IPSI Collaborative Activity Proposal Form

The following form is for use when submitting proposed IPSI Collaborative Activities for consideration by the IPSI Steering Committee. See the Collaborative Activity Guidelines on p. 3 for more information.

Please return the completed form to the IPSI Secretariat (isi@unu.edu).

> *IPSI Collaborative Activities are the activities that shall be undertaken by more than one IPSI member and constitute an important part of IPSI activities with the purpose of fostering collaboration within the IPSI membership and implementing the IPSI Strategy and Plan of Action. The IPSI Collaborative Activities shall be developed and implemented with the endorsement of the Steering Committee in accordance with the Collaborative Activity Guidelines. Resource mobilization for IPSI collaborative activities shall be the responsibility of the implementing members in principle.* – IPSI Operational Guidelines, Chapter 5.4

Date of Application:	**20th April 2016**

Project title:
Mobile technology for community-driven aquatic biodiversity monitoring in Ewaso Ng'iro Catchment, Kenya
Collaborating organizations *(IPSI members)*: *(*Please underline the leading organization)*
Kenya Wetlands Biodiversity Research Group (KENWEB) and Conservation Solutions Afrika (CSA)
Other contributing organization(s) *(including IPSI non-members)*:
Kenya Forest Service Kenya Wildlife Service Water Resource Management Authority Kenya Strathmore University, Kenya
Expected term *(e.g. 1 January 2014 – 31 December 2015)*:
August 2016 (minimum of 2 years)
IPSI strategic objective(s) addressed *(tick all that apply; see p. 3 for more details)*:
▪ 1. Increase knowledge and understanding of SEPLS ▪ 2. Address direct and underlying causes responsible for the decline or loss of SEPLS ▪ 3. Enhance benefits from SEPLS ▪ 4. Enhance human, institutional and sustainable financial capacities

Continued on next page.

Description of the activity:
Please provide as much information as possible on:

- Background
- Activities (including site locations if applicable)
- Expected outcomes
- Actors and task sharing
- How the activity relates to the *IPSI Strategy* and *IPSI Plan of Action*
- Resources, funding
- Monitoring and reporting

Brief Summary:

The Ewaso Ng'iro River is Kenya's third largest with flowing through Arid areas, maintaining unique biodiversity and ecosystems that support diverse natural resource-based livelihoods. This catchment has experienced a vast amount of conflict due to diverse activities from agriculture upstream depleting water available to downstream users (mostly pastoralists) and wildlife conservancies. The development of water resource management associations has in the ENNCA region enhanced collection of data on hydrological, weather and biodiversity data. These datasets however have remained isolated and decentralized and thus have not contributed to decision making in natural resource management. The project proposes the use of mobile technology to enhance the efficiency of data collection and transmission by diverse associations and enable centralization into a web server providing data providers and users the opportunity to access entire datasets. This project has great potential for replication in other water towers of Kenya and the east African region with similar conditions.

Project:

Water in the Ewaso Ng'iro North Cathment Area (ENNCA) is mostly abstracted for farming activities, both small-scale cash crops and large horticultural and flower farms. These activities are carried out in upstream zones drastically reducing water available for middle- and downstream users - pastoralists and wildlife conservancies.

During extreme drought, downstream flow is completely reduced to dry riverbeds, which in the early 2000s led to violent conflicts between pastoralists and farmers causing loss of lives, infrastructure and division in what is a mixed community in ethnicity, cultures and resource utilization. Biodiversity in this river system has reduced and increased human-wildlife conflicts observed. For instance, biodiversity studies by the National Museums of Kenya carried out between 2006 and 2008 (a period marked by uncontrolled water abstraction), recorded only one species of fish, out of 24 known in the catchment.

Government intervention to these conflicts led to the formalization of Water Resource User Associations, Community Forest Associations and Wildlife Conservation Associations, to locally regulate water and forest use and manage biodiversity and wildlife. These initiatives showed a recovery of freshwater biodiversity from 2010, with data showing: seven fish species; increased freshwater crab and otter. Consequently, also reduced human-wildlife conflicts - less invasion of farms and private dams by hippo, marsh mongoose and otters. Data on species diversity, hydrology, forest cover, landuse is collected in ENNCA by several research and government organizations. This data is useful for decision making to guide sustainable development in the main sectors of the catchment: agriculture, pastoralism, wildlife conservancies and forest-based sectors. Communities collect data through these associations. There's need for centralisation and consistency to enhance its utility.

These datasets though available to diverse institutions remain scattered among data holder thus are currently only useful for sector-based assessments (agriculture, wildlife, forest-based and other sectors) and decisionmaking. The three of these government agencies (KFS, KWS and WRMA) are now under one government Ministry of Environment, Water and Natural Resources, aimed at ensuring holistic management of the Kenya's natural capital.

In order to assess the status, trends, drivers of freshwater biodiversity and ecosystems, there is a need to collate existing baseline data, for natural resource management scenario development and to address several challenges including:

- increased agriculture and water abstraction;
- destruction of river riparian areas through deforestation and pastoralism
- feasibility of the multipurpose Crocodile Dam;
- Increased urbanization and landuse change;
- deterioration and encroachment of wetlands; and
- increased human-wildlife conflicts.

Whereas data is available and continuously collected, another challenge is in the manner in which it is transmitted from the field to these institutions. Currently community groups share data by SMS or handwritten datasheets. Delays and data loss are common during data transmission. There is therefore a need to find a sustainable solution to ensure efficiency and accuracy.

Project Activity and partners

This project in the ENNCA proposes the utilization of i-Conserve, as a bioinformatics platform and a biodiversity data management and monitoring solution. Thereby transforming the way data is generated, communicated, and shared. iConserve system is composed of two components which are the mobile application and the web server. The customization of i-Conserve by Strathmore University and CSA; includes testing and training carried out at various stages to optimize ease of data access in both mobile and web media but also it's utility in assessment.

Researchers managing data (data providers and users):

KENWEB and **CSA** researchers have worked in the ENNCA region on diverse biodiversity issues for over 16 years. These include studies on fish, invertebrates, mammals and water testing showing correlation between freshwater management and biodiversity in the region. Three students of KENWEB are involved in Master's and Post-doc studies in the catchment on fish diversity, effects of landuse change on aquatic biodiversity and on the success of water resource user associations in resolving water conflicts.

Water, Forest and Wildlife/Biodiversity agencies (data providers and users)

The involvement of three government agencies in Water, Forest and Wildlife/Biodiversity are curial in ensuring sustainability of data collection and management, the Project participants include:

- Deputy Technical Co-ordination Manager, WRMA-ENNCA: in charge of information collection from river staff gauges in the catchment and monitoring WRUAs. WRMA are key to the sustainability of the project as custodians of water data.

- Senior Warden Laikipia County, KWS is in charge of wildlife conservation; community awareness and involvement in conservation in the project area; management of conservancies.
- Deputy Director KFS in charge of Forest Conservation and Management, has been involved with community associations in the management, protection and conservation of forests; existing data and ongoing collection in the catchments of the ENNCA will be key in the project.

Bioinformatics and ITC support:

Customization of i-Conserve for the project will be carried out by i-Lab, Strathmore University, who partnered with CSA in 2014 to develop i-Conserve. They are the ITC partner in providing support for customization of the software for application and support the training and testing phases during implementation.

Funding: Proposals have been developed; funding opportunities are currently being explored.

Please attach additional pages as necessary.