

WIOMSA

Cities & Coasts Project

Grantees Meeting 16-18 November 2020

PROGRAMME & ABSTRACTS



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PROVISIONAL PROGRAMME

Cities & Coasts Grantees Meeting 2020		
Day 1: Monday 16 th November 2020.		
Opening	Session	
14:00-14:05	Welcoming remarks & announcements	WIOMSA
14:05-14:10	Opening remarks	Lena
14:10-14:20	Introduction	All
Project Presentations.		
Cities and Coasts 2018/2019 Projects		
14:20-14:35	Cities and Climate Change in Coastal Western Indian Ocean A Grand Challenge (CICLICO)	PI
14:35-14:45	Remarks & Discussion	
14:45-15:00	Smart and sustainable transitioning for coastal cities in the face of global environmental change: Prototyping transdisciplinary networks for peer-to-peer learning for Mombasa (Kenya) and eThekweni/Durban (South Africa)	PI
15:00-15:10	Remarks & Discussion	
15:10-15:25	Impacts of large-scale infrastructure developments on coastal biodiversity: A case of LAPSSSET infrastructure project in Lamu	PI
15:25-15:30	Break	
15:30-15: 40	Remarks & Discussion	All

Cities and Coasts Grantees Meeting 2020		
Tentatively approved projects		
15:40-15:55	Spatial Planning of Climate SMART and Resilient Port Cities in the WIO Region: A case for Mombasa and Durban	PI
15:55-16:05	Remarks & Discussion	All
16:05-16:20	Enhancing Climate Change Adaptation Under the Water-Energy-Food Nexus (ECCA-WEF) in Dar Es Salaam, Mombasa County and Maputo Mozambique	PI
16:20-16:30	Remarks & Discussion	All

16:30-16:45	Realizing a blue urban agenda for coastal cities in Kenya through sustainable production and consumption policy and governance	PI
16:45-16:55	Remark and Discussion	PC
16:55-17:00	General discussions and Break	All

Day 2: Tuesday 17th November PC Meeting

14:00-16:00	PC meeting and deliberations
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Day 3 Wednesday 18th November PC Meeting

14:00-17:00	<p>Feedback to individual projects at specified times</p> <p>Parallel grantees discussion on joint activities</p> <p>End of Meeting</p>
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ABSTRACTS

CITIES & COASTS PROJECTS

Cities and Climate Change in Coastal Western Indian Ocean – A Grand Challenge (CICLICO)

Investigators: Bernadette Snow, Mandy Lombard, Meredith Fernandes, Hannah Truter & Nina Rivers (Nelson Mandela University (NMU)); Louis Celliers, Iena Rolfer & María Máñez (German Climate Service Center (GERICS)); Sérgio Rosendo (NOVA FCSH)

Introduction

This study focuses on Algoa Bay as a case study on area-based management (ABM) tools and the use of climate service in support of these. These tools each have their own spatially-sensitive policy implementation cycle in context of the grand challenge relating to coastal cities of the WIO. Some of these are: Marine Spatial Planning (MSP); Integrated Coastal Management (ICM); and Marine Protected Areas (MPAs). These tools are all in use by coastal cities and the impact of their implementation actions, based on societal objectives, are an important aspect of progressing towards global sustainability goals.

Each of these management tools and processes follow a similar policy implementation pathway. Each policy cycle (for ICM, MSP and MPA) will contain a set of objectives, as will the multitude of other management instruments that exist at coastal city level (Integrated Development Plans, Local Economic Development, Climate Adaptation Plans, etc.). This simply illustrates the following principle: “...a plurality of objectives held by pluralities of politics makes it impossible to pursue unitary aims” [22].

In South Africa, municipalities prepare Integrated Development Plans (IDP) against which each is measured. The ABM legislations and applications are considered during the development of these plans (not mutually exclusive there are many other pieces of legislation from national, provincial and local levels). These tools support decision making within the municipality. In addition, climate strategies are developed, and these are considered in the IDP.

With this understanding this project aimed to explore and plan, with decision-makers and society in the Algoa Bay and the city of Port Elizabeth, how diverse, often uncoordinated, objectives of coastal and marine planning can be implemented to enable better adaptation to climate change in vulnerable coastal cities of the WIO through the use of climate services for city planning tools.

Research aims, objectives and methods.

The overall aim of CICLICO is to explore and plan, with decision-makers and society in the Algoa Bay and the city of Port Elizabeth, how diverse, often uncoordinated, objectives of coastal and marine planning can be implemented to enable better adaptation to climate change through the use of climate services for city planning tools.

The project focuses on the opportunities and constraints presented by the use of Area Based Management (ABM) tools, namely Marine Spatial Planning (MSP), Integrated Coastal Management (ICM) and Marine Protected Areas (MPAs) and climate services to support adaptation planning by the city.

The specific objectives and the methods to address them are:

Participatory mapping of the coastal and marine planning systems (tools, institutions, stakeholders) of the Nelson Mandela Bay municipality in Algoa Bay to understand the system, including the interaction between the different ABM approaches; how they relate to key city planning tools, in particular the IDP; the stakeholder networks created by them; key climate impacts; climate information available; and ability of the governance framework to address climate impacts across the land-sea interface. Methods developed and/or used so far:

- Desktop literature reviews (review of the legal and policy frameworks, vulnerability and risk, and stakeholder analysis)
- Institutional analysis (Celliers et al 2007; Ostrom 2005): a rapid assessment of institutional actors in coastal and marine area-based management in the Algoa Bay coastal system using three indicators for a composite value of agency, i.e., scale, power and capital. Visualise the similarities of institutional actors using multivariate statistics and the stratification of actors.
- A modified application of the Capitals Approach Framework (CAF; Ojwang et al 2018, Celliers et al 2020). The CAF aims to understand the governance capacity of the various actors and stakeholders of the Algoa Bay social-ecological system to effectively manage natural resources and environmental change and adapt to climate change.
- Fuzzy Cognitive Mapping (FCM: Williams et al 2020). The FCM aims to relationship between capitals and identifies the leverage points for intervention of climate services.

Build a *system dynamics model* with stakeholders in order to build a shared understanding of the Algoa Bay system and key drivers of change and identify and test possible policy interventions enabled by ABM tools, including what data, information and knowledge are needed to inform management. Methods developed

and/or used so far:

- Participatory mapping and systems dynamics of Algoa Bay. The purpose of the mapping was to consider the causal loop diagram of the management of climate change impacts across the land-sea interface of Algoa Bay

3) *Co-create climate services* adapted to the needs and policy objectives identified by stakeholders in Algoa Bay, using system dynamic models as proof of concept. Not started yet

Team

Nelson Mandela University		GERICS	
Dr Bernadette Snow	South African PI	Dr Louis Cilliers	German PI
Prof Mandy Lombard	Marine Spatial Planning	Dr Maria Manez	Systems Modeller, Climate Services
Dr Sergio Rosendo	FCSH sub contract – Fuzzy Cognitive Mapping, Stakeholders and CAF	Lena Rolfer	Emerging Researcher (PhD candidate): Stakeholder and Fuzzy Cognitive Mapping
Dr Nina Rivers	Emerging researcher stakeholders		
Ms Meredith Fernandes	Research Assistant - Desk Top Reviews & stakeholder Analysis		
Ms Hannah Truter	Research Administration and Stakeholder/Data Manager		
Masters Student	Not selected due to COVID 19. Not in the budget, removed originally as requested by PC.		

Scientific Results & Conclusions

The initial stages of and the activities of the CICLICO project had to be substantially adjusted to the limitations imposed by the Covid pandemic. Even so, the research team further amended a process for a very intentional and structured assessment of stakeholders in Algoa Bay

Specific outputs, results and implications for CICLICO objectives:

- The desktop research includes: (1) Review of the legal and policy frameworks impacting on the management of resources in Algoa Bay; (2) Focussed review of environmental and climate hazards, vulnerabilities and risks related to the city of Port Elizabeth and its location in Algoa Bay. The

reviews provided the background information on the environmental, governance and institutional and risk and vulnerability of Algoa Bay. The reviews confirmed the highly connected state of Algoa Bay and the need for a systems approach to governance.

- Institutional analysis (IA) of stakeholder resulted in the identification of key stakeholders associated with the objectives of the project. The IA resulted in definition and assessment of the level of agency of stakeholders. The IA was also the basis for developing a sampling strategy for the assessment of forms of capitals held by stakeholders.
- Preparing an assessment of the forms of capitals (CAF) held by key stakeholders was a major activity in the CICLICO project. The CAF preparations resulted in a locally relevant method for collecting complex data and information under pandemic lockdown conditions.

Publications in preparation

- Celliers et al. Stratification of institutions in a complex coastal system: implications for participatory processes.
- Rivers et al. Institutional arrangements and agency within coastal area-based management in Algoa Bay, South Africa
- Rölfer et al. Stakeholder and network analysis for climate adaptation planning in coastal areas (and implications for breaking undesirable resilient governance)

Implications/Applications

The CICLICO team is also preparing a policy proposal that will be submitted to the Nairobi Convention Secretariat for possible discussion at the WIO Science to Policy Forum that is convened by the Nairobi Convention. The policy document will consider the inseparability of land and ocean and the imperative of understanding the coastal system. Such consideration also demands a renewal, or re-conceptualisation, of the scientific approach of studying such a system, and a novel “box of tools”, approaches and methodologies particularly for area-based management of coastal and ocean space.

Outputs

- Information flyer produced
- Final Draft: Analysis of the Governance and Legal Landscape for Algoa Bay
- Final Draft: Synopsis of climate and environmental risks for Algoa Bay

- Second Draft: Algoa Bay Stakeholder Analysis
- Paper draft: Institutional Analysis
- Research Ethics Approval
- CAF: Propose Capitals Criteria and Indicators and online application preparation
- CAF: online questionnaire developed and tested with advisory board members and team
- Advisory Board Online Constituted (letters and guidelines)
- CICLICO Governance Brief for AB
- Bi-weekly short meetings interspersed with planning meetings (using online platforms)
- Revised online work plan

Adaptation to the project

In light of particular challenges to the project including timing, COVID 19 and partner relationship building there are adaptations to the project that do not change the particular objectives or aims of the project. These adaptations do however impact on timing, budgets and additions of skills to the team, as required. The audit process also delayed the project and took up resources due to the intensity and time requirements. Co-production of knowledge and co-designing approaches have required reflection and scope increased or adapted. A focus has been on

desktop reviews during this period and therefore the initial scope and depth has increased with the addition of a more detailed stakeholder/institutional analysis.

Suggested objective wording changes in light of COVID 19 and feedback from AB:

Objective 1: Online participatory mapping of the coastal and marine planning systems (tools, institutions, etc.) of the Nelson Mandela Bay municipality in Algoa Bay. (Capitals Approach Framework)

Objective 2: Undertake online causal loop modelling consisting of the key causalities of managing coastal and marine space in a changing climate. Using fuzzy cognitive mapping

Objective 3: Co-creation of climate services as proof of concept. [Possible online as the pandemic unfolds]

Conclusion

The project has developed despite project, COVID and socio-political challenges linked to the case study area. There are tangible products and the development of a stronger partnership with the local governing authority in the Bay.

Smart and sustainable transitioning for coastal cities in the face of global environmental change: Prototyping transdisciplinary networks for peer-to-peer learning for Mombasa (Kenya) and eThekweni/Durban (South Africa)

Investigators Justus Kithiia & Innocent Wanyonyi (Coastal and Marine Resources Development (COMRED)); Sean O'Donoghue (Thekwini Municipality/Durban & University of KwaZulu-Natal); Daniel Irurah (University of Witwatersrand); Joseph Maina (Macquarie University); Godfrey Nato (County Government of Mombasa); James Kairo (Kenya Marine and Fisheries Institute)

Aim

The overall aim of this project is to examine city systems and codesign practical pathways towards a smart and sustainable port city of Mombasa.

Methods

The project is employing a variety of methodological techniques coupled with strong intellectual discipline. The analytical process involved an eclectic mix of techniques, including content analysis survey, interview, observational and archival designs, resulting in data that are both quantitative and qualitative. This was complemented by the analysis of natural capital, particularly mangrove forests in Mombasa county, and how this could be mainstreamed in the county integrated development plan. The valuations of mangrove goods and services was then carried out using direct market and Contingent Valuation Method (CVM).

Key findings/Results

Analysis of Policy Documents

- A comparison between integrated developments plans for Mombasa and eThekwini Municipality, for the planning periods 2012-2017/2017-2022, revealed that terminologies/concepts related to smart-sustainable cities were more prevalent in eThekwini plans than in Mombasa plans. For example, climate change is mentioned 143 times in eThekwini plans compared to only 13 times in Mombasa plans.
- Smart and sustainable issues are better integrated into the policy contexts in eThekwini than in Mombasa
- The minimal use of concepts relevant to the international discourse on smart-sustainable cities in Mombasa reflects little impact of the political/policy milieu in catalyzing actions towards a smart sustainable city.

Water and sanitation

- Water supply and sewage systems are characterized by a series of inequalities in access resulting in a “dual economy” (informal less serviced areas & formal well-connected areas).
- The pyramidal colonial racism paved the way for post-colonial classism whereby poor people living in the informal settlements are disproportionately affected by the water and sanitation backlogs.
- Increased funding for the water and sanitation sector, coupled with changes in policies have not produced the desired results.
- The continuing water and sanitation problems are a manifestation of governance and policy inefficiencies. Such inefficiencies lead to scarcity even in the presence of physical water abundance

Assessment of the natural capital (Mangrove)

- The peri-urban mangroves of Mombasa are not pristine with Tudor creek and Port Reitz having lost 70% cover in the last 29 years as a result of over-exploitation of resources, habitat conversion, pollution and climate change
- Restoration efforts have been initiated by the community together with civil society, county government, private sector and the Kenya Forest Service
- There is a lot of willingness among the community to participate in mangrove restoration and conservation activities with 68.2% of the respondents willing to pay for the conservation of mangrove forests

Peer-to-peer learning exchanges

The first exchange visit found several challenges facing Mombasa County in solid waste management and water and sanitation. For example, the 47% of waste collected is not levied by the government thus handing over the part of the responsibility of garbage collection within Mombasa to private sectors. Key issues facing solid waste management include illegal dumping, mixed waste, poor road to the main dump site and financing. The report from this visit is referenced in the Durban Adaptation Charter 2019 annual report. Due to Covid-19, the second exchange visit to EThikwini municipality for Mombasa city officials was postponed to a later day and the project started webinar sessions. Two webinar session have been conducted so far one on Transformative River Management Programme (TRPM) and the second on Sustainable sanitation. The output from TRPM webinar resulted in the implementation of the *Mtopanga* TRMS in Mombasa county.

Implications

Transformative River Management (Mtopanga River).

Learning from the 1st Webinar on transformative river management, the county government of Mombasa developed a programme to transform one of its rivers (river Mtopanga). An interdepartmental team has been constituted drawing high level management officials from the departments of Environment, waste management and energy; water, sanitation and natural resources, transport infrastructure and public works; and department of lands, physical planning and housing.

Climate change policy

The situation analysis results have so far raised issues that require policy interventions. These findings are informing the development of climate change policy that is currently underway. It should address issues on waste management, water and sanitation, natural capital/biodiversity. Sea level rise among others.

Solid waste management

Dashboard to monitor solid waste management i.e. collection, diversion and transportation. The department is currently being engaged to provide inputs on the key issues to inform finalisation of the dashboard.

Mangrove evaluation

Economic valuation of ecosystem services is of great importance and cannot be over emphasized. For example, the average value of Tudor creek mangrove forest was estimated at 3586.3 USD/ ha/year indicating that the forest is of high value and therefore, there is need for concerted efforts for sustainable management. The results revealed that illegal harvesting, pollution and infrastructural development are the major threats facing mangroves; allowing the county government to identify investment priorities for mangrove restoration for suitable degraded sites.

Overall, the above findings provide a snapshot the disparities, inadequacies and current investments in social, economic and ecological aspects of the city of Mombasa. This understanding is important in designing long term sustainable interventions.

Impacts of large-scale infrastructure developments on coastal biodiversity: A case of LAPSSET infrastructure project in Lamu

Investigators: Zachary Maritim (WWF-Kenya); Raymond Ogalo (LAPSSET Corridor Development Authority); James Kamula (National Environment Management Authority)

1. Introduction

Worldwide Fund for Nature - Kenya (WWF-Kenya), jointly with National Environment Management Authority (NEMA) and LAPSSET Corridor Development Authority (LCDA) is undertaking research on the impacts of large-scale infrastructure developments on coastal biodiversity, a case study of the LAPSSET Project in Lamu. The research is based on robust scientific methodologies to inform policies on sustainable investments. The research is also engaging two graduate students to undertake their graduate research with one of the studies having progressed well save for a few challenges as a result of Covid-19 pandemic.

2. Aim of the research.

- *General objective:* By the end of the project, the research findings will contribute towards safeguarding and maintaining the integrity of critical coastal ecosystems (marine and terrestrial) within the LAPSSET Corridor Program area for people, economy and nature.
- *Specific objective 1:* By 2022, there is data and information available to inform planning and decision-making for better environmental governance and sustainable development in the LAPSSET Program area.
- *Specific objective 2:* By 2022, key policy and institutional frameworks are influenced to create an enabling environment for sustainable management of natural resources.

3. Method

We approached this study by conducting a number of sub-topical researches largely undertaken by students undertaking their master research and the project teams. The following subtopics are currently under study albeit at varying degrees of progress at this reporting period.

i) Land use dynamics & Critical ecologically significant areas

The study will entail natural capital assessment and mapping of critical ecologically significant areas. A further trend analysis will be done to ascertain the lost natural capital as a result of the construction of the LAPSSET components in lamu.

ii) Participatory Communication of the LAPSSET work to the host communities

This study is conducted by Alex Kubasu and it incorporates a case study research approach. This method was preferred because it was envisaged as the best suited in capturing community perception in understanding the role of participatory communication in the context of large-scale infrastructural project.

iii) Climate resilient infrastructure

A desktop review is being undertaken to understand the historical and projected climate risks as well as validate this with stakeholders in Lamu. A tool to study the resilience of the LAPSSET infrastructure to climate change/variability will be designed and used to conduct this study. In addition, ground truthing and GIS maps will be developed to establish a vulnerability index for the area.

iv) Livelihoods

A study will be conducted to establish the extent of the impacts of the LAPSSET project on the livelihoods of the host communities. This will involve review of the Resettlement Action Plan Report by LAPSSET on restoration of lost livelihoods

v) Compliance to Environmental and Social safeguards as per the EMP

A consultancy to assess the status and extent of compliance by LAPSSET with the measures prescribed in the EMP and recommend areas for improvement to enhance compliance will be undertaken.

4. Findings/Results

i) Land use dynamics & Critical ecologically significant areas

High resolution satellite imagery acquired, and processing and analysis being undertaken by the GIS experts. Handheld GPS procured to assist in ground truthing the result of the satellite imagery analysis.

ii) Participatory Communication of the LAPSSET work to the host communities

Preliminary findings of the research conducted by Alex Kubasu indicate that a majority of the community in Hindi ward were not adequately involved in the design, planning and implementation of the LAPSSET Project neither were they communicated to adequately the impacts of the project on their livelihoods. This partly explains the legal and street protests that characterized the project during its initial stages

iii) Climate resilient infrastructure

Tools to undertake climate change vulnerability assessment (CCVA) have been developed ready for field survey. The field survey will be undertaken once the travel restrictions have been lifted.

iv) Livelihoods

The study team has already developed tools to undertake the livelihoods study. The study will be jointly undertaken by LCDA, WWF and NEMA.

v) Compliance to Environmental and Social safeguards as per the EMP

Terms of Reference to procure a consultant have already been approved by the management and the recruitment of a consultant is underway.

5. Implications/Applications

Findings from the research will inform decision making by both LCDA and NEMA in regard to sustainable investments by the LAPSSET project. The research will help NEMA in setting standards for current and future large-scale economic developments. Regionally, the findings will inform Marine Spatial Planning and co-management of marine resources.

6. Challenges faced and the realignment of objectives to "ground conditions"

Challenge	Adaptive management
COVID-19 lockdowns, restrictions on gatherings, leading to slow progress of project activities	Prioritizing on desktop studies as well having virtual meetings
Student funding structure (project only without funding for tuition, or pickup of students into projects due to need to get hands on the project research components. There's need for fully funded scholarships in projects with initial adverts for positions and contractual obligations with students. Absence of this led to student despair, student withdrawal, finding of new students and eventually delays in project execution)	Identification of a new student to replace the student who withdrew from the project is at an advanced stage.
Unforeseen procurement delays especially on purchase of aerial imagery for the study area	Virtual meetings for procurement committees put in place to expedite procurement process

The research will be undertaken jointly by WWF – Kenya, National Environment Management Authority (NEMA) and LAPSSET Corridor Development Authority (LCDA). It will be based on robust scientific methodologies to inform policies on sustainable investments. WWF-K will engage two graduate students to assist in undertaking field-based research.

Enhancing Climate Change Adaptation Under the Water-Energy-Food Nexus (ECCA-WEF) in Dar Es Salaam, Mombasa County and Maputo Mozambique

¹Ojoyi M., ¹Kongo V., ²Sbirima D., ³Gaspare L., ⁴Khatali A., ⁵Jumbe A., ⁶Addai B., ⁷Nofel T., ⁸Oulu M., ⁹Guisamulo A.

Partners: Tanzania Water Partnership, Tanzania, Sokoine University of Agriculture, Tanzania, University of Dar es salaam, Tanzania, Environmental and Sustainability Group, East Africa, Department of Environment, Vice President's office, Zanzibar Tanzania, Elite Consult, Ministry of Agriculture Natural Resources Livestock and Fisheries, Zanzibar, University of Nairobi, Kenya and Eduardo Mondlane University, Mozambique

Introduction

The attainment of Sustainable Development Goal (SDG) 13— 'Climate Action'—in Sub-Saharan Africa (SSA) is, to a great measure, dependent on innovations (technological, policy and institutional) governance of water, food, land and energy resources which is recognized, at least implicitly, in the United Nations Agenda 2030 and the African Union's Agenda 2063 as well as various national policy statements of SSA countries. Climate variability and change with its long-term implications for social, economic and ecological systems is an inevitable and urgent challenge in the Coastal region in Africa. Increased occurrence of extreme climatic events brings about negative implications for infrastructure, health, production and economic growth, amongst others.

African coastal cities are more vulnerable from rising sea-levels and extreme weather events because of poor infrastructures development contributed by limited economic and technological capacities. Climate change poses a range of potential threats to African Cities (Dar es Salaam, Mombasa and Maputo) due to their geographical location – at low elevation, below 10 metres above sea level (Awuor et al 2008; UN-Habitat, 2010, 2014). There is a high concentration of people, infrastructure and economic assets which increases the vulnerability of climate hazards in the cities (START Secretariat, et al, 2011); yet cities are not well prepared to meet challenges of urbanization and increased vulnerability to climate-related hazards (Erman, et al., 2019). The climate hazards among urban populations is unevenly distributed, especially lower-income class who tend to live in marginalized lands with a greater risk and low adaptation capacity (START Secretariat, et al., 2011).

The combined effects of current and future climate change impacts are large enough to prevent countries like Tanzania, Kenya and Mozambique from achieving their key social and economic growth and environmental sustainability targets, because large part of their economy is based on climate-sensitive production sectors, such agriculture, water and energy. Investment is required on measures that will

increase the resilience of the water-linked sectors and evaluation of alternative livelihood options in order to improve and sustain the water sector's adaptive capacity to deal with future climatic impacts.

Aim and Objectives

The proposed project aims at enhancing resilience through integrated and participatory knowledge generation, application and governance using a WEF-nexus approach. The nexus approach offers an opportunity to understand and address issues from a cross-sectorial approach. The project will provide a detailed understanding of the relevant and specific needs for coastal zone communities, and respective cities, in integrated resources management in order to strengthen their adaptive capacity to manage climate change risks, to build a resilient and sustainable knowledge applications for decision making on climate change adaptation under a Water-Energy-Food (WEF) nexus approach. The following specific objectives will be addressing the different work packages:

WP1: Water-Energy-Food-Climate change nexus status

Objective 1.1: Analyse the current WEF resource availability, infrastructure, and access in the three cities and interlinkage across sectors in the region

Objective 1. 2: Analyse the WEF resources interlinkages with consequently income levels, poverty index, unemployment and other key related indicators as defined in the national and local development plans;

WP2: Sectoral policies bottleneck in WEF-climate change nexus

Objective 2.1 Investigate the structural factors underpinning WEF governance and interrogate the status and interconnections in existing WEF policies, legislations and institutions among sectors

Objective 2.2 Evaluate decision-making processes that govern management of WEF resources at both national and regional scales;

WP3: Impacts of Climate change on WEF and resilience capacity

Objective 3.1 Determine vulnerability index and mapping of vulnerable communities under WEF-nexus to climate change at landscape and household level

Objective 3.2 Understanding strength of community livelihood systems to absorb shock from climate change and variability and traditional coping strategies under the WEF-nexus

Objective 3.3 Understanding and mapping of the drivers of environmental impacts of climate change

WP4: Develop an all-inclusive scenario analytical framework on sustainable development planning

priorities that can guide future policy and future research on adaptation and resilience to climate change

Outcomes

The project will increase capacity among scientists in participating countries through the project's capacity building activities and will strengthen partnerships among scientists and decision makers in the region. The long-term contribution will entail a good understanding of climate dynamics under the food-water-energy nexus and development of effective adaptation strategies and a contribution to establishment of ecological, economic, social aspects and better policies and compliance with relevant legislation embodied in the water acts of respective countries and international treaties.

Spatial Planning of Climate SMART and Resilient Port Cities in the WIO Region: A case for Mombasa and Durban

Aim

The goal of this study is to bridge key data and information gaps on: i) trends and patterns of land use and land cover change; ii) causes of the observed change in Mombasa, Durban and Moroni port cities in the WIO. Hence, the objectives of the study are:

1. Evaluate the impacts of port development and operations on urban socio-ecology, socio-economy and socio-spatial arrangements.
2. Determine the spatial and temporal changes in LULC in selected port cities and attribute changes to socio-environmental drivers
3. To develop and apply an integrated spatial development framework that can inform both current and future coastal planning and management policy options through simulated development scenarios in the WIO region.

Methods

The project will follow a simplified conceptual analytical framework for operationalizing the spatial planning of climate smart and resilient port cities. The conceptual analytical framework is comprised of four interconnected modules: Firstly, we begin with quantitative data/indicators input from social surveys. Second, the social survey analyses will be used to spatially map the identified socioeconomic indicators; third, is predictive modelling of land use and spatial planning; and fourth, the prototyping the decision support system. The methodology presented here demonstrates the advantage of integrating perceived land use with a land cover classification derived from high-resolution satellite imagery. The resulting composite dataset exhibits the ability to capture landscape features (integrating land use and land cover), indices, and a related typology congruent with existing socio-geographic units around port cities.

Anticipated Results

Having an integrated spatial development framework that can inform both current and future coastal planning and management policy options

Implications or Applications

Spatial/temporal data and information on land-use and land cover change in WIO port cities is critical for informing planning of port cities, while accounting for climate change risks and sustainable development. The port/city mega-projects could be altering society's consumption patterns, economic activities, perceptions and use of space in a manner that is yet to be discovered notwithstanding the ecological changes.

Realizing A Blue Urban Agenda for Coastal Cities In Kenya Through Sustainable Production And Consumption Policy And Governance

By Dr Akunga Momanyi,¹

ABSTRACT

In 2016, participating governments at the Third United Nations Conference on Housing and Sustainable Urban Development adopted the *New Urban Agenda* (“the Agenda”) which sets out a new global paradigm for urban governance and sustainable development. Kenya domesticated the Agenda in 2017 to contextualize the realities and complexities of its urban areas. The Agenda contains an implementation strategy for the period 2016-2036 with eight (8) priority action areas for all cities and urban areas, including addressing unsustainable consumption and production patterns.

Cities account for about 60 percent of total global domestic material consumption of raw materials for building and other uses, including sand, gravel, iron ore, coal and wood. Human populations in cities and urban areas are predicted to increase exponentially until 2050 resulting in higher annual resource requirements. In coastal cities, the impacts of this growth if not well planned for will be more severe because of resultant adverse effects on marine and coastal ecosystems which are vital for food security, alleviating poverty and advancing the blue economy. Therefore, unsustainable consumption and production patterns in coastal cities, for example, through destruction of mangrove areas for development, increased uptake and consumption of fresh water resources, unsustainable use of other natural resources, increased generation of domestic and industrial wastes such as plastics, litter, sewage and effluents, and contamination of ground and surface water translates to socio-economic vulnerability which, if not addressed, will lead to further environmental pollution and degradation, biodiversity losses, increasing resource scarcity, as well as inequality and persistent poverty.

It is important that coastal cities in Kenya reduce natural resource consumption and waste production footprints and improve land-use efficiencies so that negative environmental impacts are minimized. Therefore, an urban agenda tailored for Kenya’s coastal cities and urban areas is necessary. This proposal terms it as the *Blue Urban Agenda*.

The *Blue Urban Agenda* will focus on addressing three (3) unsustainable consumption and patterns that

¹ Maritime Centre/FishForce Academy, School of Law, University of Nairobi, Kenya.

affect ocean sustainability. These are; the unsustainable management and inefficient use of natural resources, unsustainable management of chemical and other wastes, and food wastage and food losses as reflected in Goal 12 of 2030 Agenda for Sustainable Development. Thus, this proposal builds on knowledge pertaining to transitions in consumption and production patterns for sustainable cities with a focus on policy and governance.

The **main aim** of this research is to investigate how to integrate sustainable consumption and production (SCP) in Kenya's coastal cities and urban areas, mainly through the coastal counties' development plans, urban planning, legislation, regulatory frameworks, investments and policy decisions. In this regard, the research will analyze global, regional, and sub-national national frameworks on SCP with a view to address policy, legal and institutional gaps and possible interventions. It will also seek to present good practices on how SCP policy and governance can support the development and implementation of Blue Urban Agenda for Kenya's coastal region, and present possibilities for replication elsewhere in the Western Indian Ocean (WIO) region.

In terms of **approach and methodology**, the research is designed to be science-informed, cross-sectoral, actively involving stakeholders through co-creation processes, and transformative by simultaneously addressing multiple sectors and objectives. It also uses a mixed methodological approach encompassing doctrinal and qualitative research methods, and will utilize desktop and field studies, as well as both primary and secondary sources.

In terms of **application**, the results and outcomes of the project are expected to provide innovative policy and governance pathways for SCP that will aid Kenya's coastal cities and urban areas in the coastal region to develop and implement a sustainable Blue Urban Agenda for the country, with possible replication elsewhere in the WIO region.