



DEVELOPMENT
CORRIDORS
PARTNERSHIP

Stakeholder Workshop Report

4th April 2019

Intercontinental Hotel, Nairobi, Kenya



The Development Corridors Partnership is a research and capacity building collaboration among institutions from China, Kenya, Tanzania, and the UK. Its main purpose is to deliver effective research and build capacity so development corridor decision-making can be based on sound scientific evidence and effective use of available planning tools and procedures.

Partners



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Citation

Development Corridors Partnership (2019). Stakeholder Workshop Report. Contributing authors: Olago. D, Waruingi L., Nyumba T., Sang C., Githiora Y., Kago F., Owira G., Mwangi M., and Gichoya F. Institute for Climate Change and Adaptation (ICCA) University of Nairobi and African Conservation Centre (ACC), Nairobi, Kenya. e-Published by UNEP-WCMC, Cambridge, UK.

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Executive Summary

This report presents the outcomes of the Development Corridor Partnership (DCP) Stakeholder Workshop held on 4th April 2019 at the Hotel Intercontinental in Nairobi, Kenya. The workshop was part of a comprehensive approach adopted by the DCP project in Kenya to bring together different actors involved with the development corridors (DCs) in the country. A development corridor is a geographical area identified as a priority for investment to catalyse economic growth and development. This is usually through the creation of infrastructure such as railways or pipelines and are designed to attract new investments, boost agricultural production, open access to natural resources and facilitate their export to world markets.

The main goal of the stakeholder workshop was to bring together key stakeholders in development corridors in Kenya to discuss the results of the scoping report on development corridors in Kenya; learn from key government institutions and civil societies on their current and future activities around development corridors; and to prioritise research and capacity needs and identify key partnerships for the DCP research in Kenya.

Participants and workshop format

The workshop brought together representatives from local communities, government ministries, parastatals, county government officials, national and international civil society organizations, private sector, international financial institutions, academic and research institutions, independent experts and professionals, regulators and international organisations. The workshop adopted an interactive format, consisting of formal presentations from corridor institutions and natural resource conservation, research and management institutions, followed by discussions and breakout group discussion around selected themes. The presentations focused on the status, investment and implementation of corridors in Kenya, Ethiopia and Uganda; perspectives from corridor institutions in Kenya; and social and ecological considerations around corridors.

Thematic group discussions

Five thematic areas were explored and included: Biodiversity; Water Resources; Decision Making; Capacity Building; and Stakeholder Engagement. The breakout group discussions established a number of issues that can be summarised as:

1. Emphasis on evidence-based decision making at different levels. Collaboration, data sharing and efficient dissemination of research results can deliver maximum impacts and support decision making.
2. Robust involvement of stakeholders can lead to improved outcomes for conservation/environment. Cross-sectoral collaboration and multidisciplinary approach to developmental corridor design, implementation and maintenance offers an opportunity to build a wide base and support from stakeholders.
3. Issues related to transferring models from one region to another. The need to apply lessons learnt from other components of the work (e.g. in phase 1 of SGR to phase 2 of SGR) and experiences from other regions are important in building sustainability and resilience.
4. Water and other natural resources as the enablers of development programmes. Availability of improved tools and mechanisms for cost-benefit analysis and creation of safeguards in these processes is central to understanding the contribution of

natural resources to the development programmes. Furthermore, this will enhance an appreciation of the cumulative impacts of the development projects.

5. Role and working model of Chinese stakeholders. A clear understanding of how Chinese stakeholders work in Africa, how local factors impact on the success of these models and possibly develop a new model to improve the delivery of benefits.

At the end of the workshop, the following observations were made:

1. This workshop offered a rare platform for various government and non-state agencies, and hence an opportunity to take up particular issues through a multi-stakeholder team.
2. Knowledge generated through the project should be shared with the communities who usually don't have access to this information.
3. There are research gaps within the implementing agencies and they welcome sharing of findings so they can incorporate them in specific on-going development such as SGR phase 2b and 2c. Sharing findings, particularly those with high need for the information to help them improve their projects.
4. Developing new guidelines on how to interact with developers is key for collaboration. We should go back to the lessons that have been learned and allow organizations like KWS to share their experiences.
5. Ensure that development corridors become green corridors
6. Need to bring in the private sector and developers into future meetings. Need political will to influence proposed sections such as Bechtel expressway which is passing through wildlife ranches.
7. Proposal to form an international working group on development corridors

The DCP team is currently working on a comprehensive research approach and will be consulting with as wide a stakeholder base as possible on the interactions between development corridors and water resources and biodiversity.

Acronyms

ACC	African Conservation Centre
ACLIE	African Conference on Linear Infrastructure and Ecology
APAC	African Protected Areas Congress
ASAL	Arid and Semi-Arid Lands (ASAL)
AU	African Union
BRT	Bus Rapid Transit
CCCC	China Communications Construction Company
CETRAD	Centre for Training and Integrated Research in ASAL Development
CNN	Cable News Network
CRBC	China Road and Bridge Corporation
CREC	China Railway Engineering Corporation
DCP	Development Corridors Partnership Project
EIA	Environmental Impact Assessment
EIIN	Ewaso Infrastructure Information Network
EIK	Environment Institute of Kenya
EMCA	Environmental Management and Co-ordination Act
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
FEWS	Flood Early Warning Systems
GDC	Geothermal Development Company
GOK	Government of Kenya
HIV	Human Immunodeficiency Virus
ICCA	Institute for Climate Change and Adaptation
ICT	Information Communication Technology
IFC	International Finance Corporation
IFC	International Finance Corporation
KenGEN	Kenya Electricity Generating Company
KeNHA	Kenya National Highways Authority
KETRACO	Kenya Electricity Transmission Company
KFS	Kenya Forest Service
KRC	Kenya Railways Corporation
KRC	Kenya Railway Corporation
KWS	Kenya Wildlife Service
KWTA	Kenya Water Towers Agency
LAPSSET	Lamu Port-South Sudan-Ethiopia Transport Corridor
MH	Mitigation Hierarchy
NNP	Nairobi National Park
NRT	Northern Rangelands Trust
PIDA	Program Infrastructure Development for Africa
RAP	Resettlement Action Plan
RTI	Railway Training Institute
SAGCOT	Southern Agricultural Growth Corridor
SEA	Strategic Environmental Assessment
SGR	Standard Gauge Railway
SOE	State Owned Enterprises
UK GCRF	United Kingdom Global Challenges Research Fund
UN	United Nations

UON	University of University
WCMC	World Conservation Monitoring Centre
WRA	Water Resources Authority
WWF	World Wide Fund for nature

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1. Background

A development corridor is an, often linear, geographical area identified as a priority for investments aimed to promote economic growth and development. The concept of 'development corridors' is increasingly used to support economic growth in Africa, driven by international as well as national interests. Development corridors have enormous development potential yet they face significant challenges. These include uneven development impacts, traversing so-called "underutilized" lands that are generally already populated and managed, and vulnerable to climate change. At the same time, there is a lack of appropriate research capacity on development corridors in the region. There are currently no programmes in place to enhance the capacity of local researchers, think tanks informing international investors, and UK researchers to support the planning, designing and implementation of sustainable and resilient development corridors in East Africa.

It is against this backdrop that the Development Corridors Partnership (DCP) was initiated bringing together partners from the UK, Kenya, Tanzania and China. The DCP aims to address this gap through timely engagement with decision makers and developing relevant capacity within research institutions and researchers in eastern Africa, China and the UK. The ultimate goal is to generate decision-relevant evidence and feed it into key decision making processes in order to improve the sustainable development outcomes of investments in development corridors in East Africa and elsewhere in the long term. The project is focused on corridors in eastern Africa, particularly the Standard Gauge Railway (SGR) and the Lamu Port-South Sudan-Ethiopia Transport Corridor (LAPSSET) in Kenya; and the Southern Agricultural Growth



Figure 1: Kenya's Standard Gauge Railway. Source: Francis Kago

Corridor (SAGCOT) of Tanzania. The work is structured around three outcomes and six work packages, fully integrating research and capacity development, and significant policy engagement and outreach. The outcomes and work packages envisioned under the DCP project are:

1. **Outcome 1:** enhanced in-country capacity and training for researchers at different levels

Work Package 1: Training courses

2. **Outcome 2:** generation of cross disciplinary research that reaches and influences decision making processes

Work Package 2: Natural Capital and Ecosystem Services assessment and valuation

Work Package 3: Scenario analysis of the development potential of corridors

Work Package 4: Political and practical analysis and implementation of corridors

3. **Outcome 3:** more sustainable land use planning based on the outputs of the supported research programmes
Work Package 5: Co-learning and planning events in eastern Africa.
Work Package 6: Co-learning and investment planning events in China.
Work Package 7: Outreach and Policy linkage.

On 4th April 2019, the DCP held a high level stakeholder workshop at the Intercontinental Hotel, Nairobi, Kenya. The workshop brought together over 80 participants drawn from the government ministries and agencies, research institutions, non-governmental organisations, funding agencies, infrastructure contractors, independent researchers, community leaders, media and professional bodies. The main objective of the workshop was to set a platform where all the key stakeholders can engage with a view to come up with solutions that will promote resilient and sustainable development in Kenya and other African countries. At the end of the workshop it was clear that there was lack of coordination between the various stakeholders; a lot of overlaps and conflicting roles and policies in government institutions; a disconnect between community and government expectations; challenges in cross-sectoral collaboration and stakeholder engagement by implementing organizations; and data availability and accessibility. The workshop recommended that stakeholders should collaborate in sharing data and carrying out multidisciplinary research; and address overlaps in government agencies' mandate. Finally, there was a proposal to form an international working group on development corridors which would include all the key stakeholders. This report captures the key highlights of the workshop whose primary organizers were the University of Nairobi's Institute of Climate Change and Adaptation, and the African Conservation Centre.

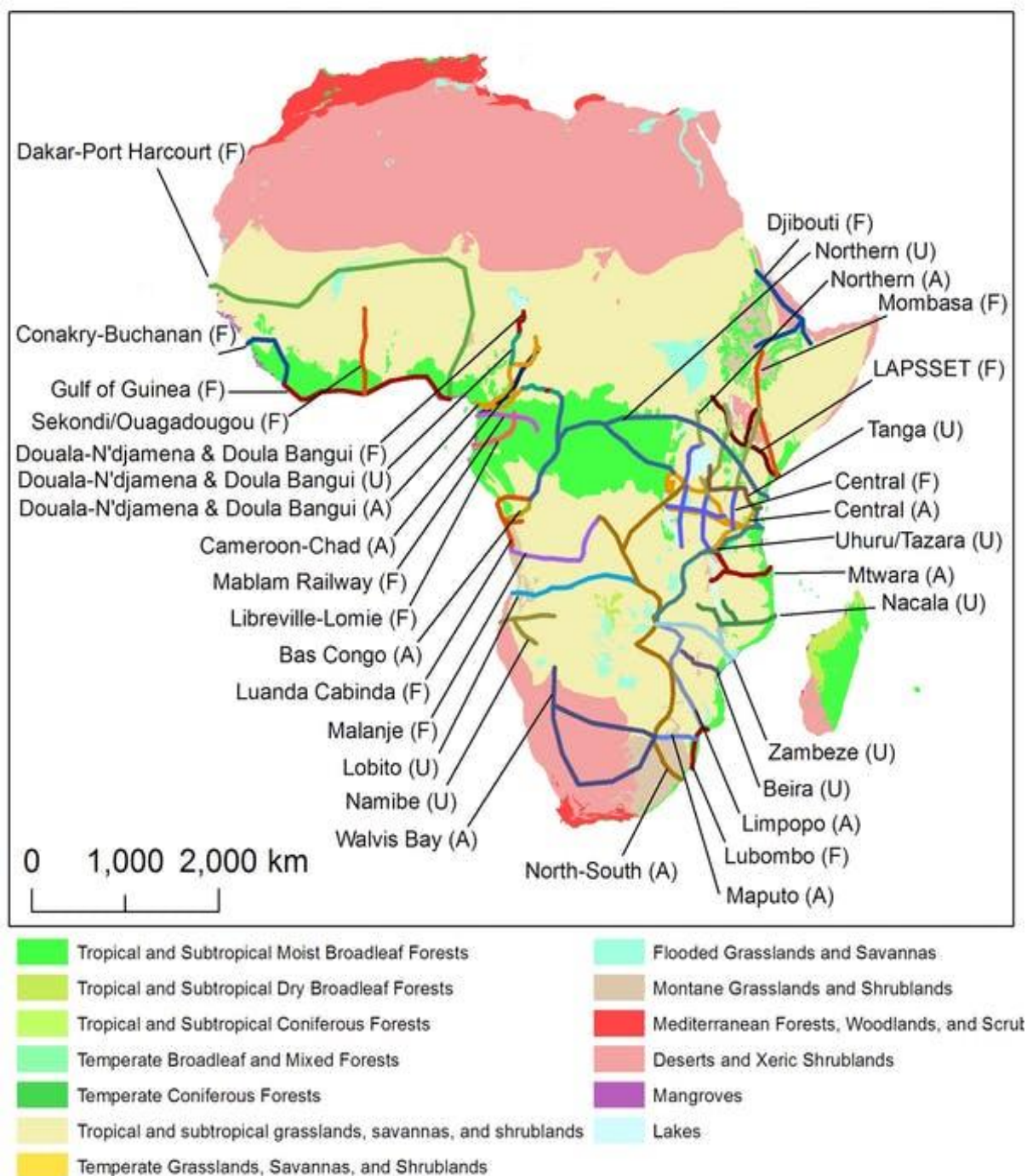


Figure 2: Status of 33 Development Corridors traversing diverse ecosystems in African in 2015. Active (A), Planned (F) and Upgrade Planned (U). (Source: Laurance et al. 2015)¹.

¹ Laurance, W.F., Sloan, S., Weng, L., and Sayer, J.A., 2015. Estimating the Environmental Costs of Africa's Massive 'development Corridors'. *Current Biology*, 25 (24), 3202–3208.

2. Welcome and Opening Addresses

Dr. George Outa, the workshop moderator began the workshop by introducing the two DCP Country Principal Investigators, Professor Daniel Olago and Ms. Lucy Waruingi. He acknowledged the presence of the chief guest, Director of Multilateral Environment Agreements in the Ministry of Environment and Forestry, Mr. Richard Mwendandu. He also welcomed the Director of the Africa Office of UN Environment, Dr. Juliette



Figure 3: Dr George Outa, University of Nairobi

Biao Koudenoukpo, the Deputy Vice-Chancellor, Research, Production and Extension at the University of Nairobi, Prof Madara Ogot and the Director of the Institute for Climate Change and Adaptation at the University of Nairobi Professor Shem Wandiga. He then invited introductions from the workshop participants. The participants represented a wide array of stakeholders, including government ministries and agencies, research institutions, non-governmental organisations, funding agencies, infrastructure contractors, independent researchers, community leaders, media and professional bodies.

2.1. Welcoming Remarks

Professor Wandiga began his welcoming remarks with an overview of the Institute for Climate Change and Adaptation (ICCA), UoN. Prof. Wandiga noted that during the six years of its existence, ICCA has carried out a number of research projects with other institutions across the world. Further, he said the institution currently has over 240 masters and PhD students drawn mostly from Africa, as well as Asia and Europe, some of whom were addressing environmental

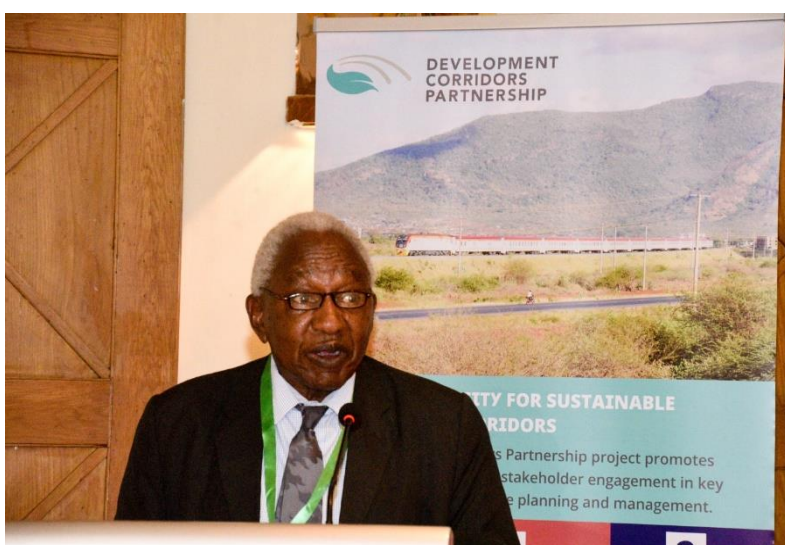


Figure 4: Prof. Shem Wandiga, Director – Institute for Climate Change and Adaptation (ICCA), University of Nairobi

conservation and biodiversity issues in the context of climate change and adaptation. He

noted that the ICCA, which promotes transdisciplinary approaches in teaching and research, has been accepted as a member of the African Research University Alliances' Centre of Excellence for Climate and Development. Prof. Wandiga also noted that the institute aspires to fill knowledge gaps in the conservation of environment and protection of biodiversity. He noted that development corridors, such as the Standard Railway Gauge (SGR), are closely linked to the history of Kenya's socio-economic development, and gave the predecessor Kenya Railways as an example. The construction of Kenya-Uganda railway at the beginning of the 20th century., brought about many changes such as increased population that have had impact on the environment. He further noted that the impacts of the implementation of railway and other development corridors, could worsen especially in arid and semi-arid areas. Prof. Wandiga observed that emerging towns, for example, will need related studies on sustainable and efficient water supply to avoid water crisis. He observed that the DCP project will therefore harness scientific knowledge relevant to enhancing the resilience of communities and improve their livelihoods.

2.2. Address from the Vice-Chancellor, University of Nairobi

The Vice-Chancellor of the University of Nairobi, Prof. Peter Mbithi was represented by the Deputy Vice-Chancellor for Research, Production and Extension, Prof. Madara Ogot, who read his speech. Prof. Ogot began by welcoming participants and registered the university's pleasure at hosting the DCP stakeholder workshop, terming it very timely. He especially thanked Prof. Daniel Olago from ICCA and Ms. Lucy Waruingi from the



Figure 5: Prof. Madara Ogot, University of Nairobi

ACC for the actualisation of the DCP stakeholder workshop. He asserted that transport infrastructure has brought rapid growth which impacts on social-ecological systems through habitat degradation and fragmentation, accelerates the loss of biodiversity and water resources, changes livelihood regimes and land tenure systems, and sometimes results in unsustainable and incompatible land use activities, among others. He emphasized that the university is committed to providing quality education and undertaking research to assist in addressing these issues, a position he said resonated with the DCP's research objectives. He noted that the DCP intends to build capacities in research to address these complex and inter-woven issues. This will ensure that evidence-based sustainable development is incorporated into the policy and decision-making processes and build the capacities of key influencers in corridor design and implementation to become more engaged in considering natural capital in development planning. He emphasised that for the DCP to realise its objectives, it is important to engage stakeholders as outlined in the project's scoping report and that scientific research should make recommendations that are responsive to

stakeholders' needs. Finally, he thanked the project funders, the UN Environment and the workshop organisers and wished participants fruitful deliberations throughout the workshop.

2.3. Keynote Address from UN Environment, Africa Division



Figure 6: Dr. Julliette Biao Koudenoukpo, UN Environment

The keynote address was given by Dr. Julliette Biao Koudenoukpo of the UN Environment. In her introduction, she stated that, while environmental protection and development have been viewed as competing concerns, they should in fact be mutually supportive. She also noted that ecosystems provide crucial services that support human wellbeing. She observed that the achievement of good development in the face of climate change and environmental stressors requires sustainable infrastructure. This, she

emphasised, would enhance the quality of life of citizens and protect vital natural resources. She observed that the journey of transforming Kenya and the region as a whole largely depends on the government's commitment to providing an enabling and safe environment for each citizen to realize their full potential including the ability to improve their livelihoods, that of their communities, and that of the nation at large.

Furthermore, she noted that infrastructure development is a key enabler for the connectedness of agricultural areas with urban centres which are characterised by concentrations of activities such as seaports, industrial centres and regional distribution centres. In particular, she observed that linear infrastructure enhances competitiveness by reducing the cost of transport and of doing business, facilitates start-ups and operation of business ventures, and opens up new areas that are key to tourism activities thereby revitalizing economies. She expressed optimism that the expansion of road networks, railways, waterways, pipelines, power lines and cable infrastructure will create direct, positive impacts for all.

Dr. Biao pointed out that up to 90 per cent of new road construction in developing countries occurs in landscapes that are exceptionally high in biodiversity. This, she noted, is a threat to the existence of wildlife in their natural environment and by extension, nature-based sectors such as tourism². However, she observed that although the tourism industry depends on infrastructure development, this cannot happen at the expense of the very resource tourists come to enjoy. She stated that it would be in the interest of all countries including Kenya to ensure that the much-needed improvements to their infrastructure did not threaten this precious resource.

Dr. Biao reiterated the purpose and goals of the DCP project and how it was set out “*not to stand in the way of development but to find best practices based on the principles of*

² As much as 80% of tourism revenue in Kenya is from wildlife and nature-based tourism. Therefore, wildlife is a precious resource to Kenya's economy. According to Kenya's Tourism Blueprint 2030, the tourism industry accounts for 10% of Gross Domestic Product and 11% of all jobs in Kenya.

sustainability, resilience and inclusivity” through interdisciplinary research. Therefore, she observed that the stakeholder consultation workshop was a key step in that journey and encouraged participants to engage and deliberate constructively on pertinent issues affecting development corridors and wildlife.

In her concluding remarks, Dr. Biao affirmed the commitment of the UN Environment to support the Kenyan Government in her efforts to find the balance between conservation and development. She reported that the UN Environment was already working with the Cabinet Secretary of Tourism and Wildlife to organise and facilitate a series of inter-ministerial dialogues aimed at establishing a forum for cross-sectoral engagement in infrastructural planning and development. She expressed her conviction that this is the appropriate path towards maximizing the benefits of infrastructural development to Kenya’s economy as well as the contribution that wildlife makes to it.

2.4. Opening Speech from Ministry of Environment and Forestry

The opening speech was made on behalf of the Chief Guest, Dr. Ibrahim Mohammed, the Principal Secretary from the Ministry of Environment and Forestry by Mr. Richard Mwendandu. He began by acknowledging that infrastructure in developing countries connects cities and accommodates human activities, thereby promoting socio-economic growth and development. However, Mr. Mwendandu noted that the planning, design and implementation of infrastructure generate negative impacts such as carbon emissions and habitat destruction. He stressed that there was a need to study these impacts to inform more sustainable developments. Noting that there has been some focus in the recent past on some of the negative impacts of these developments, particularly on wildlife, Mr. Mwendandu observed that impacts on habitat edges, natural ecological processes and disruption of biodiversity and wildlife populations still needed further enquiry. He called for the development of improved tools and mechanisms for cost-benefit analysis and the creation of safeguards in development planning and implementation processes. He commended the DCP project initiators and expressed optimism that the project will build capacity to address these impacts and the key issues relating to corridor planning and management. He acknowledged the rich mix of the workshop participants and expressed his confidence in their ability to deliberate effectively on how to develop sustainable infrastructure which delivers benefits while safeguarding the environment for posterity. He concluded by declaring the meeting open.

3. Overview of the Development Corridors Partnership, Lucy Waruingi, African Conservation Centre (ACC)



Figure 7: Lucy Waruingi, DCP Kenya Country Principal Investigator and ACC Executive Director

Ms. Lucy Waruingi introduced the Development Corridors Partnership (DCP), which is a UK Global Challenges Research Fund (GCRF) funded project led by the UN Environment- World Conservation Monitoring Centre (WCMC). The partnership comprises UK universities (University of Cambridge, University of York and London School of Economics), Kenyan Institutions (University of

Nairobi and African Conservation Centre), Chinese think tanks (Chinese Academy of Agricultural Sciences, Chinese Academy of International Trade and Economic Cooperation, and the National Centre for Climate Change Strategy and International Cooperation), and Tanzanian institutions (WWF-Tanzania and Sokoine University of Agriculture).

She defined development corridors, in the context of the DCP project, as *linear, geographical area identified as a priority for investment to catalyse economic growth and development*. She then outlined the DCP work packages as: training courses to enhance in-country capacity and training of researchers, natural capital and ecosystem services assessment and valuation, scenario analysis and modelling, political and practical analysis and implementation of corridors, co-learning and planning events in Africa and China, and outreach and policy linkage.

Ms. Waruingi observed that the economic pillar of Vision 2030 underscores the importance of infrastructure in Kenya's development. The pillar also recognizes that wildlife corridors and dispersal areas are critical to securing tourism, which is Kenya's second highest foreign exchange earner. However, infrastructure development in some of these areas negatively affects wildlife and resources that support the ecosystems. She cited the Phase 2A stretch of the SGR on Nairobi National Park (NNP) as one key area that requires monitoring. Some of these impacts have been highlighted in the DCP scoping study report which focused on the SGR and LAPSSET corridors. In addition to studying corridor impacts, the scoping study also mapped stakeholders and their influence and the planning and implementation process of the corridors.



Figure 8: Kenya's SGR

Ms. Waruingi further noted that development corridors planning is always done sector by sector. In contrast, she emphasised that the DCP was more focused on an integrated approach that will enable and inspire cross-sectoral and multidisciplinary research and collaboration. She acknowledged that the workshop participation and meeting was in itself very cross-sectoral in nature with participation from roads, rail, highways energy and oil

pipeline companies and offered an opportunity for engagement in DC planning, designing and implementation between government agencies and other concerned stakeholders.

Finally, Ms. Waruingi stated that the DCP will assess and document the current and future impacts of DCs on social-ecological systems, including aspects such as displacement of people, loss of job opportunities, impacts on access, provision and supply of water along the corridors, and scenario analysis for land use transitions. The results will be useful for spatial planning for counties, supporting dialogue in a timely manner, engagement of government agencies, engagement of multiple stakeholders, building the capacity of various players, and widely sharing the knowledge, much of which already exists.

4. Workshop Presentations

4.1. Development Corridors: Status, Investment and Implementation

The morning session began with a set of presentations setting the scene for the day's discussions. These presentations focused on the development corridors in Kenya, particularly, the SGR and the LAPSSET, and the development and expansion of highways in the country. An overview of the Chinese investment models in infrastructure was explored and how the models have been implemented in Africa.

4.1.1. Development Corridors in Kenya: A scoping study - Dr. Nyumba Tobias, African Conservation Centre (ACC)



Figure 9: Dr. Tobias Nyumba, Post-Doctoral Research Fellow, DCP Project

Dr. Nyumba outlined the scope and objectives of the scoping study. The study established the significance of infrastructure development in the country and its anchorage in the country's development agenda and regional economic growth interests. The study established that the SGR and LAPSSET corridors and related projects traversed key biodiversity areas such as: protected areas and community and private

conservancies and forests; water resources including surface and groundwater sources; remote and fragile ecosystems characterised by poor climatic conditions, low human population, poor and marginalised communities. This, he noted, posed an imminent and potential threat to the survival of wildlife species, the quality and quantity of underground and surface water resources and access, and the use of natural resources. Furthermore, the corridors drew a diverse array of stakeholders, leading to disputes, communication challenges and decision-making issues among others.

The key challenges identified in the study included: inadequate knowledge and data on the unforeseen and unintended impacts of corridors on biodiversity; limited knowledge and data on inter-relationships and interdependencies between socio-ecological systems and resources; and limited knowledge on the current and potential impacts of the corridors on communities. Other issues included disputes between central and county government, lack of effective communication, inefficient enforcement and regulation, and inadequate capacity in sustainable corridor development processes. Furthermore, the study identified several research gaps, including in decision-making processes, biodiversity impact and monitoring, water supply-demand assessments, livelihood impacts, climate change adaptation, and land use dynamics in the corridors.

Meanwhile, capacity gaps identified included: poor access to and availability of information to local communities, inadequate skills training for local professionals in EIAs and SEAs, training for regulators, and training on climate change adaptation and resilience and participatory scenario analysis. In his closing remarks, Dr. Nyumba emphasised that development corridors had significant benefits which could be maximised and challenges which could be addressed if they were planned and implemented through an integrated approach using sound policies, plans and practices. He called on the stakeholders to embrace co-production of knowledge and tools to support the identified and stated infrastructure development and conservation needs through the DCP platform.

4.1.2. Is China Building Africa? Perspectives from an Independent Researcher - Dr. Zhengli Huang, University of Sheffield

Dr. Zhengli Huang (an independent researcher affiliated to the University of Sheffield, UK) outlined China's infrastructure investment and construction models and how these are applied in the African infrastructure development context. She stated that the Chinese construction sector is dominated by the State Owned Enterprises (SOEs) which are partially owned by the government. However,



Figure 10: Dr. Zhengli Huang, Independent Researcher

they do not have political influence in the decision-making process. The SOEs have the capacity to mobilise funds from banks such as China Development Bank and Export-Import Bank of China (Exim Bank) whose mandates are overseas investment. Unlike other multilateral financial institutions, the SOEs are not aid agencies and are usually profit-driven.

Dr. Zhengli pointed out that although numerous SOEs exist, few of them have experience working in Africa. Consequently, SOEs such as China Road and Bridge Corporation (CRBC), China Communications Construction Company (CCCC), China Railway Group Limited and China Railway Engineering Corporation (CREC) tend to dominate the construction industry. This, she noted, does not stop other SOEs from taking up construction projects in Africa who more often end up with “*controversial headlines*”. Despite their dominance, the SOEs only often play more of a contractor role in the projects.

In concluding her presentation, Dr. Zhengli observed that the Chinese model was successful in China since the local government had total control of the land and the capacity to negotiate with banks using the land as collateral. She averred that many of the SOEs come to Africa with the same model in mind whereas the situation here is very different. She disabused the notion of “the scramble for Africa” as presented in current media and other

discourses and stated it could just be a case of “elevation of short term over long term goals, empowerment of contractors over planning agencies, and territorialisation of executive power”. Finally, she pointed out that the current challenges in infrastructure development in Kenya and other parts of Africa could be attributed to what she termed as “conventional planning with different visions; conventional planning with unconventional implementation mechanism; and planned infrastructure in unplanned cities”.

4.1.3. Discussions

At the end of the presentations, Dr. Outa opened up the floor for discussions, comments and questions around the issues arising from the presentations. The first comment raised by Dr. Cornelius Okello (Machakos University) was that the DCP team would be well advised to consider land use change from rural to urban systems occasioned by the migration and settlement along the corridors and how this impacts on water demand and supply and provision of sewerage services. In addition, Dr. Eric Kioko (Kenyatta University) stated that over the years, he has worked in Isiolo and observed a disconnect between LAPSET and the local community expectations. He stated that the projects seemed to ignore or neglect the needs and aspirations of the local communities.



Figure 11: SGR line traversing the landscape

Incidents of massive land claims by big players and institutions such as universities and elite captures led to land privatisation and speculation. On her part, Dr. Kes Smith (ACC) raised questions around land ownership as they relate to insurances around Chinese supported infrastructure projects in Sri Lanka and Zambia where there are fears of Chinese takeover due to non-payment of loans. The role of corruption in preventing local communities from benefiting from

the development corridor projects and alternative model to the land collateralization model used by the Chinese in financing infrastructure projects in Africa were questioned by Arielles Emmett (American Society of Journalists and Authors). Meanwhile, Dr. Mwangi Githiru (Wildlife Works) raised a concern around the interactions between science and policy, particularly if and how scholars were linking with decision-makers at the policy level. He further inquired if there were adequate data to enable participatory scenario modelling that can be replicated in biodiversity-rich areas. Finally, Dr. Githiru asked if there were enforceable measures that would ensure that these developments were not implemented until certain conditions were met.

In response to these issues, Dr. Nyumba observed that more often than not the planned infrastructure tends to have unplanned developments spring up around them, and this is not always adequately captured in the planning (further comments in Zhengli's presentation above). He stated that, currently, there is no systematic study that has highlighted the linkages between benefits that meet expectations of the communities and the outcomes of the corridor projects. The DCP will undertake a detailed study to address this disconnect. To address corruption, Dr. Nyumba stated that the DCP project will aim to integrate some of the

weaknesses that perpetuate corruption to see how the development can be better informed. The research will be done through co-production with stakeholders so as to have maximum impact. Dr. Nyumba noted that a number of institutions have enough data but there was a need to share these data and experiences between institutions so as to support planning for these developments.

Dr. Jessica (DCP Postdoctoral Research Fellow) stated that the DCP team is currently undertaking a participatory scenario planning with communities and experts to develop plausible trajectories 30 years into the future and called for more participation and engagement with the project. Finally, Dr. Zhengli noted that unlike the Chinese model, the important thing is not the use of the land as collateral but the ability to have land capture to deliver maximum benefits from the projects. The public sector is meant to be pro-public and this is the mind-set in China. Therefore, African countries need to establish how to generate public interest in development and enhance transparency so everyone can understand what is happening.

4.2. Perspectives from Corridor Institutions

The mid-morning session began with presentations from key corridor institutions and the Kenya Wildlife Service (KWS). These included the Kenya Electricity Generating Company (Kengen), Kenya Railways Corporation (KRC) and Kenya National Highways Authority (KeNHA).

4.2.1. Geothermal Development Agenda in Kenya - Eng. Ronoh Kibet, Kenya Electricity Generating Company (KenGen)

Eng. Ronoh began by giving an overview of how geothermal energy is generated and pointed out that geothermal energy has only been harnessed in a few locations across the globe with Kenya being the world's 9th largest geothermal power producer and 1st in Africa. In Kenya, geothermal energy has been produced in the Rift valley region. Within the energy structure in Kenya (Generation, Transmission and Distribution), KenGen falls under the energy generation role. In order to achieve its objectives, KenGen has an installed energy generation capacity of 1631 MW. In terms of mode of energy generation in Kenya, 90% of power is renewable. Meanwhile, 40% of the energy comes geothermal energy, 35% is hydro- generated, 13% is from wind power and 2% is solar energy. KenGen commits to the Big Four agenda through energy development that ensures the objectives of the agenda are achieved. In terms of social and environmental concerns, KenGen has worked with KWS to design environmentally friendly pipes. He stated that over the years, they have moved from "brown" to "green" pipes to blend



Figure 12: Eng. Ronoh Kibet, KenGen

He stated that over the years, they have moved from "brown" to "green" pipes to blend

with the environment. To address the impacts of their projects on the local communities, Eng. Ronoh stated that KenGen developed a Resettlement Action Plan (RAP) to enhance co-existence with the project affected persons. They also developed a stakeholder coordination committee to enhance conflict resolution, sharing of information, and institute benefit-sharing programmes such as scholarships, employment among others.

4.2.2. Building capacity for sustainable development corridors in Africa - Eng. Walter Ochieng, Kenya Wildlife Service (KWS)



Figure 13: Eng. Walter Ochieng, KWS

Eng. Ochieng started by highlighting that the KWS has the mandate to maintain roads that support conservation and tourism. His talk focused on building capacity for sustainable development, infrastructure demand in Africa, Africa's future plans for infrastructure, and impacts of mega construction projects. Citing Silvius *et al.* (2014)³, he stated that sustainability should be routed in capacity

building of key personnel involved in the implementation of mega infrastructure projects and appreciation of integration and transferability of ecological equity during project development stages. He noted that the African continent has a deficit in infrastructure e.g. the road network coverage is 204 km per 1000 sq. km which is far below the 944 km per 1000 sq. km worldwide. Kenya is at 305 km per 1000 sq. km which is still below the world average. To address this, the African Union (AU) Agenda 2063 aims to interlink Africa using infrastructure development anchored in the Program Infrastructure Development for Africa (PIDA) which covers a spectrum of key sectors such as transport, energy, water, and information technology (ICT broadband and fibre optics). Drawing comparisons from the challenge provided by the copper boom and the Berkeley Pit in America where a boom in resource extraction led to permanent damage, Eng. Ochieng wondered whether the current infrastructure construction boom in Africa will lead to a bust or a collapse.

Eng. Ochieng referenced Flyvbjerg (2011)⁴ who observed that “mega infrastructure projects face a common disease of ‘over budget, over time, over and over again’”. This leads to financial impacts on taxpayers and other investors funding major projects. He stressed on the importance of learning from past mistakes and whose damage we have seen e.g. through road-kills on our highways, and doing things better than have been done in previous

³ Silvius, A.J. Gilbert & Schipper, R.P.J. (2014). Sustainability in Project Management Competencies: Analysing the Competence Gap of Project Managers. *Journal of Human Resource and Sustainability Studies*. 2. 40-58. 10.4236/jhrss.2014.22005.

⁴ Flyvbjerg, B. (2011). *Over budget, over time, over and over again*. In Morris, P. W. G., Pinto, J. K., & Söderlund, J. (Eds.), *Oxford handbook of project management* (pp. 321–344). Oxford, UK: Oxford University Press.

decades. He laid emphasis on the impacts of the mega-infrastructure developments on rangeland and conservation ecosystems during her presentation. He stressed that it is better to do slow planning and quick implementation than the other way round, as is done currently. He spoke about inter-generational and inter-species equity in sustainable development. He gave the example of a Rapanui society on Easter Island that collapsed due to the destruction of their environment. His thoughts in overcoming the dilemma were that collaborative approaches with other disciplines are key, among them ecological scientists.

Eng. Ochieng stressed the need for involving key stakeholders at different stages of linear infrastructure planning and development. In terms of policy direction, he emphasised that collaboration between development economists, planners, engineers and ecological scientists was essential. He concluded by calling for sustainability thinking through addressing competency gaps that should give voice to the voiceless.

4.2.3. The Mombasa-Malaba SGR Development - Ms. Stellah Ndiwa, Kenya Railways Corporation (KRC)



Figure 14: Ms. Stellah Ndiwa, KRC

Ms. Ndiwa stated that the SGR was identified under Vision 2030 as a flagship project in the transport sector. The project has a number of benefits and also negative impacts, which KRC acknowledges. She stated that, the benefits of the SGR include: economic growth, enhanced social inclusion, large transport capacity, safety, punctuality, convenience and comfort. These, she observed would improve the lagged transport conditions in Kenya, promote connection and

integration between towns along the route, optimize allocation of resources and promoting economic development. The project will also bring with it some negative impacts on the physical, cultural and socio-economic environment. In view of this, KRC has undertaken a participatory ESIA and RAP exercises so as to address the negative impacts and enhance positive impacts. For instance, a 6.7 km Super Major Bridge running across the expanse of Nairobi National Park has been constructed with sound deflectors.

Ms. Ndiwa stated that the Government of Kenya had identified two corridors for the development of a modern, high-capacity, high-speed Standard Gauge Railways (SGR) to ease transportation challenges being experienced in the country and the region for both freight and passengers. The entire SGR is about 3,012 Km of which Northern Corridor (SGR Phase 1 & 2) is 962 Km. Phase 1, covering a distance of 490 km, was launched in June 2016 and traverses 7 Counties namely: Mombasa, Kwale, Taita Taveta, Makueni, Kajiado, Machakos and Nairobi. Phase 2A covers 120 km (Nairobi-Narok), while Phase 2B covers 262 km from Narok to Kisumu including Kisumu Port, and Phase 2C covers 107 km from Kisumu to Malaba.

KRC is guided by institutional, legal and regulatory frameworks and other governmental policies. She noted that KRC has a number of ongoing initiatives namely: SGR Phase 2A which is 90% complete, management the metre-gauge railway, upgrading of the Railway Training Institute (RTI), and development of Kenya Railways Corporation (KRC) land assets such as the KenRail towers and Railway City.

She stated that handling of the environmental challenges is guided by EMCA (preparation of ESIA and RAP). Save the Elephants published a report on “*The effect of the new SGR on elephant movements in the Tsavo Ecosystem, Kenya March 2016-March 2018*”. The report will enable KRC to monitor and address emerging and pending issues from the SGR project. KRC has engaged a number of stakeholders but they have experienced challenges such as heightened public expectations following KR marketing and publicity activities, political interference, land acquisition process, independent budgets and timelines among agencies, cultural barriers and at times language barrier among others. On the other hand, they have opportunities that include government support of KR projects, reliable customer base, and collaborations with development and ministry partners among others. etc. She noted that KRC has some capacity gaps within management and support staff category, brought about by the reliance on foreign contractors and consultants and a delay in the implementation of new organization structure. In addressing those gaps, KRC plans to implement the new organizational structure over the next 2 years through recruitment of personnel with specialized skills, and training and capacity building through RTI and apprenticeship in order to accommodate more professionals in its structure.

4.2.4. Infrastructure and Sustainable Development - Mr. Evance Omondi, Kenya National Highways Authority (KeNHA)

Mr. Omondi stated that KeNHA is a road agency established under the Kenya Roads Act 2007 with a responsibility to manage, develop, rehabilitate and maintain Class S, A, and B roads. He further noted that KeNHA has aligned all their projects with various policy guidelines from the Government of Kenya (GoK) and International Finance Corporation (IFC). With particular regards to GoK, Mr. Omondi said that most of the policy guidelines are drawn



Figure 15: Mr. Evance Omondi KeNHA

from articles 42, 69 and 70 of the Constitution of Kenya (2010) and other national laws such as Environmental Management and Coordination Act (EMCA) 2015, and the National Land Commission guidelines on land acquisitions and compensations. On the other hand, he stated IFC has elaborate policies on social, environmental, and legal issues as well as an aspect of access to information which KeNHA follows. He clarified that KeNHA gets operational licenses after conducting ESIA's and carrying out Resettlement Action Plans (RAP). Further, he said that KeNHA has Safeguard Policy Tools and Documents that cut

across various aspects such as ESIA's, HIV mitigation reports, Waste Management Plans, Traffic Management Plans, Child Protection Strategies as well as working with the Vulnerable and Marginalized Groups, and Social and Gender Assessments.

According to Mr. Omondi, KeNHA has various current and future infrastructure initiatives. They include: projects that enhance highways to accommodate Bus Rapid Transit (BRT); the integrated LAPSET-corridor development which is intended to create a seamless intermodal transport system; development of high-speed traffic and climate resilient expressways and highways; and effective and efficient use of construction aggregates such as recycling and use of modern engineering practices that will mitigate hazards like flooding. He mentioned Witu-Garsen road construction as one of the current KeNHA projects among other upcoming ones such as the highway to Lokichar and the proposed Nairobi-Mombasa expressway.

Mr. Omondi noted that KeNHA continues to experience challenges arising from integrating environmental concerns in their projects. Due to this fact, KeNHA has developed a new tender-bidding process that elaborately takes into account environmental concerns. According to him, some of the challenges include: limited time and training and resources; difficulty in identification and prioritisation of the people with suitable expertise in environmental conservation; the dynamism of project needs throughout project life cycles; balancing multiple inputs, diverse views and expectations, and; understanding when exactly to engage specific types of stakeholders. He also said that stakeholders sometimes reacted negatively to some KeNHA projects, resulting in a lot of complaints, yet those very stakeholders would not offer potential solutions to mitigate such complaints. Finally, Mr. Omondi emphasised that KeNHA would be very keen on research studies/projects that will fill gaps and develop capacity in the following areas; highway runoff water quality, highway runoff characterisation and assessment and evaluation of storm water control programme, and assessments.

4.2.5. Discussions

Mr. Chigozie Nweke Eze (University of Bonn) enquired about the relationship between KenGen and the Geothermal Development Company (GDC), and whether there was any other direct use of geothermal resources apart from the Olkaria spa facility in Naivasha. He further enquired on the success of the Resettlement Action Plan (RAP). Dr. Mwangi Githiru (Wildlife Works) enquired from the Kenya Railways Corporation on who should implement the Environmental and Social Management Plan (ESMP) and who is responsible for addressing the challenges within the underpasses constructed along the SGR, such as the presence of livestock and settlements. He further noted that the Strategic Environmental Assessment (SEA) also seems not to have properly incorporated the impacts of huge projects such as the SGR... "Could it be due to capacity gaps or corruption?" Ms. Lucy Waruingi (ACC) stated that it would be useful to hear from KRC on lessons that have been learnt in phase 1 and how they will be incorporated in the next phase of SGR construction. Particularly, she wanted to know who is mandated to monitor the impacts of the SGR and whether the implementing agencies take it upon themselves to monitor these impacts. Meanwhile, Dr. Winnie Kiiru (CHD Conservation Kenya) enquired on who checks the "*big guys*" for instance the funders and those receiving money from them to make sure they are working within their codes of conduct. Finally, Ms. Edith Bikeri (Kenya Water Towers Agency) asserted that government agencies seem to have overlapping and conflicting roles hence there is need to have a way to create synergy in how they work.

In response to the above questions, Eng. Ronoh (KenGen) stated that GDC is a special purpose vehicle to expedite de-risking of new fields to allow players such as KenGen to come in and do the development. Regarding other direct uses, the Oserian Flower farm in Naivasha buys geothermal steam for use in their greenhouses. KenGen is also looking to partner with manufacturing companies such as the leather manufacturers in order to have them to use steam in their production process. Regarding ESIA's, Eng. Ronoh stated that KenGen normally undertakes baseline assessments and then assess how their implementation deviates from the baseline.

On her side, Ms. Ndiwa stated that the KRC is working with KWS on the blocked underpasses and illegal settlements to ensure that they are cleared for use by wildlife. This is being done in collaboration with the operator of SGR. She noted that the DCP is a great potential collaborator in addressing such issues. Furthermore, KRC has also worked with a consultant to monitor the environmental impacts of the SGR.

On the question of who checks the "*big guys*", James Maroa from the World Bank Group pointed out that his institution uses a system and due diligence to ensure that clients take environmental issues into consideration. The bank also has an independent arm that addresses concerns from the communities – an inspection arm that holds the client responsible to the laws and policies in their country. Several projects in Kenya have gone through this inspection system.

4.3. Development Corridors, social and ecological considerations

The afternoon session comprised presentations from parastatals, research and conservation institutions. These included the Water Resources Authority (WRA), Centre for Training and Integrated Research in ASAL Development (CETRAD) and the Ewaso Infrastructure Information Network (EIIN).

4.3.1. The role of WRA on sustainable development in the regional development corridors - Mr. Kanute Mwamburi, Water Resources Authority (WRA)

Mr. Mwamburi, presenting on behalf of Mr. Mohammed Shurie, began by stating the mandate of WRA which is to regulate the use and management of water resources. He then gave an overview of the development corridors in Kenya (LAPSSET and SGR) and their components. He emphasized that water resources management is an essential activity in any development but is always taken for granted and not considered during the planning and implementation processes of development projects. He said that the National Agenda commonly known as the 'BIG 4' should be stated as "Big 4 + 1" with water as an enabler for the achievement of development programmes including the four objectives (food security, manufacturing, health and housing). The LAPSSET transport corridor growth area map shows areas outside the corridor that will grow as a result of the project and this may have a great impact on water resources and thus the need for a comprehensive assessment of water resources.

Mr. Mwamburi stated that WRA's involvement in the context of SGR, LAPSSET and related developments include: water resource assessment, equitable water allocation and apportionment, water resources monitoring (quantity and quality), protection and conservation of water resources, assessment of environmental impacts on water resources, mapping flood-prone areas and river regimes, and installing and operating Flood Early

Warning Systems (FEWS) under the Kenya Water Security and Climate Resilience Programme. He further mentioned some of the expected impacts of the developments on water resources as: expected water demand for port operations and shipping line; increased population along new settlements and towns; immigration; increased demand for water for domestic use; over-abstraction of existing sources; dam safety for downstream communities; increased effluent and wastewater discharge from industries; destabilized landscapes leading to floods; affected wildlife corridors leading to overgrazing and catchment degradation; flash floods and runoff; high sedimentation; dangers and risks of oils spills from pipeline and related disasters; increased water demand for irrigation and food security, and; water resource-based conflicts (including inter-county) and declining groundwater levels.

Mr. Mwamburi identified the challenges that WRA faces which include impacts of climate change on water resources, inadequate data for flood prediction and early warning systems, degraded catchments and deforestation, reduced river flows, reduced duration of high river flows, increased sediment loads, reduced reservoir lifetime, depletion of aquifers, affected wildlife migration along the corridor in relation to water points and pasture and competing water needs. He also cited poor groundwater quality, especially where it is the only source, caused by pollution from effluent discharge and saline water infiltration and mineralization, low groundwater yields due to over-abstraction, flooding and its impacts on infrastructure and communities along the corridors, and inadequate coverage of FEWS along the development corridor areas.

In concluding, he pointed out the actions and measures that can be put in place to address the water resources challenges faced in the corridors and the country at large. These include: comprehensive water resource assessment; enhanced and fully supported water resources monitoring; enhanced water resources data management and packaging for decision making; enhanced Flood Early Warning Systems (FEWS); installation of telemetric water data collection systems; enhanced stakeholder involvement, and; effective dissemination of information.

4.3.2. The Geography of Ewaso Ng'iro North Basin: Status, Trends and Implications - Ms. Caroline Ouko, Centre for Training and Integrated Research in Asal Development (CETRAD)

Ms. Ouko presented on behalf of Dr. Boniface Kiteme of CETRAD. She began by describing the Ewaso Ng'iro North basin and stated that the basin lies north and west of Mt Kenya and covers an area of 220,000 km² and thus is the largest basin in Kenya. She asserted that the LAPSET corridor will be touching the basin which covers seven counties: Laikipia, Meru, Isiolo, Samburu, Garissa, Wajir and Marsabit; and traverses high ecologically diverse areas. The larger area of the basin (92%) is classified as arid and semi-arid with small pockets of humid areas. She described the basin as having four rainy seasons: Long rains season (mid-March to mid-June) which contributes 29%-40% of annual rainfall in the entire basin; continental rains season (mid-June to mid-September) which is mainly confined to the western edge of the basin and which helps to maintain flow at Archers' post in July-Sept; short rains season (October to December) which penetrates the basin from the dry north and contributes 50%-60% of the annual rainfall in the arid lowlands; and the dry season rains. Approximately 80% of the area receives rainfall that is less than 50% of the evaporation potential.

Ms. Ouko stated that most of the contribution of the surface water in the basin is from the Mount Kenya region and the area is very rich in wildlife and has a high species diversity. In

terms of land tenure, she explained that there were large tracts of land before independence which were then subdivided into smaller parcels after independence. During 1900 to 1960 there was land use transformation from pastoral to large scale commercial farming and ranching (livestock and range) which she said was triggered by colonialism. According to her, there were no serious environmental threats during this period because of the application of best practices in farming and ranching, and which were strictly based on land carrying capacity. During the early 1960s, after independence, the white settlements-native settlements arrangements were abolished and the land was acquired through government settlement schemes, land buying schemes and co-operatives.

Ms. Ouko said that migration from neighbouring regions is high and has led to an increased human population. This has been escalated by the growing population in the Dadaab refugee camp leading to more pressure on water and other resources within the basin. There are also a large number of commercial farms in the area including 1500 commercial horticultural farms, and horticulture export has gone up compared to other forms of farming. According to her, the area has diverse communities with different cultures and ways of life and the main land use is livestock production. On land cover, Ms. Ouko stated that shrublands and savannah grasslands form 60%, with forests only covering 2%. The forest cover has drastically reduced and built up areas have been expanding. In conclusion, Ms. Ouko presented the implications on water resources as: increased water demand which has led to increased abstraction from rivers in the basin; reduced river flows, and; decreased levels of groundwater. Finally, she identified rain water harvesting and storage as being one of the solutions to water scarcity in the basin.

4.3.3. Seeking coordination in the complexity: lessons from efforts to mitigate environmental impacts of the LAPSSET corridor in Northern Kenya - Dr. Sarah Chiles, Ewaso Infrastructure Information Network (EIIN)

Dr. Chiles stated that land in Northern Kenya mainly occurs in the arid and semi-arid (ASAL) areas and is under community management. She said that community conservancies in the region were established under the Northern Rangelands Trust (NRT). The landscape in Northern Kenya is home to endemic range-restricted and



Figure 16: Dr. Sarah Chiles, EIIN

endangered wildlife such as the Grevy's zebra. She narrated the seeming complexity of co-existence of people and wildlife amidst intense resource competition and observed that the livestock numbers have grown thereby degrading the landscape and wildlife significantly.

Dr. Chiles said that LAPSSET is a multi-project corridor development that includes seven components: *Lamu Port, Crude Oil Pipeline, Highways, Railway, International Airports, Resort cities, and High Grand Falls Dam*. Dr. Chiles, therefore, asserted her belief that the Mitigation Hierarchy (MH) developed by the IFC was a potentially useful tool to ensure no net loss of biodiversity after implementation of development projects such as LAPSSET. Unfortunately, the cumulative impact of all the component projects under LAPSSET was not yet clear. She mentioned impacts on wildlife such as highway road kills as one of the challenges from the LAPSSET corridor development so far.

Dr. Chiles said they had produced a report that put together and particularly tried to inform mitigation of road impacts on wildlife. She raised fears that the intended construction of a 220 KW power line through multiple conservancies in Northern Kenya would have adverse effects on wildlife and communities. She acknowledged that KETRACO had re-routed the power line to avoid critical conservation areas in Laikipia. However, in Samburu county, this was not the case, thus a mismatch between counties. She also said that they had worked in collaboration with other stakeholders and the Kenya Pipeline Company to re-route the Oil pipeline to avoid the Grevy's zebra critical breeding areas which it had initially intended to pass through. She said IFC requires a net gain for biodiversity in every place where endangered biodiversity is found.

Concerning the proposed Isiolo Dam (Crocodile Jaw Dam), Dr. Chiles said that the Ewaso Lions, Grevy's Zebra Trust and Save the Elephants mapped the movements of lion, zebra and elephant to understand their use of the landscape in relation to the proposed Isiolo dam. She shared that they had also carried out a local economic costs analysis of the proposed Isiolo dam and found out there would be losses in livestock, and a possible eight million USD loss for tourism. She affirmed her hope that the report will inform decision-making around the construction of the dam. Dr. Chiles said the Ewaso Lions and collaborators had shifted attention to the railway development under LAPSSET so as to plan how to minimize impacts - in a similar way they did with the re-routing of an oil pipeline. She shared that they had robust involvement in the oil pipeline through Laikipia which led to the inclusion of the Mitigation Hierarchy tool in its development.

Dr. Chiles noted that most implemented projects have focused on the movement of people and wildlife through the corridors but not on the movement of information from/to where it is needed. In fact, learning from existing developments such as SGR, Dr. Chiles said that cross-landscape learning and public-private coordinated engagement are quite key. She gave an example of the recently concluded African Conference on Linear Infrastructure and Ecology (ACLIE) in South Africa. Dr. Chiles also said that an intra-environmental platform would be very important and registered her happiness that the DCP was interested in building such relationships. Finally, she said that there was urgent need for new capacity on emerging issues.

4.3.4. Remarks on Environmental and Social Impacts Assessments - Mr Herbert Mwachiro, Environment Institute of Kenya (EIK)

Mr. Mwachiro gave a brief comment on the EIK and its mandate. He stated that EIK represents all environmental impact assessment (EIA) experts in Kenya. He emphasised that Environmental and Social Risk Assessment is important to the development of corridor projects. Mr. Mwachiro stated that the EIK would like to see more engagement of the infrastructure stakeholders with ESIA professionals to ensure relevant stakeholder inclusivity

to champion conservation efforts. He noted that there is need for a bottom-up approach to public participation in the ESIA process to increase knowledge and awareness of environmental considerations, especially among the communities at the grassroots level. He underscored the importance of reviews and updates to ensure environmental and social safeguards are in place. He decried the lack of a “human and environmental feel” in the design, planning and implementation of development corridor projects. He suggested that the overlap of different state agencies needs to be resolved to avoid confusion and wastage of resources.

4.3.5. Discussions



Figure 17: Participants engage during the workshop

Cyril-Lazare Siewe from UN Environment that the discussions at the workshop suggested that everything is going well to the best of “our” capacity and knowledge but what is missing? He noted that development has a cost and enquired how development can be undertaken while mitigating its impacts on the environment. “Is the Brundtland (1987) definition of Sustainable

Development still relevant?” he quipped. The complexity of issues sometimes means that bringing all the stakeholders together is not enough. There is a need to have an international working group and to develop a curriculum on infrastructure development and mitigation of impacts. Cyril emphasized that lessons from this group can be an authoritative voice to inform other countries. Jenny Marsh (CNN reporter) observed that the development of a communication mechanism through EIIN is important but suggested that a continental mechanism can be proposed to the upcoming African Protected Areas Congress (APAC). She further observed that the ESIA as a tool is presently used just to push through projects with no mechanism to properly mitigate impacts.

Mr. Riungu (EIK) wondered if WRA replaced WRMA and if it includes Kenya Water Towers Agency (KWTa). He further sought to know what WRA was doing to conserve groundwater resources. Ms. Charity Munyasia of the Kenya Forest Service (KFS) enquired from Dr. Chiles if SEA informed the projects in the various counties she worked with and whether opportunities existed to consider the whole Mitigation Hierarchy rather than just additional conservation actions, for projects that haven’t begun.

To answer these questions, Mr. Mwamburi (WRA) explained that in 2016, the Water Act 2002 was reviewed to align the water sector to the new Constitution (2010). Consequently, WRA now handles regulation of water management and use whereas the KWTa deals with water towers. KWTa’s main function is to coordinate and oversee the protection, rehabilitation, conservation and sustainable management of water towers. Mr. Mwamburi stated that WRA has put in place an elaborate groundwater monitoring network, a

groundwater authority and is developing a guideline for aquifer management. He stated that groundwater assessment is becoming a national focus now, a position that was affirmed by Ms. Ouko of CETRAD. On her part, Dr. Chiles stated that mitigation needs to be budgeted and the development proponent should pay for it. She observed that the SEA for LAPSET was completed in 2016 retroactively so it was not able to influence the process as much. There are, however, opportunities to apply the Mitigation Hierarchy in upcoming projects noting that Kenya has significant capacity but coordination and collaboration is needed.

5. Thematic Group Discussions



Figure 18: Participants in group discussions

At the end of the presentations, participants were divided into thematic groups for discussions. The following thematic areas were considered.

1. Biodiversity
2. Water resources
3. Stakeholder engagement
4. Decision-making process
5. Capacity building

The discussion results are presented below.

5.1. Biodiversity



Figure 19: Mt. Suswa in Kenya

Group members: Caroline Ng'weno, Mary Mwangi, Grant Hopcraft, Heather McDevitt, Charity M. Munyasya, Bernard Ngoru, Mwangi Githiru, Kes Smith,

Group Chair: Grant Hopcraft

Questions:

1. *What are some of the current and potential impacts of the development corridors on terrestrial and aquatic biodiversity? For each impact could you suggest measures to address them? Please consider impacts at construction, implementation and operation stages;*
2. *What are some of the current and potential impacts of the development corridors on key biodiversity areas such as forests, protected areas, conservancies, lakes/wetlands/rivers? Please consider impacts at Construction, Implementation and Operation stages;*
3. *From a biodiversity/ecosystem perspective, are there some lessons learnt from Kenya's experience to date, with mega infrastructure and related development projects that could inform future development corridor initiatives in Kenya?*

The group did not have adequate time to complete the tasks.

However, they were able to give some useful insights as shown in the table below. The table shows

current and

potential impacts of development corridors during Pre-construction [PreC]; Construction [C]; Operational [O]; and Decommissioning [DeC] stages.

Table 1: Current and potential impacts of Development Corridors

#	Impact (terrestrial & aquatic)	Planning & Avoidance	Minimise	Restore	Offset (NNL)	Net gain
1	Habitat loss leading to loss of species	PreC: Avoid ecological sensitive areas e.g., Protected Areas			O: Create unrestored habitat	O: Provide additional habitat
2	Habitat fragmentation; Corridor loss (dispersal and movement)		C: Ecologically-informed and friendly infrastructure	O: Provide alternative access routes		
3	Species injuries and mortality: road-kills, ship-kills, barotrauma		O: Signage and enforcing regulation			
4	Change in species behaviour e.g., feeding, breeding and movement – perception of risk or attraction	PreC: Avoid the critical areas	O: Provide access routes			
5	Increasing human-wildlife interaction and conflict					
6	Increased access with other effects e.g., poaching, encroachment					
7	Invasive species					
8	Pollution e.g., noise, oil, light					
9	Disruption of ecological processes (soil, hydrological), functions and eventually services					
10	Decreased resilience and sustainability in the face of climate change					
11	Loss of aesthetic or intrinsic value					

5.2. Water resources

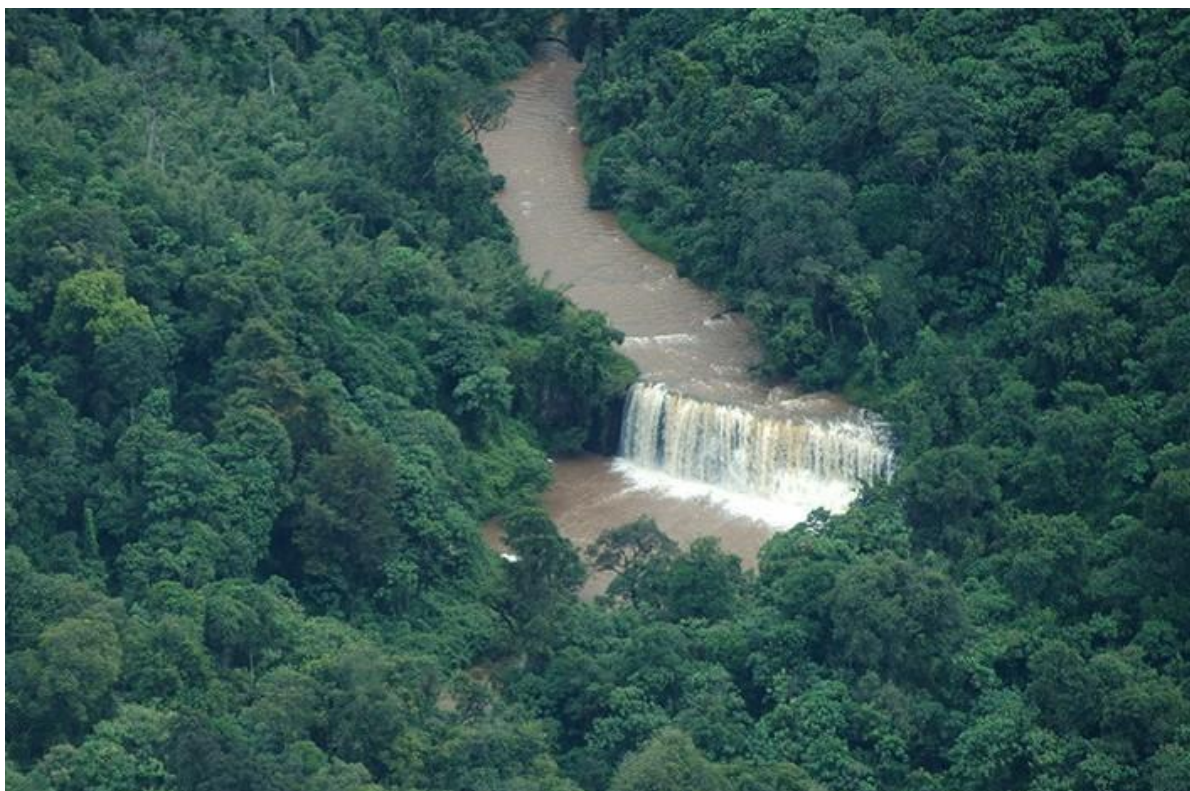


Figure 20: River in Kenya's Mau forest. Source/Mariana Rufino (CIFOR)

Group members: Susanne Manyasi, Solomon Njenga, Titus Wamae, John Mwaniki Njoka, Caroline Ouko, Edith Bikeri, Wycliffe Nyangau, Canute Mwakamba, Tom Ogol, Catherine Sang

Group Chair: Susanne Manyasi

Questions:

1. *In what ways is water resources assessment crucial in the planning of development corridors?*
2. *What are the major water resource concerns and/or challenges in the development corridors? Cite examples of where these concerns/challenges are severe. Suggest strategies that help in addressing them.*
3. *What are the key issues that relate to the water, land-use, climate change, livelihoods nexus in the development corridors? Suggest some of the strategies that can be put in place to overcome them.*

Given that “You can only plan with what you have”, sustainable development requires availability of adequate good quality water. With the development of corridors and increased growth of urban centres, the human population is expected to increase hence we need to project water demands, understand the carrying capacity; and embrace technological change in addressing water-related issues.

Major water resource concerns include availability of water; water quality and quantity; competition and water conflict, e.g. in Isiolo and Muranga; and transboundary resources conflict aggravated by climate change. Strategies to address water resource concerns should include public awareness on the importance of water; tackling politicization of water issues; implementing policy and legal reforms; improving stakeholder engagement; putting in

place long term- water storage mechanisms; conservation; embracing research and innovation such as recycling

Key water issues identified were climatic patterns; land degradation; resource use conflict; population; urbanization; knowledge-base on groundwater management; livelihood dynamics; corruption and impunity; poor enforcement. Strategies suggested to overcome the issues were research and innovation; spatial planning/zoning; education, capacity building, awareness; research funding; collaboration with research institutions through data sharing and management; environmental rehabilitation programmes; enforcement of the polluter-pays principle

5.3. Decision-making process



Figure 21: Participants in the group discussion on decision-making

Group members: Sarah Chiles, Joseph Chirchir, Ogeli Makui, Stella Ndiwa, Shalini Tak, Lucy Waruingi, Annie Hu, Bundi G, Mwanasiti M B, Stephen Nzioka.

Group Chair: Joseph Chirchir

Questions:

1. What decision-making processes exist in planning, financing, implementing and monitoring development corridors? What are the challenges? What are the gaps?
2. How can this be addressed?
3. What tools or frameworks would you propose to support/enable effective decision making and long-term planning?

Decisions are predicated on Vision 2030, following the legal framework (Constitution 2010), the institutional framework, a concept note which is then translated into a design framework, along with existing institutional plans and political manifestos. The recovery stimulus also includes prioritization of decisions. However, politicians often cherry-pick from Vision 2030.

The political agenda also drives decision-making, and is based on policies in some cases, but also the specific government regime in power, as well as popular discourse and the media. Decisions are typically driven either by experts who design the projects, or the sentiments and ideas of the elites of selected communities. For example, vision documents are often not adequately inclusive of all parties' views. Economic growth and trade of a country also drive decision making (e.g., opportunities for oil exploration in LAPSSET and the aim to open up the country). Well intended but poorly informed decisions are often made.

A number of gaps were identified in the decision-making process. For example, projects are pre-selected, and consider one option rather than multiple options. In addition, many projects in Kenya were decided prior to devolution and therefore county governments and communities were not involved, resulting in a lack of ownership and local push back against development corridor initiatives. Some of the development corridor processes are also not clear to stakeholders. Further, institutions work in silos and the challenge of ineffective and overlapping mandates between ministries remains a problem. The process of creating a variation order for the contractor takes for a very long time and therefore it is difficult to make changes to projects which are in the process of being implemented. In many cases, "spectators' hands are tied".

To address the issues identified above, the group suggested that, first, more adequate information needs to be given on the design of projects. There is a need for a process of information sharing at all levels as well as having the right sample population to ensure adequate representation. We need to have better management of political interference (e.g., which pushes the timelines of project delivery that does not allow adequate community consultation?). The SEA and EIA process should be more independent, and within that, the financing mechanism should be revised. Regularization of the valuation process for land compensation, and improved ability for landowners to negotiate land prices are also needed.

The group proposed a number of tools to support planning. First is the implementation of steering committees to centralize information at all levels. This can be complemented by development of a centralized website with the safeguard guidelines and monitoring and evaluation which is done within relevant institutions. Other tools may include use of vernacular radio broadcasts, barazas and regular messaging through advocacy organizations.

5.4. Capacity Building



Figure 22: A giraffe in Nairobi National Park with Nairobi city in the background

Group members: Dr. Zhengli Huang, Antony Kamau, Jessie Zhang, Pauline Kiarie, Ronald Kimutai, Julius Buyengo

Group Chair: Dr. Zhengli Huang

Questions: Considering the (a) individual (b) institutional and (c) systemic dimensions of capacity building, address the following questions in relation to effective development corridor design, planning, implementation and monitoring:

1. What type of data, skills, and tools are needed, and why?
2. With respect to stakeholders, what are the key gaps that need to be plugged, and how, with reference to:
 - a. Environmental Impact Assessments and Strategic Environmental Assessments?
 - b. Monitoring and evaluation?
 - c. Decision-making process?
 - d. Public participation as per the constitutional

In terms of data, assessment is needed to identify the gaps. The group also identified the need to develop technical skills at the individual level, and managerial skills at institutional level. Tools identified include communication through media, policy tools at organizational level, education, implementation of a legal framework and building of capacity and skills.

Gaps were also identified at the various levels. For the EIA and

SEA processes, gaps include refresher courses, training and budget allocation. For Monitoring and Evaluation, gaps include follow-ups, empowerment through media and environmental reporting, and budget allocation and stiffer penalties. For the decision-making process, gaps that need to be addressed are adequate monitoring, equipping the team, inter-stakeholder/ ministerial forums, and enforcement of EMP. For public participation, gaps

include empowerment- acceptability, transparency, civic education and inclusion of the public throughout the project

5.5. Stakeholder Engagement



Figure 23: community member watching the train over the SGR

Group members: Rosemary Barasa, Steve Nzioka, Ezekiel Moseri, Mbeo Ogeya, Jessica Ndubi, Ramson Kamurshu

Group Chair: Steve Nzioka

Questions:

1. *What are the gaps/challenges in the stakeholder engagement and public participation in the Development corridor project design, approvals, and implementation process? How can these be addressed?*
2. *To what extent (below satisfactory, satisfactory, highly satisfactory) are the stakeholders at different levels (e.g. policy makers (governance), investors, decision-makers (managers), practitioners (implementers e.g. NGOs, professional organisations), private sector, community) involved in the development corridor projects design, planning, environmental impact assessment, and implementation process? If below satisfactory, what can be done to improve their involvement?*
3. *Are communities (the public) involved in the monitoring and evaluation of the impacts identified in the EIA process? Should they be involved and if so, how?*

The group members identified a number of gaps in the stakeholder engagement process. For example, there has been inadequate consultation and representation and misrepresentation of the project at the grass root. EIAs are also improperly done, for example mentioning people who were not

present at the stakeholder engagement. Mapping and identification of relevant stakeholders is also a challenge. For communication channels, projects are often gazetted through channels that are not accessible to the public and timelines for stakeholder engagement are unrealistic, thus preventing proper inclusion of a wide range of stakeholders. Further, there is little effort made to involve enough stakeholders. Political interference and influence also pose a challenge.

There is also a lack of recognition of the value of the stakeholder engagement and public participation processes and a top down approach in identifying and implementing projects which leads to lack of community buy-in. Community gatekeepers can also pose a challenge when they block access to the community members. Literacy levels of community members can also sometimes be taken advantage of, to prevent them from being adequately engaged in the process. Further, there are often many unverified sources of information which can influence communities. Monitoring and evaluation of the process is also not adequately done. There is also lack of harmonization of corridor projects at different stages.

These gaps/ challenges can be addressed through measures such as monitoring by the community members, stakeholder mapping by an independent organization, engagement of community based organization and civil society organizations in the process, and the use of interactive media to engage communities. In terms of satisfaction with the stakeholder involvement in the development corridor design, planning, environmental impact assessment, and implementation process, the group's results are displayed on the table below.

Table 2: Stakeholder involvement in development corridor projects

Stakeholder	Project design	Project planning	EIA process	Implementation
Policy makers	Satisfactory <input type="checkbox"/>	Satisfactory <input type="checkbox"/>	Below satisfactory	Below satisfactory <input type="checkbox"/>
Investors	Highly satisfactory <input type="checkbox"/>	Highly satisfactory <input type="checkbox"/>	Below satisfactory <input type="checkbox"/>	Below satisfactory <input type="checkbox"/> Satisfactory <input type="checkbox"/> Highly satisfactory <input type="checkbox"/>
Decision-makers (managers)	Below satisfactory <input type="checkbox"/> Satisfactory <input type="checkbox"/> Highly satisfactory <input type="checkbox"/>	Below Satisfactory <input type="checkbox"/> Satisfactory Highly satisfactory <input type="checkbox"/>	Below satisfactory <input type="checkbox"/> Satisfactory <input type="checkbox"/> Highly satisfactory <input type="checkbox"/>	Below satisfactory <input type="checkbox"/> Satisfactory <input type="checkbox"/> Highly satisfactory <input type="checkbox"/>
Practitioners (implementers e.g. NGOs)	Below satisfactory <input type="checkbox"/> Satisfactory <input type="checkbox"/> Highly satisfactory <input type="checkbox"/>	Below satisfactory <input type="checkbox"/> Satisfactory <input type="checkbox"/> Highly satisfactory <input type="checkbox"/>	Below satisfactory <input type="checkbox"/> Satisfactory <input type="checkbox"/> Highly satisfactory <input type="checkbox"/>	Below satisfactory <input type="checkbox"/> Satisfactory <input type="checkbox"/> Highly satisfactory <input type="checkbox"/>

Where involvement is below satisfactory, improvement can be achieved through critical analysis of the EIA process; mainstreaming of environmental concerns in all policy, programmes and plans and creation of an environmental desk to handle all projects.

The group concluded that communities are not involved in the monitoring and evaluation of impacts that are identified in the EIA process. They should be involved in the monitoring and evaluation process as independents monitoring the project.

6. Workshop Recap



Figure 24: Dr. Catherine Sang', Post-Doctoral Research Fellow - DCP Project

6.1. Some key issues raised during presentations

1. Linking research with decision-makers at different levels
2. Robust involvement of stakeholders can lead to improved outcomes for conservation/ environment (Ewaso Lions- Grevy's Zebra Trust example)
3. Issues related to transferring models from one region to another
4. Water as the enabler of development programmes
5. Cumulative impacts of the development projects
6. Role and working model of Chinese stakeholders
7. Disconnect between community and government expectations
8. Challenges implementing organizations face in stakeholder engagement
9. Data challenges

6.2. Some aspects to consider

1. Need for collaboration, data sharing and efficient dissemination of the results to deliver maximum impacts
2. Need for a cross-sectoral collaboration and multidisciplinary approach
3. Need for improved tools and mechanisms for cost-benefit analysis and creation of safeguards in these processes
4. Need to apply lessons learnt (e.g. in phase 1 of SGR to phase 2 of SGR)

5. Need to address the overlapping roles of government agencies
6. Formation of an international working group?
7. Need to understand how Chinese stakeholders work in Africa, how local factors impact on the success of these models and possibly develop a new model to improve the delivery of benefits
8. Need for development of a communication mechanism between actors
9. Standards for Kenya on EIAs e.g. IFC standards
10. Development of a curriculum on the environment and mega-infrastructure development
11. Incorporation of the marine environment in development corridor impact assessments (e.g. Lamu Port and maritime transport)

6.3. Next steps and Way forward



Figure 25: Prof Dan Olago, DCP Kenya Country Principal Investigator

Prof. Olago in the closing session got summaries of the key action points take-out messages of the workshop

1. Various government and non-state agencies present rarely have such forums. There is need to take up particular issues through a multi-stakeholder team
2. Knowledge generated through the project should be shared with the communities who usually don't have access to this information.
3. There are research gaps within the implementing agencies and they welcome sharing of findings so they can incorporate them in specific on-going development such as SGR phase 2b and 2c. Sharing findings, particularly those with high need for the information to help them improve their projects.
4. Developing new guidelines on how to interact with developers is key for collaboration. We should go back to the lessons that have been learned and allow organizations like KWS to share their experiences.
5. Ensure that development corridors become green corridors

6. Need to bring in the private sector and developers into future meetings. Need political will to influence proposed sections such as Bechtel expressway which is passing through wildlife ranches.
7. Proposal to form an international working group on development corridors

Prof Olago ended by stating that DCP is available to all stakeholders to give expert and unbiased opinions on any issues. DCP personnel are happy to give relevant presentations to boards and organizations in order to influence decision-making.

Dr. Tobias Nyumba gave the final vote of thanks acknowledging the distinguished guests, Director of ICCA, the PIs, DCP team, presenters and participants.

7. Appendices

7.1. Appendix 1: Workshop Programme

Time	Activity	Responsible Person(s)
8.30	Arrival, registration and welcome of participants	<i>Rosemary, Francis, George and Mary, Frida</i>
9.00-9.05	Welcome and overview by ICCA	<i>Prof Shem Wandiga Director -ICCA</i>
9.05-9.30	The Development Corridor Partnership Project: An introduction	<i>Ms Lucy Waruingi Executive Director-ACC</i>
9.30-9.45	Address from the University of Nairobi - VC	<i>Prof Peter Mbithi VC-UoN</i>
9.45-10.00	Keynote address; UN Environment, Africa Division	<i>DR. Juliette Biao Koudenoukpo- Director, Africa Office</i>
10.00-10.15	Opening Speech: Ministry of Environment and Forestry	<i>Dr. Ibrahim Mohammed, the Principal Secretary</i>
10.15-10.45	<i>Group Photo and Tea Break</i>	
10.45-11.00	Presentation of development corridors scoping study	<i>Dr Tobias, Postdoctoral Researcher, DCP</i>
11.00-11.10	Is China Building Africa? Perspectives from an Independent Researcher	<i>Dr Zhengli Huang- Independent Researcher</i>
11.10-11.20	Discussions and feedback	<i>Dr Outa</i>
11.20-11.35	Presentation from Government agencies <ul style="list-style-type: none"> <i>Kenya Wildlife Service</i> 	<i>Eng. Walter Odira- Engineer Roads</i>
11.35 -12.25	Presentation from Corridor Institutions <ul style="list-style-type: none"> <i>Kenya Railway Corporation (KRC)</i> <i>Lamu Port-South Sudan-Ethiopia-Transport (LAPSSET) Authority</i> <i>Kenya Electricity Generating Company (KenGen)</i> <i>Kenya National Highways Authority (KeNHA)</i> <i>Konza Technopolis Development Authority (KoTDA)</i> 	<i>Stella Ndiwa- KRC</i> <i>Norman Muraya</i> <i>Eng. Abel Rotich- CEO</i> <i>Eng. Peter Mundinia</i> <i>Eng. John Tanui - CEO</i>
12.25-12.45	Discussion	<i>Dr Outa</i>
12.45-13.45	<i>Lunch</i>	
13:45-14.35	Presentation from research institutions <ul style="list-style-type: none"> <i>Water Resources Authority–Proposed dams and water transfer facilities</i> <i>Centre for Training and Integrated Research in ASAL Development (CETRAD)- Water resources conservation and infrastructure development</i> <i>Ewaso Infrastructure Information Network-Stakeholder engagement in development corridors</i> <i>Save the Elephants- Biodiversity and Infrastructure development</i> 	<i>Mr. Mohamed Moulid Shurie- CEO</i> <i>Dr Kiteme Boniface- Director</i> <i>Dr. Sarah Chiles- Landscape Infrastructure Advisor</i> <i>Dr Festus Ihwagi – Research Scientist, Spatial Ecology</i>
14.35-14.50	Discussion	<i>Dr Outa</i>

14.50 -15.40	Stakeholder perspectives Group work to identify and prioritise research and capacity gaps and partnerships	<i>Dr Outa</i> <i>Project theme leads</i>
15.40-16.10	<i>Tea Break</i>	
16.10-16.30	Presentation of results from group discussions	
16.30-16.40	Recap and wrap up remarks	<i>Dr Catherine Sang</i>
16.40-16:55	Next steps & Way forward	<i>Ms. Lucy Waruingi and Prof Dan Olago</i>
16:55-17:00	Vote of Thanks	<i>Dr Tobias</i>
17:00	<i>End of Workshop</i>	

7.2. Appendix 2: Participant List

<u>Name</u>	<u>Affiliation/Organization</u>
1 ABIGAIL MWANGI	State Department for Petroleum
2 ANNIE HU	East Africa Director of Transnet / Ripple Education
3 ANTONY KAMAU	UN Environment, Africa Division
4 ARIELLE S EMMETT	American Society of Journalists & Authors
5 ARTHUR MBATIA	State Department of Physical Planning
6 BENSON KIMOTHO	CAEC-SGR
7 BERNARD NGORU	Kenya Wildlife Service
8 BIANCA NOTARBARTOLO	UN Environment, Africa Division
9 BRIAN OBARA	LAPSSET Authority
10 CAROLINE OUKO	CETRAD
11 CHARITY MUNYASI	Kenya Forest Service
12 CHIGOZIE NWEKE-EZE	University of Bon
13 CYPRIAN RIUNGU	Environment Institute of Kenya
14 CYRILLE-LAZARE SIEWE	UN Environment, Africa Division
15 DINAH OGARA	Institute for Climate Change and Adaptation, UoN
16 DORICE AMBUKA	Amara Conservation
17 DR CAROLINE NG'WENO	Born Free Foundation
18 DR CATHERINE SANG	Institute for Climate Change and Adaptation, UoN
19 DR CORNELIUS OKELLO	Machakos University and ICCA, UoN
20 DR ERICK M KIOKO	Kenyatta University
21 DR IRENE AMOKE	Kenya Wildlife Trust
22 DR JESSICA NDUBI	KALRO
23 DR JULIETTE BIAO	UN Environment, Africa Division
24 DR KES SMITH	ACC-EU CONNEKT
25 DR MWANGI GITHIRU	Wildlife Works
26 DR OUTA GEORGE	Institute for Climate Change and Adaptation, UoN
27 DR TOBIAS NYUMBA	African Conservation Center/ICCA UoN
28 DR ZHENGLI HUANG	Independent Researcher
29 EDITH BIKERI	Kenya Water Towers Agency
30 EMMA SCOTT	UN Environment World Conservation Monitoring Centre
31 ENG. WALTER ODIRA	Kenya Wildlife Service

32	EVANS OGUTU	Kenya National Highways Authority
33	EZEKIEL MOSEERI	National Environment Management Authority
34	FLORENCE GICHOYA	African Conservation Center
35	FRANCIS KAGO	African Conservation Center
36	FRIDAH MUENI	African Conservation Center
37	GEORGE OWIRA	Institute for Climate Change and Adaptation, UoN
38	GERVASO BINDU	Ministry of Energy
39	GLORIA KOSGEY	Kenya Wildlife Trust
40	GRANT HOPCRAFT	University of Glasgow
41	HEATHER McDEVITT	University of Glasgow
42	HERBERT MWACHIRO	Environment Institute of Kenya
43	HUSSEIN MOHAMOUD	Technical University of Mombasa (PASTRES Team)
44	JAMES MAROA	World Bank Group
45	JENNI MARSH	CNN
46	Dr. JESSICA THORN	University of York
47	JESSIE ZHANG	China desk for Mazars
48	JIM NYAMU	Elephant Neighbors Centre
49	JOHN MWANIKI	Ewaso Ng'iro North Development Authority
50	JOSEPHINE CHIRCHIR	East African Community
51	JULIUS BUYENGO	Regional Centre for Mapping Resources for Development
52	LORI BERGEMANN	Amara Conservation
53	LUCY WARUINGI	African Conservation Center
54	MARY MUTEMI	Kenya Climate Change Working Group
55	MARY MWANGI	African Conservation Center
56	MBEO OGEYA	Stockholm Environment Institute
57	MONIPHER MUSASA	African Wildlife Foundation
58	MWANSITI BENDERA	Coast Development Authority
59	NANCY OGONJE	East African Wildlife Society
60	NGANGA MUKINDI	MoDA
61	OGELI MAKUI	Tuala Community
62	PAULINE KIARIE	Kenya Railways Corporation
63	PROF DAN OLAGO	Institute for Climate Change and Adaptation, UoN
64	PROF MADARA OGOT	University of Nairobi
65	PROF SHEM WANDIGA	Institute for Climate Change and Adaptation, UoN
66	RAMSON KARMUSHU	IMPACT Trust
67	REINHARD BONKE	Friends of Nairobi National Park
68	RICHARD MWENDANDU	Ministry of Environment and Forestry
69	RONALD KIMTAI	Environment Institute of Kenya
70	RONO KIBET	KenGen
71	ROSEMARY BARASA	Institute for Climate Change and Adaptation, UoN
72	SARAH CHILES	Ewaso Lions/Grevy Zebra Trust
73	SHALINI TAK	CAEC-SGR
74	SHI YUCHENG	China Road and Bridge Corporation
75	SOLOMON NJENGA	University of Nairobi
76	STELLA NDIWA	Kenya Railways Corporation
77	STEPHEN NZIOKA	Ministry of Energy
78	SUSANE MANYASI	Environment Institute of Kenya

79	TITUS WAMAE	Wetlands International
80	TOM OGOL	Stockholm Environment Institute
81	WINNIE KIIRU	Conservation Alliance of Kenya
82	WYCLIFFE NYANGAU	WARREC
83	YVONNE GITHIORA	Institute for Climate Change and Adaptation, UoN