs have established beekeeping learning sites, with a total of 360 beehives. Although the beekeeping has not performed well in Ruvu, only 73 Kgs of honey was harvested with local market value of TZS 730,000.00, there are lessons learnt including appropriate apiaries and management practices which can help the groups in proceeding with the initiatives. Two fish-farming groups have been established with total of 63 members (50 male, 13 female), with improved fish ponds with capacity producing 27 tons of fish per year with a local market value of 175 million Tanzanian Shillings.</p>
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<p>Output 4.1 Sustainable land management practices promoted and natural rehabilitation facilitated in 10,000 ha of forest</p>	<p>% decline in illegal harvesting from protected forests</p> <p>% improvement in land cover in rangelands</p>	<p>Total of 50,754 ha of protected forest is degraded (including 49,066 ha of 60 m river line, 438 ha Uluguru Nature Forest Reserve and 1250 Amani Nature Forest Reserve)</p>	<p>Forest cover restored over at least 5,000 ha of riverine habitat in protected forests and 5 000 ha outside of protected areas</p> <p>Land Cover improved by 25% over 2,000 ha of rangelands</p> <p>At least a 25% decline in the rate of illegal harvesting from protected forests</p>	<p>Not yet measured</p>
<p>Output 4.2 Household food production and incomes increased by 30% (for actively participating villages) through promotion of sustainable income</p>	<p>% increase in household incomes and % increase in production rates as a result of SLM practices</p>	<p>Average household income ranges from TZS 480,000 – 550,000 per year</p>	<p>At least 2 new sustainable livelihood practices taken up in each of the target areas and contributing 10% to production and overall incomes</p> <p>At least a 15 % increase in annual</p>	<p>Two new sustainable livelihood practices (Beekeeping and Fish farming) have been established in Ruvu catchment 14 beekeeping sites have been established with 360 beehives as start-up capital and 350 members (266 male, 124 female) participating. Initial harvest of 73 Kgs of honey has been produced, with local market value of TZS 730,000.00. At full capacity the initial investment of the enterprise is expected to produce 3600Kgs of honey annually contributing an annual income of TZS 36,000,000 to the participating households annually. On fish farming the project has assisted two groups of fish farmers with 63 members (50 male, 13 female) to establish 3 improved fish ponds to capacity of producing 27,000 Kgs of fish valued at TZS 175,000,000.00 (local market price), this enterprise will benefit 550 families in the targeted area.</p> <p>A sample of households adapting on-farm SLM practices has shown</p>



<p>generating activities in participating villages</p>			<p>agricultural produce for key crops as a result of SLM practices introduced by the project in the target villages</p> <p>At least 25% of households in target villages using clean energy cooking technology and 75% of households aware of alternative energy solutions through capacity building of men, women and youth</p> <p>At least 25% of farmers in the target villages benefitting from accessing micro-finance and the development of new markets for agricultural products</p>	<p>increase in production levels of cereals as follows: Zigi Catchment: from 2.0 tons/ha at project inception to 2.2 tons/ha (10% increase) in Muheza District. In Ruvu Catchment: farmers in Morogoro DC registered an increase from 2.5 tons/ha at project inception to 3.8 tons/ha (an increase of 52%)</p> <p>Number of farmers benefiting from accessing micro-finance and the development of new markets for agricultural products in not yet measured; however, the project organised farmers in Zigi catchments to establish a centre for bulking and processing spices a process which will develop capacity to reach new markets and attract further financial support</p>
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<p>Output 4.3 Sustainable livestock management technologies developed and tested and infrastructure developed to operationalise SLM in rangelands</p>	<p>% increase in number of farmers using SLM techniques</p> <p>% decrease in undesired movements of livestock in search for pasture and water</p>	<p>Most livestock keepers do not practice SLM</p> <p>No livestock/rangeland management structures in place</p>	<p>At least 50% of farmers trained in the use of sustainable land management techniques</p> <p>At least 30% of livestock keepers adopt alternative livestock management technologies</p> <p>At least 20% increase in number of farmers in target villages consistently applying 2 to 5 SLM techniques introduced by the project</p>	<p>Through project implementation processes of activities including WUA formation and strengthening, Land Use Planning, demarcation of 60 metre river buffer, establishment of village forest Management plans, establishment of SLM demonstration sites and their management, 34000 farmers have been trained in the use of SLM techniques, which is about 10% of the estimated 350,000 farmers in the project catchment</p> <p>Number of livestock keepers adapting alternative livestock management technologies has not been measured, partly because livestock management activities are being established in the last quarter of this reporting period</p>
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Challenges:

Although a good progress in implementation of activities has been made, several challenges were encountered.

- Communities not being able to leave their current IGAs due to low return rate of the alternative IGAs might slow down the pace of WRM activities.
- Inadequate working tools (e.g hydrological equipments and motorcycles)
- High ambitions by local community about tangible benefits from the project
- Low level of implementing Integrated Water Resources Management among sectors
- No working place/ office building for WUAs
- Communities in Sakale village specifically the youth not being able to leave the idea of investing in illegal mining activities as there was once a primary mining licence provided.

Opportunity:

- Commitment and willingness of community members to participate in WRM activities
- Presence of other stakeholders involved in water and environment management activities e.g. LGAs, TAFORI, SAT, WARIDI, Amani and Uluguru Nature Reserve (UNR).
- Commitment and willingness of community to participate in SLM activities
- Available land for SLM practices along with agricultural production
- Available forest / woodlands and watershed areas (good environment) for bee keeping.
- Political willingness and positive attitudes towards the project
- Presence of early adopters to SLM interventions notably modern beekeeping, conservation agriculture and tree planting who are playing a potential role in up-scaling the interventions.
- Appropriate legislative framework and implementation of the measures defined in the Water Act, Water Policy & EMA legislation for proper water management
- Effective establishment of a Water Use Association, river committees and catchment committees



- Presence of the National Land Use Planning Commission (NLUPC) and the Ministry of Lands, Housing and Human Settlements (MLHHS) which are responsible for stimulating public and private participation in programmes and activities related to land use planning and developing a set of Guidelines for Participatory Village Land Use Planning
- Presence of Ministry of Natural Resources and Tourism (MNRT) for overseeing the management of all natural, cultural and tourism resources in Tanzania.
- Presence of Ministry of Agriculture, Livestock and Fisheries (MALF) which one of its functions include, developing and implementing a national strategy for improving the livelihoods of communities dependent on livestock and fisheries in ways that do not compromise animal welfare or conservation of environmental resources.
- Presence of President Office-Regional Administration and Local Government (PO-RALG) which has the responsibility for all development planning at the regional level.
- Presence of District Councils which are responsible for coordinating all the projects within the districts
- Presence of Village Councils through Village Natural Resource Committees (VNRC, or Village Environmental Committees, VECs) which are responsible for overseeing the protection, conservation and lawful utilisation of natural resources (including water) at the village level.
- Presence of other stakeholders involved in water and environment management activities e.g. PBWB, Tanga UWASA LGAs, WARIDI, TAFORI, SAT, ONGAWA, Amani Nature Reserve (UNR).
- Amani area is very rich in spice, butterfly, fish farming and tea out growers. Currently Mushroom farming has also started. These IGAs if strengthened will give the local opportunity to improve their livelihood specifically the youth who are most destructive.

SLM good practices include:

- Demarcation of protected areas and enforcement of bylaws related to use of the land
- Tree planting for restoration of degraded areas + promoting natural regeneration
- Agroforestry technologies: Tree planting in farmlands, management of apiaries, woodlots, soil and water management structures (contours, tie ridges, terraces - fanyajuu/fanyachini, bench terraces etc), integrated soil fertility management, establishment of fruit orchards



- Rangeland Management - fire control, pasture/fodder improvement, production and management, provision of water points
- Integrated soil fertility management (use of compost, other organic manure)

Key Lessons Learnt:

- Community members are willing to adopt modern farming practices which do not destruct the environment once they are well educated and involved in the process
- Group formation, entrepreneurship and best farming practices training is still the best way of improving the livelihood of communities; and involving them in water and environmental management issues.
- In order to make WUAs sustainable, there is a need to provide technical support to enable WUAs to collect water user fee, membership and annual subscription fees and other sources of income for WUAs to become financially sustainable.
- Protection and conservation of the catchment requires participation of all stakeholders through Integrated Water Resources Management and Sustainable Land Management
- Community members even the youth are willing to adopt modern and sustainable practices which do not destruct the environment once they are well educated and involved in the process
- Task force formed in Amani Nature Reserve will reduce illegal mining and deforestation in the upper catchment
- To facilitate conservation education (especially on forest fires management) to raise awareness and to promote capacity build of the adjacent communities will further improve dialogue.
- Regularly forest patrols (both participatory and non-participatory is) will ensure protection and conservation of forest and water resources.
- If the prioritized income generating activities are conducted in a positive ways (to improve the livelihood of the adjacent communities), the notion that Illegal alluvial gold mining pays more and rate of dependency on forest resources will be minimized.



- Existence of big and small water users/ stakeholders can be used to lobby and mobilize partnership to fund raise for joint water security initiatives.