

**CAPACITY BUILDING ON THE WATER-ENERGY-FOOD SECURITY NEXUS IN
KENYA AND UGANDA (CAPNEX)-A CASE STUDY OF THE SIO-MALABA
MALAKISI RIVER BASIN**



**A REPORT ON THE DISSEMINATION WORKSHOP HELD ON 27TH JANUARY 2020
AT 12 PEARLS HOTEL BUSIA-UGANDA**



MAKERERE UNIVERSITY



AUSTRIAN
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AUSTRIAN PARTNERSHIP PROGRAMME IN HIGHER
EDUCATION & RESEARCH FOR DEVELOPMENT

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Introduction and objective of the Workshop

The project “Capacity Building on the Water-Energy-Food Security Nexus through Research and Training in Kenya and Uganda (CapNex)” project was carried out in partnership with Institute for Water Quality, Resource, and Waste Management, TU Vienna, Austria; University of Natural Resources and Life Sciences Vienna, Austria; Makerere University Uganda, and Technical University of Kenya with support from the Austrian Development Cooperation (ADC) through Austrian Partnership Programme in Higher Education and Research for Development (APPEAR). The project started in December 2016 and will end in June 2020. The object of the workshop was to disseminate results of the research carried out, as well as hold discussions with stakeholders to validate the results obtained. The programme of the workshop was as shown in Table 1.

Table 1: Agenda for the stakeholders’ dissemination workshop on CAPNEX project in Busia-Uganda

Start	End	Activity	Responsible person
08:00am	09:00am	Arrival and registration	Miss. Agnes Nalunga (Project team)
09:00am	09:30am	Welcome remarks, Prayer and introduction	Assoc. Prof Jeninah Karungi, Mr. Ronnie Ahumuza and Participants
09:30am	10: 00am	Brief about the CapNex project	Assoc Prof Jeninah Karungi
10:00am	10:30am	Group photo and tea break	Participants
10:30am	1:00pm	Presentation of the findings of the project	Mr. Nathan Muli, Mr. Stanely Chasia, Dr. Alice Turinawe, Dr. Allan Komakech
1:00pm	2:00pm	Lunch break and networking	Participants
2:10pm	3:30pm	Plenary discussion	Dr. Allan Komakech, Participants
3:30pm	4:00pm	Closing remarks	Assoc. Prof. Jeninah Karungi, Dr. Alice Turinawe
4:00pm	4:00pm	Housekeeping and departure	Project team

A brief about the CAPNEX project

An overview about the project was presented by Associate Professor. Jeninah Karungi of Makerere University, Uganda (Figure 1)



Figure 1: Associate Prof. Jeninah Karungi giving introductory remarks about the CAPNEX project

CAPNEX is an acronym for the Capacity building on the Water-Energy-Food-security (WEF) nexus through research and training in Kenya and Uganda. The project was motivated by the fact that supply of water, energy and food requires the same resources that act in an interlinked manner. For instance, land can be used to grow firewood or food crops and for both inputs, water is required. The same water can be used to generate energy, irrigate crops, and be used for drinking and domestic purposes. There is thus high pressure exerted on these resources due to multiple uses which calls for sustainability in their use. A multi-disciplinary approach involving different sectors and stakeholders was adopted to examine the WEF nexus (Figure 2). This was achieved through research by students from four universities which included; Technische Universität Vienna-Austria, University of Natural Resources and Applied Life Sciences (BOKU) Vienna-Austria, Makerere University, Uganda, and the Technical University of Kenya; with direct involvement of communities in the SMMRB.

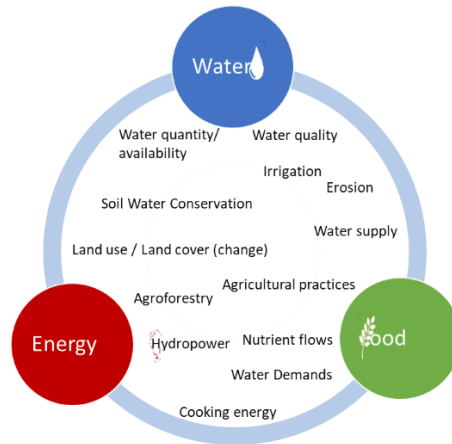


Figure 2: An illustration of the water -energy-food (WEF) nexus approach

Sio-Malaba-Malakisi-River-Basin (SMMRB) in Kenya and Uganda (Figure 3) was taken as the case study area. This area was selected based on the perceived pressure on the resources as a result of its high population density of 396 capita/km² which is the highest in the Sub-Saharan African (SSA) region. The project was divided into four case studies (A, B, C and D). Case studies A and B and focused on the current and future water quantity available in the area, and erosion and how it affects the surface water quality in the area. Case Study C focused on the adoption of soil and water conservation (SWC) while case study D focused on the Cascade manure utilization in Agriculture.

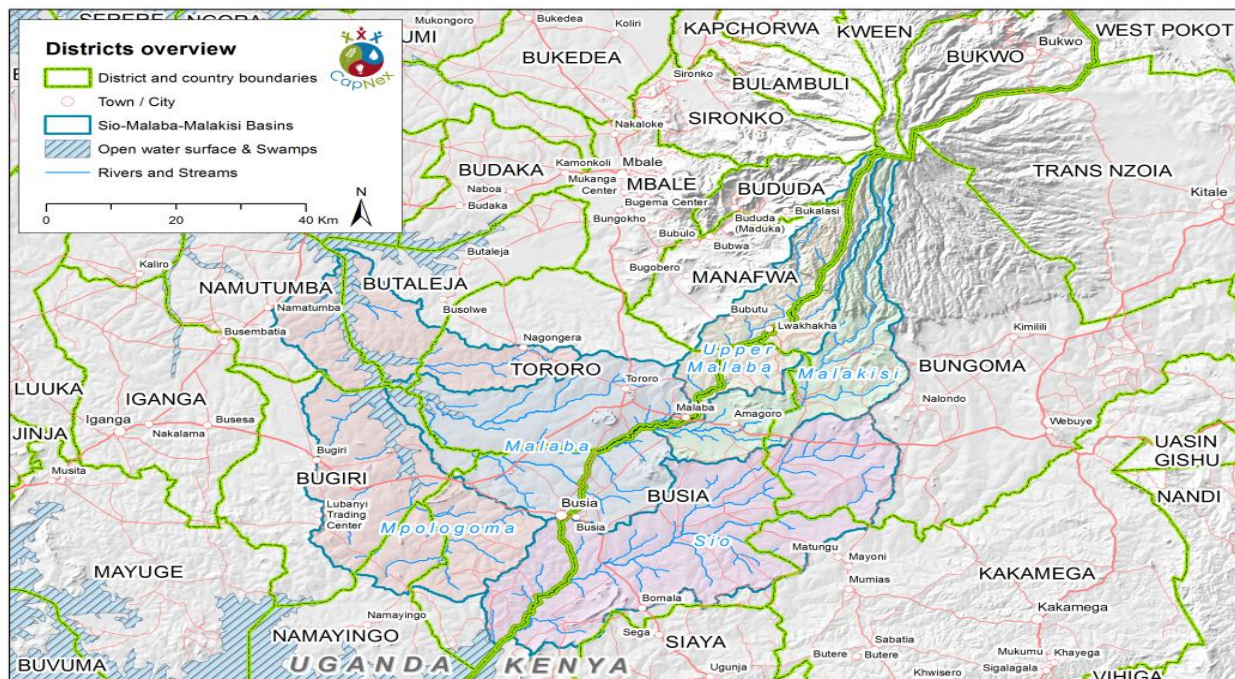


Figure 3: A map of SMMRB

Attendance of the workshop

The workshop was attended by 69 members of which 59 were invited stake holders who came from the districts of Tororo (Uganda), Busia (Uganda), Namisindwa (Uganda), Bungoma (Kenya) and Busia (Kenya); and ten were staff (3) and students (7) (from Uganda and Kenya) on the project (Figure 4). All the workshop activities took place at 12 Pearls Hotel, Busia-Uganda (N0.475413, E34.092912)

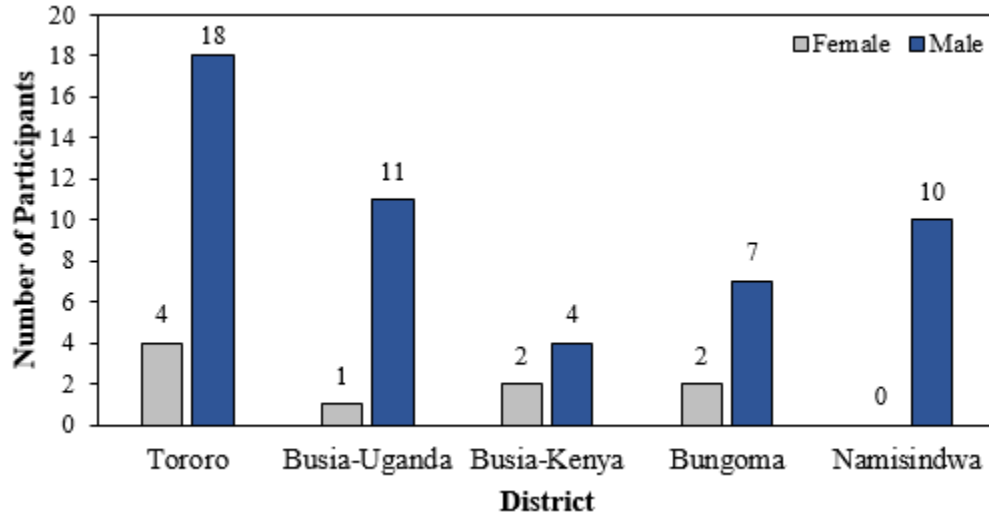


Figure 4: Distribution of stakeholder participants by district

Presentations of the project findings

Presentations on the findings on water quality analysis of the SMMRB, assessment of the current and future land use/cover of the SMMRB, adoption of soil and water conservation technologies, and improved nutrient management in agriculture were presented by Mr. Nathan Muli, Mr. Stanley Chasia, Dr. Alice Turinawe, and Dr. Allan Komakech, respectively.



Figure 5: Presentation of project findings. L-R: Mr. Nathan Muli (Technical University of Kenya), Mr. Stanley Chasia (Technical University of Kenya), Dr. Alice Turinawe (Makerere University), and Dr. Allan Komakech (Makerere University)

Reactions from the participants

The reaction session was led by Dr. Allan Komakech. In this session, the views of the participants in regards to the presentations and findings of the project were of main interest. Focus group discussion (Figure) was used as a means of capturing responses from the participants. A total of six (6) focus groups were formed and members present were assigned randomly to these groups. The guiding questions of the plenary discussions are presented in Table 2 and the responses in regards to the questions presented in Table 3.

Table 2: Guiding questions for the plenary discussion

Question 1: What recommendation would you give on promoting adoption of soil and water conservation
Question 2: Give recommendation for policy on water quality, soil erosion, soil and water conservation
Question 3: Recommendations on promoting vermicomposting and biogas production



Figure 6: Participants of the workshop taking place in focus group discussion



Figure 7: Participants presenting their findings from the focus group discussions

Table 3. Group reports and plenary discussions

Group number	Group report synthesis		
	Recommendations for promoting adoption of soil and water conservation	Recommendation for policy on water quality, soil erosion, soil and water conservation	Recommendation for promoting vermicomposting and biogas production
Group one	<ul style="list-style-type: none"> • Government to give incentives like machinery equipment at subsidized prices • The findings are good information package for farmers (proper dissemination of information which can easily be understood by farmers) • Sensitization and follow-ups on gender equity 	<ul style="list-style-type: none"> • Enforcement of policies about soil and water conservation 	<ul style="list-style-type: none"> • Further research on the species of worms which is environmentally friendly • Scaling it to small scale farmers through demonstrations • Adoption to be tailored according to farmers' capacity needs and availability of raw materials
Group two	<ul style="list-style-type: none"> • Findings should be adopted and implemented. • More sensitization is required on SWCTs. • Demonstration plots should be set as per the findings reflecting the technologies. • Exchange tours should be organized to places where the technologies are being implemented • Incentives should be given to those adopting the soil and water conservation 	<ul style="list-style-type: none"> • The policy should be formulated, adopted and implemented • The government and relevant stakeholders should sensitize the community on the importance of soil and water conservation • The wetlands should be protected and reclaimed • Soil and water conservation should be adopted in the school curriculum 	<ul style="list-style-type: none"> • The community should be trained on both technologies • The community should be encouraged to have at least 2 cows per households for biogas establishment • The government and relevant stakeholders should cost share with the farmers in putting the biogas technologies • Proper research should be put into vermicompost technology and how to reduce the effect on GHG emissions before its promotion
Group three	<ul style="list-style-type: none"> • Need to protect soils so as to reduce erosion and increase productivity • Incentives to be provided through a cost sharing approach • Strengthen extension services through capacity building and proper facilitation 	<ul style="list-style-type: none"> • Restrictive policies on settlements and activities along river banks. A concern of all governments • Tree planting policy to ensure that every citizen plants trees on his/her land around the river banks • Overall, strengthening extension services through capacity building and facilitation 	<ul style="list-style-type: none"> • Biosafety measure especially on reduced costs on fertilizer use • Overall, capacity building adoption of the technologies (Extension officers and farmers)

<p>Group four</p>	<p>Men headed households are more adaptive because:</p> <ul style="list-style-type: none"> • Men are more hardworking • They are the main decision makers • They control more resources <p>Kenyans are more adaptive than Uganda</p> <ul style="list-style-type: none"> • Kenyans had pre-independence and post –independence plans for water conservation from white farmers • Ugandan farmers fear costs of production • Poor mindset among farmers • Ugandan think that their soils are very fertile while the Kenyan soil are general poor • Kenyan has a stronger policy than Uganda e.g food for work 	<ul style="list-style-type: none"> • Sub county By-laws on farming practices • Creating strong enforcement team and penalties • Conservation of wetland for purification e.g River Bank protection • Massive sensitization of community 	<ul style="list-style-type: none"> • There is need to get an alternative worms than those dangerous one • More research on how to collect the emitted gas and find a better use for it.
<p>Group five</p>	<ul style="list-style-type: none"> • Views on adoption of soil and water conservation technologies • To change the approach of incentives to have from Bottom to up in a participatory way (encourage cost sharing) • Need for regular capacity building trainings and sensitization • Increase extension services to reduce the farmers to offices ratio • Promote light conservation measures 	<ul style="list-style-type: none"> • Reinforcement on protected areas and rivers banks • Affirmative action is required on environmental degradation, NUSAF, works, roads. NEMA-by laws and policies (reinforce the law of environment impact assessment)- soil testing measures-kits 	<ul style="list-style-type: none"> • Biogas needs reliable water source and number of live stock • Further research on vermicompost before rolling out for adoption –sustainable development
<p>Group six</p>	<ul style="list-style-type: none"> • Population pressures on land led to increased use of fertilizers resulting into low pH, CEC in Kenya with low yield as compared to Uganda 	<ul style="list-style-type: none"> • Strengthen extension focusing on soil policy formulation • Policy to handle gender issues, soil health • Livelihood support to farmers 	<ul style="list-style-type: none"> • Increase awareness to the community • Improvement of soil conservation by using green manure cover crops i.e lablab, mukuna beans, jack beans, desmodium

	<ul style="list-style-type: none"> • Leaders should talk soil conservation more than the use of fertilizers • Low crop rotation in Kenya as compared to Uganda 	<p>promoting land use management</p> <ul style="list-style-type: none"> • Should be the work of all sectors • Formulation of policy to promote the implementation of SWCP i.e fanya chini /fanya juu, band making etc 	<ul style="list-style-type: none"> • Provide market for manure to engage youths and all farmers on adoption of the technology
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Further suggestions and contributions from the audience

- ✓ Efforts should be made to change the mindsets of farmers about soil and water conservation technologies so as to increase adoption rates
- ✓ A number of policies from the two countries are present, but enforcement is lacking hence there is need to strengthen enforcement.
- ✓ Findings should be translated to local languages to involve all stakeholders at all levels
- ✓ There is need to understand agro-ecological zones of the places so as to be guided on policies
- ✓ Formulate a bye-law at district levels through stakeholders so as to enable these laws work
- ✓ There is always a tradeoff between politicians and implementations of law hence there is need to empower the communities in appreciating their natural resources
- ✓ Provide soil testing kits to establish the composition of the soil nutrients hence guiding on the right fertilizer application rates
- ✓ Translate the project into a natural program through the Ministry of Agriculture, Animal Industry and Fisheries
- ✓ There should be a clear difference between soil and water conservation technologies and soil fertility as they seem to be wrongly used by stakeholders.
- ✓ Widen on the variety of organic systems that can rejuvenate soil lives.
- ✓ Sometimes male headed house-holds may perform better because of a direct contribution by the women in those households
- ✓ There is still a wrong belief that the soils in Uganda are naturally fertile which has limited the used of conservation technologies hence reducing the yields

Appendix



Figure 8: Conference hall with some of the posters obtained from project studies

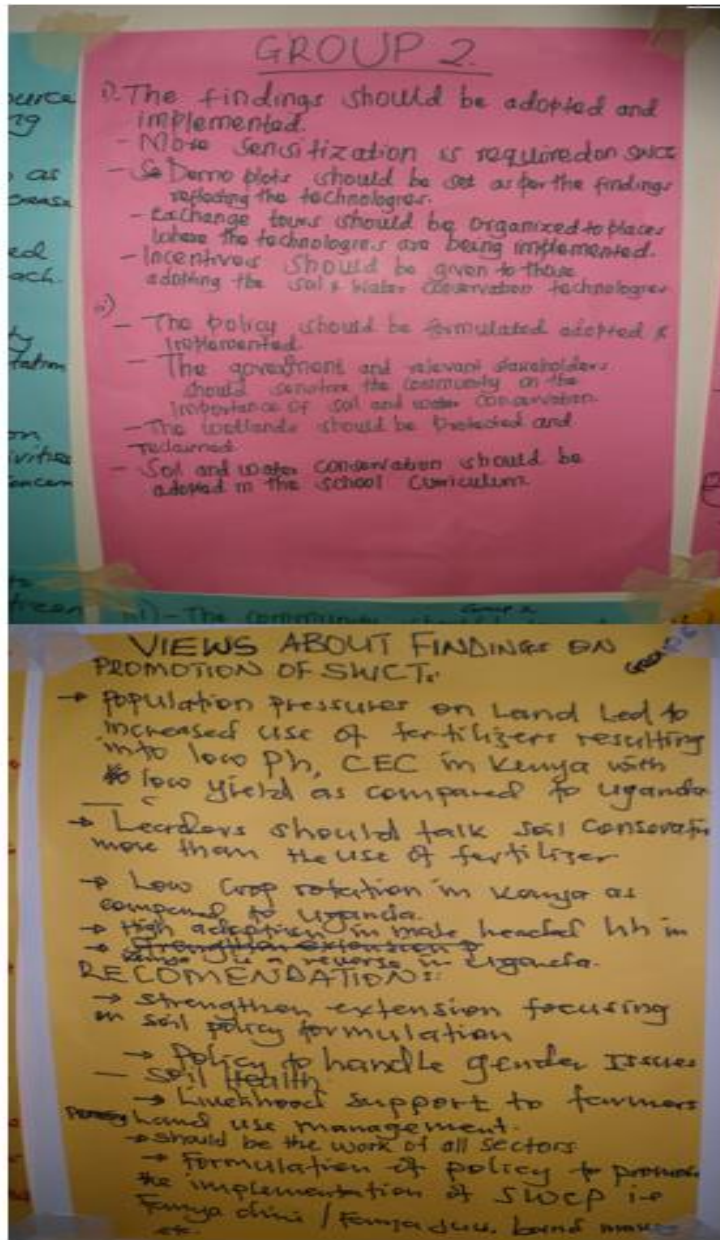


Figure 9: Some of the works that arose from the group discussions

Table 4: A list of the participants and their affiliations

No	Name	Organization/contact	Designation	District/County
1	Simono. Abwao		AO	Bungoma, Kenya
2	Musa Otieno		Engineer	Busia-Kenya
3	Wabwire Deogracious		Executive Director	Busia-Uganda
4	Ongom Isaac		DVO	Namisindwa
5	Walimbwa Wilson		Secretary Production	Namisindwa
6	Nasimolo Aron		AO	Namisindwa
7	Wambya Martin		Member	Namisindwa
8	Musamali James		AO	Namisindwa
9	Namisi Albert		AO	Namisindwa
10	Mutuka Benard		Driver-DPO	Namisindwa
11	Kalori Izara		District Coordinator	Tororo
12	Emojong Lawrence		Coordinator	Tororo
13	Owere Charles		Farmer	Tororo
14	Wamalwa Martin		AO	Busia-Kenya
15	Esipisu Sheldrick. K		Farmer	Bungoma, Kenya
16.	Wambia Getrude		AO	Busia-Kenya
17	Ngetigo Emmanuel		AO	Busia-Kenya
18	Emuria-Maurice		AO	Bungoma, Kenya
19	Ofamba Peter		AO	Tororo
20	Oluku Geoffrey Ojaka		Teacher	Tororo
21	Wakapiri MF		DPO	Busia-Kenya
22	Okoth Joseph		Agricultural Engineer	Tororo
23	Chrisantus Mangozi		AO	Bungoma, Kenya
24	Mary Gorretti Wanjala		Accountant	Bungoma, Kenya
25	Othieno John Obbo		AO	Tororo
26	Florence Nyabuni		AO	Tororo
27	Okware Rosemary		farmer	Tororo
28	Isogol Simon Peter		DO	Tororo
29	Juliet Namono		AO	Tororo
30	Olowo Godffrey		AO	Tororo
31	Dr. David Mbakaya		Deputy center director	Busia-Kenya
32	Fred Sikuta		Farmer	Bungoma
33	Ben Mugeni		Farmer	Busia-Uganda
34	Anya Milton		Driver	Busia-Uganda
35	Nyayuki Alexandra		AO	Tororo
36	David Owor		Farmer	Tororo
37	Nassir Wekesa		AO	Bungoma, Kenya
38	Okware Patrick		DPO	Tororo
39	Olweny John Francis		Secretary Production	Tororo
40	Obbo Bonifance		DVO	Tororo
41	Ofwono Micheal		Driver-DPO	Tororo
42	Okecho Apollo		AO	Tororo
43	Wafula Sam		Farmer	Namisindwa
44	Soita Emma			Namisindwa
45	Borniface Maena		AO	Namisindwa
46	Murundi Jackson		AO	Namisindwa
47	Ntalo ben		Engineer	Busia-Uganda
48	Owor Alexander		Manager	Tororo
49	Allan Komakech		Lecturer	Kampala
50	Lamek Pollicarp		Project officer	Tororo
51	Jeninah Karungi		Coordinator-Uganda	Kampala

52	Joseph Jjagwe		Student	Kampala
53	Nalunga Agnes		Student	Kampala
54	Stanley Chasia		PhD student	Nairobi, Kenya
55	Nathan Muli		PhD student	Nairobi, Kenya
56	Turinawe Alice		Lecturer	Kampala
57	Sande Francis Okumu		AO	Busia-Uganda
58	Mudati Moses		Farmer	Busia-Uganda
59	Beatrice Wamalwa		Farmer	Bungoma, Kenya
60	Wabwire Electire		Assistant Director	Busia-Kenya
61	Bwire Brian		Officer	Busia-Uganda
62	Opio Martine		Project officer	Busia-Uganda
63	Auma Budesta		Farmer	Tororo
64	David Mondorf		CAPNEX Student	Munich_Germany
65	Ahuma Ronnie		Student	Kampala
66	Nafula Lydia		AO	Busia-Uganda
67	Opio Robert Bwin		General Manager	Busia-Uganda
68	Etyang Peter Odir		Farmer	Busia-Uganda
69	Achola Teresa		AO	Busia-Kenya
70	Rev. Johnston Nyongera		Bungoma	Bungoma, Kenya