



Water-Energy-Food Security Nexus along Akagera Basin, Rwanda

Road to Resilience



1. Introduction

Meeting human aspirations in the face of a changing climate and an increasingly resource scarcity requires that resources are used cautiously and equitably. Rwanda is witnessing rapid economic transformation, guided by the Economic Development and Poverty Reduction Strategy (EDPRS II). This economic transformation combined with population growth, will lead to additional pressure on the environment and particularly the use of water, use of energy and agricultural production.

Water, energy and food production are interlinked and it is crucial to adopt rational practices in regard to the later for sustainable development;; e.g. water is used to produce energy (hydro-power), Agriculture requires water for a better production. It is in this perspective that the Albertine Rift Conservation Society (ARCOS Network) with the fund from Rwanda's Green Fund (FONERWA) invested in the project named "Using Water- Energy-Food Security Nexus to Promote Climate Resilient Decisions and Model Actions in Selected Landscapes along Akagera Basin" focusing on the reinforcement of the inter-linkage between water-energy and food security nexus. The project is implemented in collaboration with Stockholm Environment Institute (SEI), Nile Equatorial Lakes Subsidiary Action Programme

(NELSAP), the Districts of Bugesera, Kirehe, and Rutsiro, and various stakeholders and sectors involved in water, energy and agriculture in the selected Landscapes along Akagera Basin. It has two components; one focusing on research to provide evidence-based policy guidance and another on local actions that foster climate resilience and participatory sustainable development along the Akagera Basin.

2. Evidence-based policy guidance

On this component of the project, the focus is on the capacity building in the use of adequate tools for the projection of national water-energy-food security nexus, policy analysis and district development trajectories in regard to WEF Security Nexus as well as reserach. Following the training of senior technical government officers in Long Range Energy alternative planning (LEAP) and Water Evaluation and Planning (WEAP) as effective tools for planning, a technical team composed of ten planners from different institutions is in place and some institutions have adopted WEF Nexus modeling. These include Rwanda Energy Group



(LEAP), MININFRA (LEAP), Rwanda Water and Forestry Authority (WEAP), currently partnering with Water for Growth to apply the tool at catchment level. Under this component also, three scenarios (alternative scenario and projection scenario for 2050) have been developed on the use of WEF Nexus and the results are being synthesized and packaged for decision-makers to mainstream water-energy-food security nexus in District Development Strategy (DDS) and EDPRS3 currently under development. The results from the participatory analysis of district's development trajectories provided guidance in mainstreaming WEF Nexus in DDS and implementation plan of EDPRS II at District level;; in Bugesera, Kirehe and Rutsiro for this case.

Moreover, the results of Integrated Landscape Assessment and Monitoring (ILAM) conducted on monitoring and reporting for biodiversity, ecosystem services and socio- economic conditions of communities in each landscape, are used to identify priority activities for Nature Based Community Enterprises(NBCES) and promotion of triple actions (linkage between Water-Energy and Food) at community level.

3. Local actions to foster climate resilience and participatory sustainable development

ARCOS' local interventions for climate resilience and sustainable development focuses on building foundation for long-term success. The integrated approach (named BEST Approach) is built on community partnership, mind-setting and ownership of interventions, cemented by a Sustainability Agreement involving communities, local government and ARCOS Network, and supported by an integrated training package, based on four pillars of the **BEST Approach** (Building sustainable institutions, Enhancing environmental resilience, Sustainable business solutions and Transformation and inspiring others).

3.1. (B): Building sustainable institutions

The success of any institution depends on its governance. In building sustainable community institutions, we conducted Capacity building in leadership, cooperative management, setting targets and business plan, supporting gender balance and youth involvement in community based



organizations, etc. and the impacts are promising. Among the impacts following the capacity building include: governance and strategy of NBCEs significantly improved with currently 11 out of 15 NBCEs are currently registered at least at district level (seven at Rwanda Cooperative Agency level); governing documents, plans and reports in place, governance structures, leadership and transparency in place and stable. Moreover, the membership of almost all NBCEs has significantly increased and diversified to include men, women and youth (e.g. KOAMI-fishermen's Cooperative of Mitako Village in Nyamugali Sector of Kirehe District- members increased from 63 to 127, KABAMU (fishermen also) members increased from 182 to 264, CITMK members increased from 14 to 67; KABONYA-horticulture farmers from Bugesera- members increased from 65 to 105).

3.2. (E): Enhancing environmental resilience

The project supported activities that enhance environmental resilience and Community Based Adaptation through promoting sustainable agriculture technologies, enhancement and protection of soil and water ecosystems and biodiversity, forest landscape restoration, Ecosystem Based Adaptation, promotion of green energy technologies (energy saving cooking stoves, biogas and solar energy), etc. This resulted in the increased capacity in tree nursery development and management and the awareness

and understanding on environmental sustainability significantly increased. So far 300ha of watershed are protected and restored through tree planting, soil conservation and agroforestry interventions, over 58,000 seedlings planted in Bugesera district on 36 ha and the target is to plant more than 100,000 seedlings in Kirehe and Rutsiro before the end of 2017.

The project achieved a lot in integrating and operationalization of WEF Nexus at community level. To enhance community's climate resilient, 1.5 km gravity water supply for irrigation and domestic consumption in kigende village, Cyanya cell, Kigarama sector was constructed and solar water pump for irrigation in Kabungeri village (Kirehe) and Rugarama village (Bugesera) is in construction process. Also as far as water security is concerned, spring rehabilitation for water supply at coffee washing station of coffee farmers' cooperative in Kigarama Sector (KOAKAKI) of Kirehe Districts were constructed and wastewater treatment plant is under construction to treat water from their washing station to reduce water pollution downstream. In the same framework 45 households were facilitated in rainwater harvesting.

The project is also facilitating the use of biogas with a target to build 97 biogas plant in Bugesera and Rutsiro. In promoting sustainable agriculture, cooperatives were supported in manure production through provision of small and large livestock (30 cows, 26 goats,



75 pigs) as well as integration of agroforestry. The results from the latter are tremendous, e.g. KABONYA (farmers' cooperative from Nyagihunika Sector of Bugesera District) increased production from 957 kg to 24 tons per season /2ha, Twigiremuhinzi Rusebeya (potatoes) increased production from 5 to 38 tons per season on 3.5 ha, KOIMIZANYA (maize) from 8 to 24 tons, KOAUKI (banana) from 158 to 250 tons.



3.3. (S): Sustainable Business Solutions

In developing sustainable business solutions, cooperatives were supported to develop business management systems such as business plan, accounting, cashflow etc. and construction of offices for five cooperatives is on-going. They were also supported to buy some assets. The achievement under this includes:

- Postharvest facilities provided or renovated (TWIGIRE MUHINZI-Rusebeya & KOIMIZANYA)
- Production and processing equipment and other inputs (seeds) provided (KOAKAKI, COABA, 3 fishing NBCEs, all farmers NBCEs)
- Market linkages (two selling points & one ecotourism house in Bugesera under construction, renovation of COABA business and training building, support to KOAAMI to finalize their collection center

Due to support provided to NBCEs as stated above, Capital and annual turnover increased.

Eg:

- KOAUKI from 3mil to 14mil
- KABONYA from 1,9 mil. to 14 mil.
- KOIMIZANYA from 2,8 to 9 mil.
- KOAKAKI from 38 mil to 80 mil
- TWIGIREMUHINZI from 3 mil. to 11 mil.



3.4. (T): Transformation and Inspiring Others

In a bid to transform and inspire others, six Nature Based Villages (NBVs) were established to serve as demonstration sites in incorporating community development, sound environmental management and resilience to climate change, therefore, sustainable villages. NBVs also involve 13,800 people as secondary beneficiaries of the intervention. In each NBV, a Nature Based Community Fund (NBCF) -a revolving community fund- were established and operationalized to support small community projects. NBCF provide loans, give awards to best performers in the village and support activities of common interests in NBVs. So far 48 loans provided and selection for the second phase is in progress.

A regional newsletter (ENDOKWA News: http://arcosnetwork.org/uploads/2017/08/ENDOKWA_News_Final.pdf) was established for experience sharing through community exchange. Transformation and inspiration involve also knowledge and skills sharing, in this framework two editions of Community-to-Community Exchange were organised to enable community groups from Burundi, Rwanda and Uganda to share knowledge and learn while doing. Cooperatives also were supported in tree nursery development and landscape restoration where over 300,000 seedlings dominated by grafted fruit trees were produced and used in greening villages and schools.





Contact address

Follow us:

UK Registered Office:

C/o BirdLife International,
The David Attenborough Building,
Pembroke Str, Cambridge CB30PE, UK.
Tel: +441223277318

Regional Office:

1329, Nsambya, Kabalagala
P.O. Box 9146, Kampala
Kampala, Uganda
Tel/Fax: +256-414- 530700

Kigali Office:

KN 14 Avenue, No. 45
Don Bosco Compound,
Kimihurura
P.O Box: 1735 Kigali, Rwanda
Tel: +250/783023303



ARCOS Network



@ARCOSNetwork

Email: info@arcosnetwork.org,
Website: www.arcosnetwork.org