JOOUST VLIR-IUC PROJECT

FACTSHEET

Belgium
partner in development

vliruos
SHARING MINDS, CHANGING LIVES

OASIS OF KNOWLEDGE

OVERVIEW OF THE PROJECT

Jaramogi Oginga Odinga University of Science and Technology (JOOUST) is implementing a ten-year (2022-2032) research grant from VLIR-UOS on Institutional University Cooperation (IUC), in collaboration with five Flemish Universities namely Vrije Universiteit Brussel, KU Leuven, Ghent University, and University of Antwerp.

The Project aims at strengthening JOOUST's capacity in natural resource management, food security and health. Through field data collection, laboratory analysis, and community action research, the Project continues to integrate qualitative and quantitative methods of data analysis to solve problems related to natural resource management, agri-food systems, health systems, ICT and climate change. The field study component of the Project involves a wide range of partners, stakeholders, and communities and implemented within nine counties in the Lake Victoria Basin as transects. Three transects have been identified for this Project, as figure 1 below illustrates: the Northern transect (Trans Nzoia, Busia, Kakamega, and Siaya counties); the Central transect (Kericho and Kisumu counties); and the Southern transect (Homa Bay, Nyamira, and Migori counties).

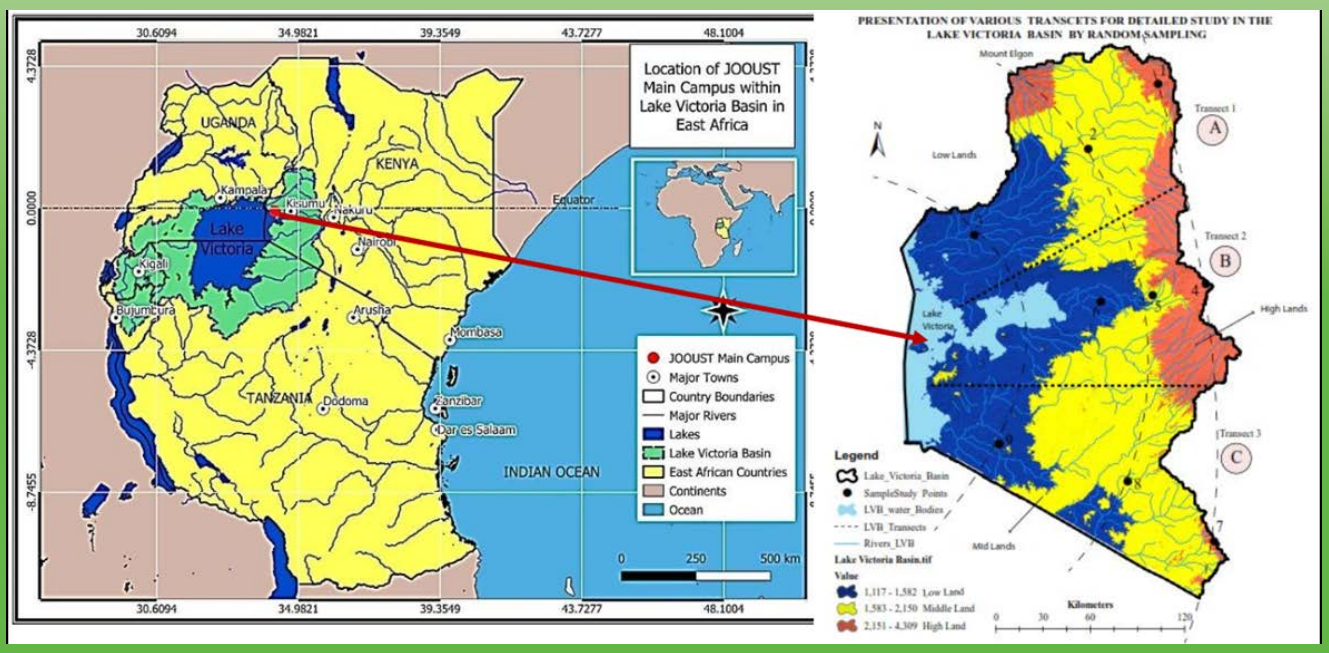

Figure 1: Study area

VUB VRIJE UNIVERSITEIT BRUSSEL

Universiteit Antwerpen

GHENT UNIVERSITY

KU LEUVEN

All stakeholders continue to work together in order to effectively improve the livelihoods of the targeted communities. Participatory learning approaches are used when interacting with stakeholders, particularly the primary resource users in order to understand the decisions, drivers, and adoption of sustainable technologies and practices at the local level.

The six domains of change illustrated in figure 2 below present challenges that are addressed through strengthening JOOUST capacity in five thematic areas aligned to the five Subprojects.

Domain	Intermediate change
Research programmes and methods	Strengthened research capacities of involved departments / units linked to academic priorities for developmental change
Education programmes and methods	Strengthened educational capacities of involved departments / units, linked to academic priorities for developmental change
People	Increased individual/community capacity (skills, knowledge, competencies) of students, staff and alumni and improved employability of the partner university's students, staff, and alumni and/or community members
Outreach and policy support	Improved dissemination practices and uptake of newly created knowledge, applications, services
Systems, policies, and infrastructure	Improved institution-wide organisational capacity of HEI in a number of institutional priority domains; and/or in domains of internal service delivery; and/or in domains of external service delivery
Networks and partnerships	Regional and international connections for sustainable higher education and networks are being developed and strengthened

Figure 2: The IUC Domains of Change

These challenges are being addressed through implementation of ICT infrastructure, sustainable natural resource management, community health information systems, innovative agri-food systems as well as climate change mitigation and adaptation. Women, youth, and other vulnerable groups receive preferential emphasis so that a more comprehensive understanding is gained while implementing gender-sensitive value chains. The Project has offered PhD scholarship to local students registered at both JOOUST and Flemish Universities. Details of the Subprojects governance are as outlined in Table 1 below:

Table 1: List of the Subprojects with their respective Local and Flemish Project Leaders

Subprojects	Team Leader JOOUST	Team Leader Flanders	University of Flemish Team Leader
Management of the Lake Victoria Basin **Natural Resource**	Prof. Julius Manyala	Prof. Steven Bouillon	KU Leuven
Building **Capacity for Transformative Agri-Food Systems** for Resilience in the Lake Victoria Basin of Kenya	Dr. Calleb Olweny	Prof. Marijke D'Haese	Ghent University
Building **Capacity for Research, Management and Control** of Communicable and Non-Communicable Diseases	Dr. Jane Owenga	Prof. John Paul Bogers	University of Antwerp
Strengthening **ICT infrastructure** to Enhance Research, Teaching and Learning	Prof. Silvance Abeka	Prof. Johan Loeckx	Vrije Universiteit Brussel

Subprojects	Team Leader JOOUST	Team Leader Flanders	University of Flemish Team Leader	
Strengthening **Climate Change Resilience** among Communities and Ecosystems in the Lake Victoria Basin	Dr. Richard Magwanga	Prof. Jan Cools	University of Antwerp	
	Local Coordinator	Flemish Coordinator	Project Manager	ICOS
Project Support Unit	Prof. Denis Ochuodho	Prof. Ann Van Griensven	Mr. Naphtaly Osika	Mr. Christophe Goossens

SUBPROJECT 1: MANAGEMENT OF THE LAKE VICTORIA BASIN NATURAL RESOURCE

The Subproject aims at enhancing JOOUST's capacity in protecting and managing natural resources and promoting socioeconomic development by creating new labs, accrediting postgraduate programs, capacity building, and developing teaching infrastructure for environmental sciences courses.

Furthermore, the Subproject continues to improve environmental science capabilities of JOOUST researchers and students, as well as their engagements with external stakeholders, so that Project deliverables are achieved. The Subproject is contributing towards the realization of the East African Climate Change Policy, SDGs 14 and 15 and the Kenyan National Development Agenda.

The Subproject is also enhancing networking, student engagement, collaborative knowledge development, and cross-investments by forming partnerships with academic institutions, NGOs, and governmental entities on natural resource management.

SUBPROJECT 2: BUILDING CAPACITY FOR TRANSFORMATIVE AGRI-FOOD SYSTEMS FOR RESILIENCE IN THE LAKE VICTORIA BASIN OF KENYA

The goal of Subproject 2 is to use transformative sustainable approaches for food production to increase resilience of cropping and market systems in the Lake Victoria Basin of Kenya. Since the three transects have different soil types, precipitation patterns, and temperatures, research areas have been identified as follows:

Quinoa research: The study focuses on a genome-wide association study (GWAS) of adaptive traits in quinoa under six contrasting agro-ecological environments. The study evaluates morpho-physiological parameters, yield, quality, lodging, preharvest sprouting, nutritional profile, and disease reactions. The aim is to establish a climate-resilient quinoa seed variety.

Sorghum research: The research assesses the impact of nitrogen-fixing cowpea with poultry manure on grain and sweet sorghum genotypes, yield, and quality during long rainy seasons. It further monitors soil physio-chemical properties and assesses the efficiency of transformative climate-smart approaches.

Socioeconomic of crop and livestock adoption and commercialization research: The research focuses on the socioeconomic aspects of crop and livestock adoption and commercialization, focusing on adoption determinants, resource reallocation, resource use and efficiency, market dynamics, and product design.

SUBPROJECT 3: BUILDING CAPACITY FOR RESEARCH, MANAGEMENT AND CONTROL OF COMMUNICABLE AND NON-COMMUNICABLE DISEASES

The Subproject aims at building capacity on cervical cancer, liver cancer, T2D, hypertension research and also establishing a reference laboratory locally. It offers capacity building for medical laboratory technologists and practitioners on biopsy processing and specimen reporting, with support from Flemish partners.

The Subproject will evaluate the prevalence of cervical cancer, liver cancer, T2D, and hypertension in the Lake Victoria Basin through observational studies and cross-

sectional data reviews. Mixed method techniques and modelling are used to assess service readiness, economic burdens, and cost-effectiveness of interventions. The Subproject has developed nursing and midwifery curriculum that upon accreditation by the Commission for University Education, will admit students through JOOUST.

Two demonstration experiments will be conducted at referral facilities to establish a digitalized registry of four target diseases. The Subproject is collaborating with Subproject 4 to develop software for accurate diagnostics and will further develop educational materials and train community healthcare workers to manage and prevent cervical, liver, T2D, and HPT diseases.

SUBPROJECT 4: STRENGTHENING ICT INFRASTRUCTURE TO ENHANCE RESEARCH, TEACHING AND LEARNING

The Subproject uses qualitative approaches to assess digital gender gaps in communities within the Lake Victoria Basin. Field trainings are conducted to address these skills gaps as well as integrating ICT skills into the other four Subprojects. Innovative interventions have been designed to increase access to digital spaces, enhance health information systems, agri-food systems and natural resource management.

Subprojects 1, 2, 3, and 5 will use qualitative and quantitative methods to determine critical indicators of change, integrate geo-spatial information systems developed by Subproject 4, and use community-based methods, laboratory techniques, and field observations developed by this Subproject. Capacity building is also a key deliverable for the Subproject achieved through training of the PhD students.

SUBPROJECT 5: STRENGTHENING CLIMATE CHANGE RESILIENCE AMONG COMMUNITIES AND ECOSYSTEMS IN THE LAKE VICTORIA BASIN

Subproject 5 aims at enhancing resilience of LVB communities and ecosystems to climate change through interdisciplinary approaches, focusing on understanding climate change impacts and adopting solutions at household, farm, and landscape levels.

The Subproject aims at understanding climate impacts through climate simulations. It also explores solutions for communities and ecosystems to become resilient to climate change, focusing on sustainable technologies and practices adopted by farmers and fishermen. Further, the Subproject explores renewable energy solutions, demonstrating the potential of a solar cooker with thermal energy storage. It also investigates mechanisms for community and regional resilience, addressing cultural, societal, and governance barriers.

JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY
BONDO-USENGE ROAD
P.O. Box 210 – 40601, Bondo | Tel: (+254) 057-250 1804/205 820 9 / 7
www.jooust.ac.ke / vliriuc.jooust.ac.ke
vc@jooust.ac.ke / vliriuc@jooust.ac.ke