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Contribution of Kenya

to the CSTD 2018-19 priority theme on 'The role of science, technology and innovation in building resilient communities, including through the contribution of citizen science'

KENYA'S CONTRIBUTION TO THE ISSUES PAPER

CSTD/UNCTAD 2018-2019 PRIORITY THEME 2: THE ROLE OF SCIENCE, TECHNOLOGY AND INNOVATION IN BUILDING RESILIENT COMMUNITIES, INCLUDING THROUGH THE CONTRIBUTION OF CITIZEN SCIENCE

GENERAL REMARKS: As expected of developing countries, Kenya's application of citizen science is just emerging. Requisite support Policies and Regulations are in place to harness Citizen Science.

Question (1a): *Can you give examples of Projects/Policies in your country aimed at using ST&I to build resilient communities.* ***(1b)*** *What are the main challenges confronted while trying to implement these projects/policies in your country or region?*

Answer:

The following examples of Policies in Kenya are aimed at using ST&I to build resilient communities

1. Disaster Management Policy, 2017
2. National Environmental Management Act (NEMA) revised 2012

Disaster Management Policy 2017

The overall Goal of Disaster Management Policy (2017)[i] is to build a safe, resilient and sustainable society/community. This is undertaken at all levels and its objectives includes amongst others; management of disasters through promotion of a culture of disaster awareness and building capacity for disaster risk reduction; coordinating and focusing participatory partnerships between the Government and stakeholders;, and promoting linkages between disaster risk management and sustainable development for reduction of vulnerability to hazards and disasters

NEMA ACT 2012

The National Environment Management Act[ii] manages communities through Strategic Environmental Assessment (SEA) regulations. Through SEA, NEMA is able to undertake the following:

i. Safeguard the environmental assets and opportunities upon which all people depend, particularly the poor, and so promote sustainable poverty reduction and development.
ii. Improve decision making related to policies, plans and programmes, and thus improve development outcomes by:
    a. Supporting the integration of environment and development
    b. Providing environmental-based evidence to support informed decisions.

SEA Regulations[iii] are based on the following principles:

i. Sustainable use of natural resources
ii. Enhanced protection and conservation of biodiversity

iii. Interlinkage of human settlement and cultural issues
iv. Integration of socio-economic and environmental factors
v. Protection and conservation of natural physical surroundings of scenic beauty as well as protection and conservation of built environment of historic or cultural significance
vi. Public and stakeholder engagement

Challenges facing Disaster Management System in Kenya

i. Inadequate policy, legal and institutional frameworks

Existing Institutional framework for Disaster Management is heavily weighted towards emergency response. Until 2017 Kenya lacked a coordinated disaster management policy, legal and institutional frameworks. Hence Standard operational procedures and Disaster Emergency Operation Plans were not yet developed.

ii. Inadequate finances, human resources and equipment

Coordinating government arms suffer inadequate funding while procurement procedures remain largely cumbersome. This rising demand for funding has made Government increasingly reliant on development partners to fund Disaster Management initiatives.

There is lack of adequately trained human resource in Disaster Management as well as poor resource management and non-availability of specialized equipment.

iii. Inadequate information and data

Collection of data, analysis, and storage is not uniformly adequate; even though improving. This has resulted in lack of effective monitoring and evaluation of disaster risk trend analysis, and forecasts.

iv. Weak inter-stakeholder linkages and deteriorating culture

The linkages on disaster management capabilities between local communities, county government and national government remained weak. In addition, the general degradation of traditional African socialism and livelihood systems has resulted in the progressive erosion of the traditional coping strategies.

v. Inadequate integration and co-ordination

Past initiatives between government and stakeholders have been reactive and uncoordinated, and without a coherent policy framework. current Policy initiative reflect the Government's commitment towards formulating a coherent and integrated strategy for addressing disaster issues in a more proactive manner with a focus on reduction of risk to communities and their vulnerabilities.

vi. Inadequate Regional and International linkages

Cross border interventions have been passive owing to situations affecting communities like the outbreak of Rift Valley Fever in life stock. This is because governments in the horn and Eastern Africa Sub- region including Kenya do not always factor in this aspect in disaster planning and response.

vii. Poor Governance and Lack of Political Will

Politics is known to have contributed to disasters in Kenya. In addition the lack of political will has slowed down the process of putting in place an effective Disaster Management system. This has hindered the formulation and implementation of disaster related policies and legal frameworks.

Challenges facing the implementation of National Environmental Management Act (2012)

i. **Inadequate Environmental Impact Assessment-EIA**
   There is inadequate Environmental Impact Assessment (EIA) to deal with cumulative, synergistic, secondary and long term impacts.
ii. **Weak Stakeholder initiatives**
   The government is supposed to ensure that public engagement is meaningful and not just a case of providing detailed, rigorous and comprehensive information. The engagement process which is currently weak fails to provide an opportunity to influence decisions.

Question (2a) *Can you provide examples of policies/projects/Initiatives aimed at using or promoting citizen science to build resilient communities?* ***(2b)*** *Do these projects incorporate a gender approach?* ***(2c)*** *What are the main challenges confronted in implementing these projects*?

Kenya has two outstanding Initiatives aimed at using or promoting citizen science to build resilient communities. They are;

1. Angaza Community Project
2. Kimana Ecotourism Project

ANGAZA COMMUNITY PROJECT

This Project[iv] which is located in Kibera, a slum of Nairobi city targets Women and Youth empowerment through the following objectives:

i. To promote health education and enhance prevention of diseases and illnesses including response to HIV/AIDS among the infected and affected
ii. To empower women and youth economically through equipping them with relevant skills and knowledge in microfinance and resource mobilization
iii. Improved literacy levels among the children, youth and adults through support of formal vocational trainings
iv. Provide referral services to the needy in the community

The project involves the public in data collection activities and encourages wider community engagement and provides important information on catchment management.

Gender approach

This project proposal focuses on women and youth empowerment in Kibera slums. It is working towards developing the entrepreneurship skills of the community so as to get them out of the cycle of poverty. This way the project contributes towards addressing part of the Sustainable Development goals (SDGs) Kenya Vision 2030. Specifically the STI component includes engaging the community in data/information gathering as well as training in ICT, enterpreneuralship, disease vaccine trials (HIV/Aids, malaria etc) and undertaking research in orphanages, etc. to enable them harness and utilize innovations.

Challenges facing Angaza Community project

i. Poverty and population growth

Kibera is estimated to be the largest slum in Africa with a population nearing 1.7 million people living in a 2 miles radius, and the population is majorly poor. It is a most crowded settlement and its population density is estimated at about 36 square feet per person. Kibera has very little or no infrastructure with open sewers and drains everywhere.

ii. Inadequate social amenities

Kibera slum experiences open sewage, open garbage dumps, mud walled houses and many more eye sores. It lacks adequate schools and hospitals to meet the demand. Despite of these miserable conditions, Kibera is an environment booming with small scale business activities of every kind.

iii. Inadequate infrastructure

Even though located in an urban area, Kibera lacks adequate electricity, running water, descent housing and most importantly food.

iv. Unethical and anti-social behaviours

Some of the slum dwellers are involved in unethical and anti-social behaviours. Such include prostitution, alcohol and drug abuse, gangsterism etc

KIMANA ECOTOURISM PROJECT

This is a wildlife-based ecotourism project started in 1996. In this project the people of Kimana have sought to exploit the commercial advantage of their communal land which lies near Amboseli National Park (ANP) in southern Kenya. The Kimana Community Wildlife Sanctuary[v] represents

one of the best examples of a community-based ecotourism project that promotes the ideals of local participation in wildlife management and creates opportunities for the local Maasai pastoralists to benefit from wildlife tourism.

The main goal of the project is to conserve biodiversity as a source of earning foreign exchange, employment and training opportunities for the people of Kimana.

In addition the project sought to encourage the community to participate in conservation through the establishment of locally owned small-scale wildlife-based ecotourism projects as a form of commercial enterprise. To help attract tourists, the game sanctuary was fenced using donor funds, human resource trained and hired, access improved through road network, luxury hotel constructed and neighbouring game lodges involved in marketing and channeling tourists to the sanctuary. The local community gives game rangers feedback on wildlife movement, migration, water sources, grazing grounds etc. using cellphone technology.

Challenges

i. Scarce resources

Due to scarce resources, competition for scarce range resources including water and pasture, serious conflicts often erupt between user groups threatening their welfare and wellbeing as well as the areas of biodiversity

ii. Danger from wildlife

Whilst the local community do not have right of access to the natural resources in the park, wildlife from park often forage on their lands spreading diseases to livestock and causing damages crops, livestock and human lives.

iii. Human-wildlife conflicts

As a result of increased human-wildlife conflicts, poaching, and complications brought about by the sub-division of the group ranches in around Amboseli National Park, the government realized that the future survival of the more than 75% of Kenya's wild animals that live seasonally or permanently outside the park depended on the goodwill of the local community.

iv. Negative attitude

Initially, there was a lot of resistance within the community because of harbouring negative attitudes towards wildlife and tourism. The community thought that Kenya wildlife service would take their land and then they would lose access to the water and pasture resources within the Kimana swamp. Also they thought that they were not going to benefit from the proposed Sanctuary because tourism was a white man's business and just for a few rich individuals. Besides the community thought that of tourism belongs to the national parks alone.

v. Lack of experience in managing wildlife ranches

The concept of group ranches, managed by an executive committee elected periodically by all group ranch members to discuss and make joint decisions on behalf of their communities, is a recent development amongst the community. Even though elections hardly took place; when they did the politicians and bureaucrats often manipulated elections in favour of their cronies.

vi. Maasai community culture versus wildlife

According to the Maasai community swamps and the vegetation around them were traditionally, one of their most important dry-season livestock grazing and watering refugees, and useful sources of food, fire wood, building materials, craft materials and medicine. In this regard the community prioritized such interests leaving out wildlife tourism.

vii. Inadequate capacity for employability/engagement

The Kimana conservancy community lacks enough skill for meaningful engagement. Despite agreements that most of the Conservancy staff would come from Kimana only a few low-waged seasonal unskilled and manual jobs such as those of security guards, rangers, porters, casual construction workers and cleaners were made available to the local people. Most of the skilled positions such as those of managers, drivers, were filled with employees transferred or rather sourced from outside. Due to illiteracy amongst the community harnessing cell phone technology as a tool for citizen science is a problem.

Question (3a): *What are the actions that the international community, including CSTD, can take to leverage the potential of STI in building resilient societies, including the contribution of citizen science? (3b) Can you give any success stories in this regard from your country or region?*

Possible Strategic direction by international community including CSTD on citizen science.

i. Treat citizen science as an emerging key area of interest for developing countries; through budget allocation, program/project planning and execution, and dissemination of citizen science outcomes in global forums
ii. Establish and address tangible, executable linkages/programmes/projects between citizen science and Sustainable development Goals (SDGs) for the benefit of mankind; especially so in line with priorities of communities that suffer from lack of or inadequate application of citizen science
iii. Partner with developing countries to help develop policies that guide exploitation of citizen science
iv. Guide the global community to adopt policies and regulations that encourage Women, Youth and Girls to participate in citizen science
v. Encourage developing countries to adopt and entrench citizen science in their value systems
vi. Encourage global promotion of citizen science through identification and undertaking of projects that tap into data and information gathering by local communities

vii. Facilitate the global community to tap into benefits of citizen science as a basis for disaster management, wildlife conservation, hydrological monitoring etc. and especially for containing shocks realized by different origins including natural disasters, economic shocks, health emergencies, social conflicts and war
viii. Facilitate developing countries to realize mutual bilateral and multilateral north-south partnerships that help build capacity for exploitation of citizen science
ix. Finally support international forums which articulate and disseminate programme/project reports and research outcomes on citizen science to enable sector-wide global capacity building.

Success Story by the international community on citizen science in Kenya

Project Title: A crowdsourced Approach for Hydrological Monitoring in Sondu-Miriu River Basin located in western Kenya[vi]

Introduction

The international community involved in this project included Germany (Institute of landscape ecology and resource management, Centre for international development and environmental research, Karlsruhe Institute of Technology) and United Kingdom (International Water Stewardship Programme). The Kenyan counterparts were drawn from World Agroforestry Centre and International Water Stewardship Programme.

Objectives: To evaluate quality and quantity of data generated by citizens in a remote Kenyan basin and assess whether crowdsourcing is a suitable method to overcome data scarcity.

Methodology involved installation of water gauges equipped with signboards explaining the monitoring process to passers-by. Results were sent via a cellphone text message based data collection framework that included an immediate feedback to citizens. A public web interface was used to visualize data

Results showed that within the first year 124 citizens reported 1175 valid measurement. However 13 citizens were active observers providing more than ten measurements. Comparison of crowdsourced data with data from automatic gauging station revealed high data quality. The driving factors that kept participants involved included giving them feedback to prevent raising unrealistic expectations associated with monitoring, management plans or rewards, using available simple cell phone technology and reimbursing costs.

Conclusion

For this remote area and others found in Kenya and the developing countries, collected water level data has the potential to support development of water allocation plans, which have become ever more essential due to increasing water demands**.** Local water user associations can profit from additional data to develop small scale sub-catchment management plans.

Question (4). ***Could you suggest some contact persons of the nodal Agency responsible for projects/policies, related to resilient communities, STI and citizen science as well as any experts (from academia, private sector, civil society or government) dealing with projects in this area.)***

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Question 5: *Do you have any documentation,* ***references,*** *or reports on the specific examples on the priority theme in your country or region?*

REFERENCES

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