For ARBEC11 conference poster presentation

Introduction:

In August 2020, the University of Pretoria's Graduate School of Technology Management (GSTM), through Enterprises@ UP, launched a case study on 'innovation pathways out of conflicts in Kenya's Lake Victoria inland fisheries'. The study was a part or component of an international project on Steering Science, Technology and Innovation for Global Sustainable Development Goals (STRINGS) administered by the Science Policy Research (SPRU) at the University of Sussex. It was funded by the United Nations Development Programme and United Kingdom Research and Innovation (UKRI). The STRING project produced a series of working papers and a final report-*Changing Direction: Steering Science, Technology and Innovation Towards the Sustainable Development Goals*, (2022).

The case study on 'innovation pathways out of conflicts in Kenya's Lake Victoria inland fisheries' was based on a survey (involving at least 35 participants in Western Kenya), focus group discussions (held in August 2020 at Port Victoria in Bunyala and Bumbe in Funyala), a stakeholders' workshop on appraisal of different innovation pathways (held in Siaya 2021) and a dissemination workshop/seminar (under the Calestous Juma Seminar Series on Knowledge and Innovation for Africa's Development organized by the Calestous Juma Legacy Foundation and the African Centre for Technology Studies later in 2021). Two of the key recommendations of the case study are: (a) further empirical research should be conducted to identify and critically analyze specific systemic barriers to the introduction and deployment of digital innovations to promote sustainable fisheries and aquaculture in the Lake Victoria Basin, and (b) ways and means should be established to unlock structural, social and technical barriers to women's entry into aquaculture (particularly cage and pond fish production) in the region. To support further evidence gathering and analysis aimed at informing the implementation of the two key recommendations of the case study, the collaboration between GSTM and CJFL allocated resources to conduct a rapid survey on the status of digital innovations (ICT-based and/or driven technologies) in the Blue Economy in the region. The survey focused on identifying specific digital innovations that are currently being developed and/or promoted in Bunyala to harness opportunities and address challenges in the region to grow a sustainable Blue Economy. The survey data generate will assist to inform policymaking and programming by various organizations-(CJLF Hub, Hydro-Victoria LTD, JOOSTU) and stakeholders in the region with regard to Blue economy in the region.

The blue economy presents vast opportunities for sustainable development in the Lake Victoria region. Digital innovation plays a crucial role in unlocking these opportunities and addressing the unique challenges faced by women and youth in the sector.

Key Research Objectives:

- Explore the potential of digital technologies to enhance productivity, efficiency, and sustainability in blue economy activities.
- Survey focused on identifying specific digital innovations that are currently being developed and/or promoted in Bunyala
- Identify opportunities for women and youth to participate in and benefit from digital innovation in the Lake Victoria region.

- Address the challenges and barriers hindering the adoption and integration of digital solutions in blue economy sectors.

Methods:

- Conducted interviews and surveys with stakeholders involved in fisheries, aquaculture, and fisheries sector in Bunyala Sub-County.
- Analyzed existing data and literature on digital innovation and the blue economy in the Lake Victoria region.
- Organized focus group discussions and workshops to gather insights and perspectives from women and youth entrepreneurs in blue economy in the region.

Key Findings:

- Digital platforms and mobile applications are facilitating market access, information exchange, and financial inclusion for women and youth engaged in fisheries and aquaculture.
- E-commerce and online booking systems are driving growth in fishery sector, creating new opportunities for entrepreneurship and employment.
- Limited access to technology, digital skills training, and financial resources remain significant barriers for women and youth seeking to participate in the blue economy.

Digital innovations deployed by fisheries in Lake Victoria Region

It was important to understand types/categories of digital innovations deployed by fisheries stakeholders in the Lake Victoria region and the following categories were identified to be common digital innovations as indicated in the table below.

CATEGORY/TYPOLOGY OF DIGITAL INNOVATION	DESCRIPTION	EXAMPLE
Digital financial services	Those that facilitate financial transaction among trading actors	Mobile money transfers e.g M-Pesa, M-Shwari, Airtel Money.
Weather/climate information services	Those that disseminate information to farmers on weather patterns and events, including forecasts and long-term predictions.	SaSAqua, My Anga app-Kenya Agricultural observation Platform (KAOP) developed by KALRO.
Supply chain coordination innovation	Those that aid in various farm planning and coordination tasks. For instance: production systems management, sale and inventory management, book-keeping	M-Shamba, Budget Mukononi,
Market information systems and Linkages	Those that disseminate information about market prices and link buyers to sellers	Aquarech, SasAqua, KMFRI-Aqua Data M-Kilimo, iProcure, Jumia, Twiga foods

Fisheries Management Apps	Refers to mobile applications that offer tools for tracking catches, recording data, and provides information on regulations and quotas	Online Fish Cart, Mobile phone GPS apps
Electronic monitoring system	Where fishing vessals are fixed with cameras and sensors to monitor fishing activities.	Smart camera, drones, sensors, CCTV

Recommendations:

- Enhance access to affordable and user-friendly digital tools and technologies tailored to the needs of women and youth in the blue economy.
- Provide targeted training and capacity-building programs to develop digital literacy, entrepreneurship skills, and financial management capabilities.
- Foster collaboration between government agencies, private sector stakeholders, and civil society organizations to promote inclusive digital innovation initiatives.

Conclusion: Digital innovation offers transformative potential to empower women and youth, drive economic growth, and promote sustainable development in the Lake Victoria region's blue economy. By addressing the challenges and leveraging the opportunities presented by digital technologies, we can create a more inclusive and resilient blue economy for future generations.

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