

Awareness on Climate Change and Decision Making Workshop for City Of Windhoek and Windhoek Constituency Councillors



Heja Lodge, Windhoek

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Summary

One of FRACTAL's main objective is to work with decision makers to integrate scientific knowledge relating to energy, water and food into climate-sensitive decisions at city-region scale. As such FRACTAL vowed to contribute to addressing the challenges associated with providing accessible, timely, applicable and defensible climate information needed by decision-makers to make "good" decisions.

This awareness workshop on Climate Change and Decision Making brought together City of Windhoek Councillors and Windhoek Constituency Councillors to discuss and raise awareness on the importance of considering climate change information into decision making processes. The workshop also included experts from the Namibian Meteorological Services, the Ministry of Environment and Tourism and the ThinkNamibia representative. The workshop provided an opportunity for the participants to interrogate and assess current policies, legal frameworks and development plans if they were climate sensitive, discuss their future plans in decision making bodies in light of what they have learned and explore opportunities during policy reviews that could be improved to support climate sensitive decisions.

This workshop includes concise information that was shared with the participants, in particular the councillors and leadership community. This report also contains summaries of the discussions in the plenary sessions and in the breakout groups. It further includes the keynote summary, perspective presentations as well as the agenda for the day.

In summary, this was a successful and stimulating workshop that brought together key stakeholders to discuss the relevance of mainstreaming climate change information and awareness into decision making, and its importance in strengthening resilience and reducing vulnerabilities.

Councillors pointed out that there is need to be involved by Policy developers from the initial stage of policy development. Furthermore, there is a need for simplified versions of climate change related policy (local and national). It was highlighted that politicians or leaders need to have knowledge about the policies, otherwise it will be hard for them to question anything as they may not be aware whether their decision contradicts the policy or not.



Acronyms and abbreviations

ACC	African Centre for Cities
AMMA	African Monsoon Multidisciplinary Analysis
CCKE	Coordination, Capacity development and knowledge exchange
CDM	Clean Development Mechanism
CoW	City of Windhoek
CSAG	Climate System Analysis Group
EIF	Environmental Investment Fund
FCFA	Future Climate For Africa
FRACTAL	Future Resilience for African Cities and Lands
GCF	Green Climate Fund
ICLEI	International Council for Local Environmental Initiatives
IMPALA	Improving Model Processes for African Climate (Africa)
IPCC	Intergovernmental Panel on Climate Change
MET	Ministry of Environment and Tourism
NAYORE	Namibian Youths on Renewable Energy
NCCC	National Climate Change Committee
NMS	Namibia Meteorological Services
SCORE	Scaling up community resilience to climate variability
SDFN	Shack Dwellers Federation of Namibia
SEA	Strategic Environmental Management
SOG	Small Opportunities Grant
START	Global Change System for Analysis, Research and Training
UCT	University of Cape Town
UMFULA	Understanding reduction in Models For Understanding Development Application
UNAM	University of Namibia

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Introduction and background to the workshop report

Future Resilience for African Cities and Lands (FRACTAL) is a four-year project running from July 2015 to June, 2019. The FRACTAL Project is one of five consortia within the Future Climate for Africa (FCFA) Programme. FCFA aims to generate fundamentally new climate science focused on Africa, and to ensure that this science has an impact on human development across the continent.

The FRACTAL Project aims to:

1. Advance scientific knowledge on regional climate responses to global change.
2. Enhance knowledge on how to integrate this scientific knowledge on regional climate responses to global change into decision making at the city-regional scale.
3. Responsibly contribute to decisions for resilient development pathways through case studies.
4. Use iterative, trans-disciplinary, co-exploration / co-production processes to enhance the understanding of co-production of climate change knowledge.

The FRACTAL-related activities in Windhoek are based on the Memorandum of Understanding with the City of Windhoek (CoW), the University of Namibia (UNAM) and the Climate Systems Analysis Group (CSAG) at the University of Cape Town (UCT).

Following the Windhoek First Learning Lab that took place on the 14th -15th March 2017 at Heja Lodge, there was an action for raising awareness of Windhoek Councillors on Climate Change issues and how this can be incorporated into decision-making processes.

On the 17th July 2017 at Heja Lodge, the awareness workshop was conducted to discuss how climate science can be incorporated into the decision-making at a city-region level. It is against this background that FRACTAL provided a learning platform for Councillors to be able to mainstream climate related information into their day-to-day decisions pertaining to the development and planning of Windhoek.

Workshop process and outcomes

In this section, the awareness on climate change and decision making workshop activities are described based on the Programme (Annexure 1).

Workshop Chairperson: Prof. John Mfune, University of Namibia, FRACTAL-Namibia Principal Investigator

1. Official welcoming

Prof. John Mfune, University of Namibia, FRACTAL-Namibia Principal Investigator.

Prof. Mfune welcomed all participating delegates including His worship the Mayor of Windhoek Mr. Muesee Kazapua for taking time out of their busy schedules to attend the workshop. Prof. Mfune highlighted the importance of carrying out the workshop and the impact it would have on high decision making bodies, particularly the Windhoek Councillors. He urged the importance of mainstreaming climate science information into decision making to promote resilience while reducing vulnerability of the population to impacts of climate change.

Lastly Prof. Mfune gave an example of individuals building in riverbeds and how this was related to lack of climate information and awareness within the city's development planning schemes. He thus urged decision makers to consider climate science information when dealing with development, planning and implementation of sectoral policies. This practice will go a long way in reducing vulnerability and increasing sustainable development.

2. Official opening

His worship the Mayor of City of Windhoek, Mr. Muesee Kazapua, City of Windhoek

The workshop was officially opened by His worship the Mayor of city of Windhoek Mr Kazapua. The Mayor welcomed all participants and expressed how the workshop platform is an eye opener for the City and its Councillors. Mr Kazapua indicated that local Councillors have a role to play in decision making processes to issues pertaining to climate change hence their presence was very important and appreciated. He further pointed out that countries with smart cities, they too began from workshops, thus this platform was important for all involved communities to exchange ideas in order to help decision makers to embed climate science information into urban development decisions.

Mr. Kazapua lamented how important the workshop was especially for the environment and the city. He stated that the workshop will enable councillors to express themselves and understand complex climate change terms and language which they could easily communicate to their colleagues. The Mayor of Windhoek stated that “Councillors need to be custodians of climate change, however before they can, they must understand the issues of climate change”. Lastly he thanked all participants for taking part in the workshop as it is important for urban development and executing decisions in the City.

3. Setting the scene

Prof. John Mfunne, University of Namibia, FRACTAL-Namibia Principal Investigator

Prof. Mfunne asked all participants to introduce themselves briefly and their organisation in order to create a comfortable environment for everyone. Secondly, he asked all participants to take part in two activities described below to encourage full participation and involvement in the workshop.

Activity 1: Every participant was given a white sheet of paper with a black dot on it. Participants were asked “What do you see in front of you” Some of the responses by delegates were “Drop of ink”, “Black dot” and “A white paper”. Majority of the participants indicated that they saw either a “Black dot” or “Drop of ink”. Based on these responses Prof. Mfunne indicated to the participants that often times leaders and councillors tend to forget the bigger picture (the white paper sheet) and get distracted by smaller things (black dot). He used this example deliberately as an eye opener for councillors and decision makers that amidst their busy schedule it is always important when providing services to the people and the city not to lose focus or sight of the bigger picture.

Activity 2: With the same paper in Activity 1, participants were asked to fold the paper in half, cut off a small piece on the top right hand corner of the paper while the paper is still folded. They were asked to fold the paper again in half but this time cut off a small piece on the bottom left hand corner. Lastly, participants were asked to fold the paper one more last time then pinch the bottom right hand corner. Participants were asked to unfold their papers and see if they had the same patterns as their neighbours.

The essence behind this exercise was for participants to see that people deal with problems in different ways and in ways they understand them. Due to individuals different perspectives and reasoning they tend to see and grade problems differently. In the city of Windhoek there are unique problems such as climate change issue and urbanisation, however due to the nature of the diversity of the City these problems can be solved in many different ways. Prof. Mfunne urged that when a City deals with problems such as urban development, informal settlement, energy and water scarcity, there is a need for decision makers to think out of the box.



Figure 1: Participants showing their results from the folding of paper activity

4. Overview of FRACTAL Project and how Namibia will benefit

Prof. John Mfuné, University of Namibia, FRACTAL-Namibia Principal Investigator

Prof. Mfuné gave an overview of the FRACTAL project for participants to understand its importance for the University of Namibia and the City of Windhoek. “Climate change is a reality, it is here, and we experience it on a daily basis” he noted. He indicated that although studies have been done to prove the presence of climate change on a global scale, Namibians can already testify to the presence and impacts of climate change. “In Namibia things are not the same” he said this by indicating that there has been a change in the rainfall patterns over the years with an increase in the severity and frequency of extreme weather events such as droughts and floods this causes catastrophic impacts to livestock and crops.

Prof. Mfuné indicated that the Intergovernmental Panel on Climate Change (IPCC) has carried out 5 assessments geared toward providing information and knowledge on aspects of climate change. The gained knowledge has been institutionalized and it has compelled countries to become signatories by implementing various protocols and policies that are climate sensitive. As a way of creating resilience within African cities they have adopted these policies in order to factor in the subject of climate change into their developmental policies. Namibia is highly vulnerable to the impacts of climate change, in its efforts to compact this a national policy for climate change was developed in 2011 together with supporting strategy and action plan.

Prof Mfuné unpacked the climate change topic further by indicating the existing debate that developed countries in the North have been the cause of climate change and developing countries in the South are the victims of climate change impacts. It is within this context that developed countries e.g. United Kingdom committed monetary resources towards research that will benefit climate change and address the issues of climate change. Currently there are different projects intended to address the issues of climate change specifically for Africa such as:

- **FRACTAL-Future Resilience for African CiTies And Lands**

- **IMPALA**–Improving Model Processes for African Climate (Africa)
- **AMMA 2050**–African Monsoon Multidisciplinary Analysis 2050 (Southern African city regions)
- **UMFULA**–Understanding reduction in Models For Understanding Development Application (Central and Southern Africa Focus on Malawi and Tanzania)
- **HICRISTAL**-Integrating Hydro-climate science into policy decisions for Climate Resilient Infrastructure and Livelihoods in east Africa
- **CCKE**-Coordination, Capacity development and Knowledge Exchange unit

Prof Mfuno indicated that the FRACTAL project will be running for four years and it is one of the five projects funded under the Future Climate For Africa (FCFA) programme. The project is the only one of its kind led by an African Institution linking climate change to the city. The FRACTAL team understand that African Cities are complex systems, and climate change substantially complicates the trajectories of African development. Performing decisions either by councillors or members of the higher decisions making bodies in the city of Windhoek are never simple. This is basically because there are multiple stressors or drivers which are climate or no-climate; multiple impacts / consequences; emergent properties present risks and opportunity; disseminate climate information in order for it to be attuned to the needs of African cities. Prof. Mfuno indicated to participants that the FRACTAL project presents few opportunities through its collaboration through learning labs, training workshops, embedded researcher, small opportunity grants etc.

Prof. Mfuno reminded the participants that the city of Windhoek is growing very fast and it is going through tremendous development. As a result services like water, energy, and sanitation need to be equitably shared among our growing population in order to prevent water shortages. The FRACTAL project will benefit the city by reminding the city that there is a need to consider climate change. Despite the challenges, he noted that the FRACTAL project through stakeholder discussions, workshops and meetings climate change information can be shared and factored into city development policies.



Figure 2: Development of the Windhoek city depicted by an increase in the informal settlement and a high number of mass housing construction.

Closing of his discussion Prof. Mfuno discussed the sub-projects running within the FRACTAL project and their relevance to gathering climate change science knowledge. He suggested that attention will be given to projects aimed at solving the issues of energy and water supply particularly in informal settlements. He extended his appreciation to Councillors for attending the workshop as this is a platform to learn how to use simpler words to understand issues pertaining to climate change.

Table 1: Responses to the key questions raised from the presentation

Question	Response
1. Will there be recommendations made by FRACTAL after the research?	<p>Prof. Mfunne: We have colleagues working on climate science, out of the climate science research, we will try to understand how climate is affecting Windhoek.</p> <p>Part of the duties of the embedded researcher within the FRACTAL project is to try and understand how decisions are made in the city, do city decision makers consider the environment, do they use climate change information, is there a balance made between benefits and the costs to the environments?</p> <p>After this is studied, necessary recommendations will be made to the city of Windhoek.</p>
2. Guidelines were provided how to construct water saving car washes in the city. Can you elaborate on how people will strike a balance between making a living from car washes and wasting water?	<p>Prof. Mfunne: This is not a contradiction of the city's decision. It is not to say we support unregulated car washes in the city because individuals make a living from them. A balance need to be made between people's livelihoods and the environment. If everyone is left to do what they want problems may arise e.g. water scarcity in the city. There must be demarcation on where to place car washes, this shows that the city is aware of climate change issues.</p> <p>It comes back to you as decision makers, in light of climate change and water scarcity how do you embed the information you learned here into your decision?</p>

5. Overview of climate systems and climate information in Namibia

Mr Simon Dirkse, Namibia Meteorological Services

Mr Dirkse explained the systems and services that the Windhoek Meteorological service is offering. Often time people tend to think climate change is a science on its own, Mr Dirkse aimed to simplify the climate change terms to councillors and decision makers in the workshop in a manner that they will comprehend and share with their counterparts.

Namibia is highly vulnerable to the risks of climate change. The Namibian Meteorological centre as part of its National Disaster, Risk Reduction Programme developed three pillars for dealing with risks 1. Risk Assessment, 2. Risk Reduction and 3. Risk Transfer. These pillars rely on national policies, legislation, planning, and allocation of resources both at national and local levels. In order to run an effective and efficient meteorological centre Mr Dirkse noted that there is a need for integrated information and knowledge sharing, education and training across agencies. In his presentation Mr Dirkse highlighted the importance of the National Monitoring System (NMS) in risk reduction, risk identification and risk transfer.

Table 2: Framework of the National Disaster, Risk Reduction Programme

Legal Framework. Policies, legislation etc.		
Risk assessment	Risk Reduction	Risk Transfer
<ul style="list-style-type: none"> • Historical hazard databases • Hazard statistics • Climate forecasting and forward looking hazard trend analysis. • Exposed assets and vulnerability • Risk analysis tool 	<ul style="list-style-type: none"> • <u>Preparedness</u>(Saving lives) • Early warning systems • Emergency saving and response • <u>Prevention</u> <u>Reduction</u> of economic losses medium to long term sectoral planning e.g. Rezoning, infrastructure and agriculture 	<ul style="list-style-type: none"> • Catastrophic insurance and bonds • Weather indexed insurance and derivatives
Information and knowledge sharing, education and training across agencies.		

Mr Dirkse further indicated that in order to predict the climate, sophisticated models are used. However, due to errors associated with these models there is always a level of uncertainty in climate forecasting. He further appreciated that the Windhoek station depends on numerical weather models which are the backbones of the weather forecasting in the country. Weather forecasting and climate monitoring is depended on observations (rainfall, temperature, wind, and pressure etc. patterns), satellite observation (NOAA, MSG) and numerical weather forecasting (GFS, ICON, local models). These information is collectively used to develop a final forecast that is normally shared on TV, Radio, and social media among others.

Mr Dirkse completed his session by notifying the participants that before severe weather news is shared on weather events an advisory warning concept is followed. Starting from the **Outlook (2 weeks) -> Watch (5 days) -> Warning (48h) -> Event.**

Table 3: Responses to the key questions raised from the presentation

Question	Response
1. Concerning models used for weather forecasting. Do you use one model only or do you combine all information from all models before you share the information regarding weather events warnings?	Mr. Dirkse: We use one preferred model that analyses and calculate situations and weather. However, combination of models is also good because you find that one model will exaggerate the weather while the other one will underestimate it. It is thus important to do current analysis then follow the model or events.
2. The 48 hours warning period does that apply to all event? Is it standard?	Mr Dirkse: The warning period is dependent on the confidence by the forecaster. If the forecaster is confident about the severity of the event then the information is released to the

	<p>public earlier, however one should take in mind that there are always errors involved in predicting weather.</p> <p>Ms. Moetie: one seasonal forecast is done on a yearly basis within the region. All countries present their forecast for the year, this is summed up to become one forecast for the region. This helps countries to know what kind of weather events are they supposed to expect.</p>
2. In simple terms can you please differentiate between weather, climate and climate change?	<p>Mr Dirkse: The difference between weather and climate lies in the time period.</p> <p>Weather – is the state of the atmosphere at a particular time e.g. wind, temperature etc.</p> <p>Climate – is the weather recorded/observed over years.</p> <p>Climate change – Is the induced change in climate. There are two types of climate change. <i>Human induced climate change</i> is caused by human activities e.g. burning of fossil fuels, cutting down of trees, etc. and <i>Natural climate change</i> is caused by the change in the natural earth orientation.</p>

6. Introduction to climate change: Impacts of climate change, climate change policies, strategies and action plan

Mr. Paulus Ashili, Ministry of Environment and Tourism, Department of Environmental Affairs

Mr. Ashili gave a summary of the impacts of climate change to Namibia, climate change focused policies and strategies including action plans. Namibia is one of the vulnerable countries to climate change. There has been a predicted increase in the temperatures and evaporation which will exacerbate the existing challenges that Namibia is already facing. The country's population is highly dependent on climate sensitive sectors such as agriculture, fisheries, livestock management and the impacts could severely affect the Namibian people especially the poor who are highly dependent on these sectors for a living. Namibia has experienced a rise in annual temperatures over the past decades and changes in rainfall patterns, particularly increase in the frequency of floods and droughts. Droughts and floods events have the potential to devastate fragile ecosystems and the livelihoods of our people who depend thereon.

Namibia drafted its National policy on climate change in 2011 and a National Climate Change Strategy and Action Plan (2012-2020). This policy aims to manage climate change response in a way that recognises the national development goals and promotes integration and coordination of programmes of various sector organisations, so that benefits to the country as a whole are maximized, and negative impacts minimized. The policy outlines different objectives that are geared towards improving mitigation and adaptation approaches that are relevant to different sectors at local, regional and national level. Mr. Ashili noted that Namibia as a country need to develop strong mitigation and adaptation strategies in order to increase our resilience to climate changes.

Table 4: Suggested adaptation and Mitigation strategies

Adaptation strategies to the impacts of climate change	Mitigation strategies to the impacts of climate change
<ol style="list-style-type: none"> 1. Drought tolerant crops 2. Grow waterlogged crops 3. Farm with heat resilient livestock 4. Diversify agriculture e.g. venture into Mari-culture or aquaculture 	<ol style="list-style-type: none"> 1. Reduce CO₂ emissions 2. Use energy efficient bulbs 3. Use improved cooking stove (solar powered) 4. Plant more trees 5. Use gas powered cars 6. Develop Solar parks 7. Hybrid buses

Apart from its ratification to the UNFCCC in May 1995, some steps that Namibia has taken steps in response to climate change, and these include policies and projects:

- a. Acceded to Kyoto protocol in October 2003;
- b. A multi-sectoral National Climate Change Committee (NCCC) was formed in 2001 to provide overall oversight and to advise government on climate change issues;
- c. National Climate Change Policy in 2011 and a National Climate Change Strategy and Action Plan (2013-2020) approved by Cabinet in 2014;
- d. Variety of initiatives to promote clean development and renewable energy such as Solar Revolving Fund (MME) and green soft loans and grants of the Environmental Investment Fund;
- e. Scaling up community resilience to climate variability and climate change in Northern Namibia, with a special focus on women and children (SCORE) (2014-2019);
- f. Africa Adaptation Project Namibia (2010-2012);
- g. Climate Change Adaptation Project under the Country Pilot Partnership for Integrated Sustainable Land Management (2008-2012);
- h. Community Based Adaptation initiatives through the Small Grants Programme.

7. Greening micro-business: The Eco-entrepreneurship Training and Mentorship Programme

Ms. Lesley-Anne van Wyk, Project Coordinator, ThinkNamibia Environmental Awareness Campaign

Ms. van Wyk indicated how Think Namibia is at the heart of climate change issues by increasing knowledge, skills and environmental awareness among the youth, decision makers, learners, students and community members at large. Environmental consciousness by Think Namibia is promoted through educational videos on water scarcity and land degradation, public dialogues, seminars and journalist support and training.

Ms. van Wyk further indicated that Think Namibia through their social eco-entrepreneurship programme aim to address environmental issues while proposing solutions and giving due recognition to those activities and ideas by entrepreneurs, business starters at local levels. She

highlighted that it is important to support the youth to come to terms with climate change as they position themselves within the solutions of climate change.

Ms. van Wyk believes that through public outreach and public awareness, green business initiatives and gearing individuals towards becoming environmentally sensitive, multiple problems ranging from issues of unemployment, lack of basic income, water and energy scarcity, poverty and urban sprawl can be solved. Driven by the desire to promote eco-entrepreneurship in the country as a means to contribute towards sustainable economic development to eradicate poverty and fight unemployment Ms. van Wyk indicated that the project is also faced by few challenges such as:

- a. Lack of skills and lack of awareness around opportunities pertaining to green enterprises.
- b. Limited market opportunities for green enterprises, initiators usually feel less confident in their products.
- c. Not many business development opportunities are tailored for the needs of social entrepreneurs in Namibia.

Ms. van Wyk noted that currently, Think Namibia trained over 100 young eco-entrepreneurs all over the country to craft their business plans. The diversity in ideas includes:

- a. Waterless carwashes
- b. Upscale waste products
- c. Smart homes – to monitor energy and water consumption
- d. Green app – to share information on recycling, reduce and reuse ideas.
- e. Solar power bicycles to do small scale delivery within the CBD
- f. Hydroponics
- g. Water harvesting
- h. Small scale power lines e.g. biogas

With collaboration with the MET, Sustainable Development Council of Namibia and EIF. The Think Namibia project launch the sustainable development award which aim to promote businesses to venture into green business.

Table 5: Responses to the key questions raised from the presentation

Question	Response
1. What is the government's involvement in the future allocation of town areas? Is there a vision for people staying there in terms of climate related events such as flood?	<p>Mr. Ashili: The government encourages the country's development supported by climate science based knowledge. It is also important to use local knowledge and environmental rich information when constructing and building towns.</p> <p>Prof. Mfuné: This is why we conduct these workshops. Every individual here is responsible for sharing information to all decision makes and councillors in order to make informed decisions in the city.</p> <p>Mr. Olavi: Most town affected by floods in Namibia were planned before environmental legislation and policies were put in place, therefore it is currently an unfortunate situation</p>

	<p>for those cities. However current mitigation measures exist for these towns to prevent severe flooding e.g. in Oshakati.</p> <p>Future plans also exist for the city of Windhoek to ensure that its structural development framework is informed by strategic environmental assessment. This must be encouraged for all upcoming towns.</p>
2. Why are people constructing houses near the coast, knowing very well the impacts?	<p>Prof Mfuno: In the past years some buildings were constructed with lack of awareness, however people are well informed now.</p> <p>A need exist to voice out the potential impacts of anti-environmentally friendly activities.</p>

8. Climate-related challenges and opportunities in the City of Windhoek

Mr. Olavi Makuti, Environment Division, Department of Economic Development and Environment, City of Windhoek

8.1 Climate related challenges

Mr. Olavi gave a brief overview of climate-related challenges that the city is facing, its response to climate change as well as some potential opportunities that can arise from the challenges.

Projection studies have shown that in light of climate change, there will be limited water resources and there will be more droughts in the central part of the country. The city is already experiencing a high rate of urbanization in informal settlements, which is putting pressure on the natural resources as people need to meet their basic needs. People in informal settlements (e.g. Okahandja Park and Havana) are using fire wood as a source of cheap energy; therefore there is overexploitation of natural resources such as trees. This means trees are being cut down for fire wood, and trees are the carbon sink that take up carbon dioxide from the atmosphere and store it. Reduction in tree cover as a result of wood harvesting will reduce our capacity to adapt to climate change challenges.

Impact of climate change will have serious threats to economic development in the city. For instance, two years ago when Namibia experienced serious drought, some businesses threatened to close, Coca Cola Company closed its bottling operations in Windhoek and moved to Oshakati. Prolonged droughts can cause businesses to shut down (due to lack of water). This will then lead to high unemployment rate which will eventually cause a reduction in rate payers, as people will be reluctant to pay for the services due to lack of income. Moreover, as a result of climate change, there is unpredictable rainfall pattern and crop fields and rangelands are not productive anymore and have become more degraded. People are flocking to the city in search for better livelihoods, and this only puts pressure on limited services in the city.

8.2 Windhoek's response to climate change

Mr. Olavi stated that, as a city, City of Windhoek have taken initiatives to respond to climate change challenges. FRACTAL workshop is one of the initiatives CoW is using to strengthen their capacity, because CoW fully understands that sustainability and climate change issues are leadership issues and therefore it is crucial that the decision makers can participate and have a basic understanding and be able to question some of the submissions made by officials to the Council for approval. At international level, the City of Windhoek is a member of the

International Council for Local Environmental Initiatives (ICLEI) to prepare and publish greenhouse gas emissions data. Additionally, CoW officials participate in international platforms dealing with climate and sustainability issues (LOCS4Africa, African Capital Cities Sustainability Forum and many others). Mr. Olavi and the Mayor have recently participated in an African Capital Cities Sustainability Forum in Pretoria, where African cities come together and share experiences and challenges in their cities and the approaches they are using to improve their cities' standards. Such engagements can lead to certain declarations that may drive African cities toward resilient sustainability.

At the national level, CoW is part of the National Climate Change Committee which the Ministry of Environment & Tourism is spearheading, the GHG Inventory Working Group and contributes to national projects. Mr. Olavi also highlighted some of CoW initiatives at the local level; CoW is a member of Compact of Mayors programme. Compact of Mayors is a global position, where Mayors have globally committed to reducing the impacts of climate change in their cities. Through the Compact of Mayors programme, CoW has also developed its first GHG Inventory, which is just waiting to be approved. Additionally, other initiatives for CoW as a local authority body are FRACTAL Project, City of Windhoek Climate Change Strategy and Action Plan (under development), City of Windhoek Climate Change Steering Committee and the Renewable Energy Policy for the City of Windhoek.

8.3 Opportunities

Within the National Climate Change Action Plan, there are several parts where CoW is expected to play a role. These include, sustainable water resources based, promotion of the use of water resources, build infrastructure that can withstand some of the impacts of climate change. For instance, houses should not be constructed in areas that are prone to flooding, build infrastructures that are robust. In addition, CoW is also expected to encourage environmental sensitive transportation mode. The city has approved CoW transportation master plan which aims at driving the city towards green transportation mode. In terms of waste management, CoW is looking at introducing the Polluter - Pay - Principle (PPP). The government needs to take national law to ban plastic bags and introduce brown paper bags and canvas shopping bags.

Highlighting on the issue of water scarcity in the city; Mr. Olavi stated that the city has an artificial recharge of aquifers. Almost 90 % of water that falls in dams and reservoirs evaporates, so the city has decided to pump the water back in to the ground and store it there. So for the last two years of drought, the city has been relying on those artificially recharged underground aquifers. A proposal has been submitted to the Green Climate Fund (GCF) for funds, to improve the city's capacity of pumping water underground, store it there and use it during droughts. Material Recovery Plant, west of Windhoek by rent-a-drum, CoW has started recycling wastes even at household level. In terms of water demand management programme, CoW has been doing quite well in managing demand, although it is not enough, the city managed to save up to 25 % for the last two years when there was drought, through various save water campaigns such as *"use more, pay more; where people are only allowed to use water at a certain time of the day and water reclamation"*. Windhoek is the only city in Africa, if not in the world, that reclaims wastewater up to the level of drinking since 1968. For the last two years, the city has been using about 35 % of the water that runs from the tap, 25 % was reclaiming water, at a global standard, that is very high. It's therefore imperative to encourage the city to do more of such noble initiatives.

City of Windhoek Council tried a project at Kupferberg Landfill site, where they are trying to see if methane under the waste can be enough to generate electricity. This project has been registered as one of the CTO projects and if it works out, it could be a lucrative opportunity for the city to sell carbon credit to developed countries and generate some income. Moreover, CoW has developed a biodiversity inventory and management framework to record all plant species around in order to maintain the natural base around the city. This is so because CoW understands the crucial role that plants play as carbon sinks.

9. Decision makers to identify climate related issues and the roles of decision makers in making Windhoek resilient to climate change

Mr. Izidine Pinto, UCT-CSAG and Prof Mfuné, UNAM

Prof. Mfuné introduced the session with a video “*Climate Change Adaptation: it's time for decisions now*” <https://youtu.be/FO46sPwm4xk>. The animated 6 minutes video shows how the impacts of climate change destroy people's livelihoods, economy, and infrastructure and disrupt communication etc. In addition, it puts emphasis on adapting to the changing climate and making decisions that are climate proof.

To promote interaction among participants, after the video was shown the participants were then divided into two groups (groups had an equal representation of councillors) where they were asked to answer three questions in light of what they have learned during the workshop. The discussion questions were; As a Councillor:

1. What will you do differently after this workshop?
2. What key policies do you think need to be changed to make them more climate sensitive?
3. What opportunities do you see during policy review process that you harness to make them more climate sensitive?

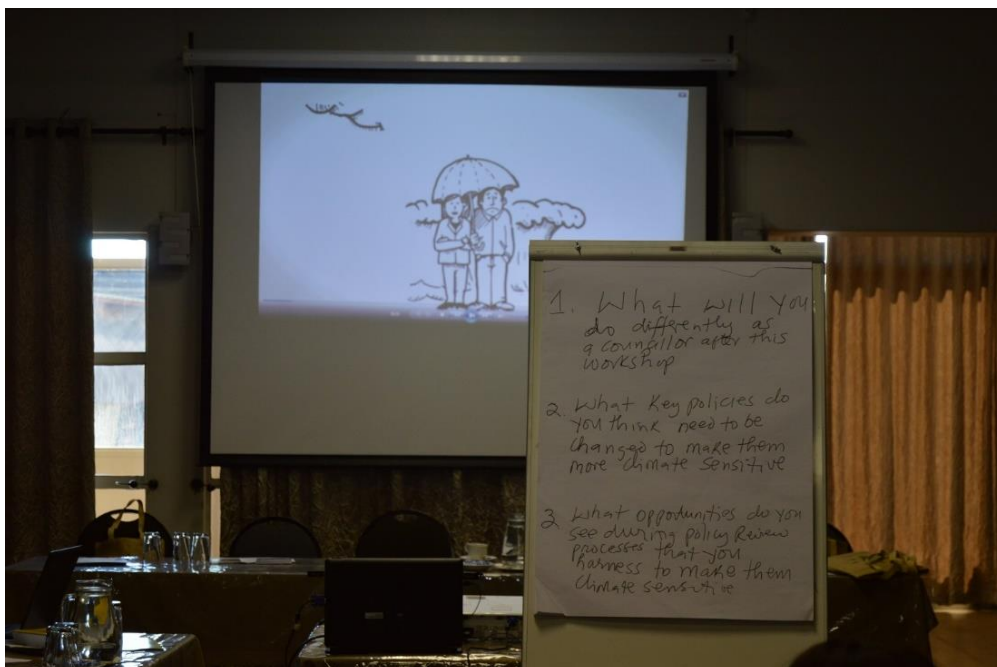


Figure 3: Showcase of the video and the group discussion questions displayed



Figure 4: Councillors in Group 1 discussing the questions



Figure 5: Councillors in Group 2 discussing the questions

Table 6 and 7 below are the discussion outcomes from the two groups.

Table 6: Group 1 discussion outcomes

Question	Response
1. What will you do differently after this workshop?	<ul style="list-style-type: none"> • Leaders need to champion climate change policies, • Consider climate change in decision-making. • Strengthen the commitment toward climate change issues. • Localizing of conventions. • Youth involvement. • Translate environmental policies into local languages so that people may understand them.
2. What key policies do you think need to be changed to make them more climate sensitive?	<ul style="list-style-type: none"> • Solid waste management regulation (e.g. plastic bags) • Town planning scheme • Integrated environmental policy • Electricity policy to accommodate solar power • Sand mining policy • Green building policy that allow the use of power efficiently.
3. What opportunities to you see during policy review process that you harness to make them more climate sensitive?	<ul style="list-style-type: none"> • Spatial development. • Food security/ urban agriculture framework • Transportation master plan. • SEA (Strategic Environmental Management) • Sand mining policy • Communal carwash plan • Climate change focal point person/ committee within the city, • Specific areas for shebeens

Table 7: Group 2 discussion outcomes

Question	Response
1. What will you do differently after this workshop?	<ul style="list-style-type: none"> • Need to give more attention to environmental issues, • Revisit environmental policies, update and share the policies, • Bring stakeholders together to update each other, • Develop early warning systems to raise awareness, • Engage with councilors from other cities to learn from their success stories.
2. What key policies do you think need to be changed to make them more climate sensitive?	<ul style="list-style-type: none"> • Replacement of plastic bags, • Spot-fine – anyone seen throwing rubbish through the window should be fined. • Be proactive before accidents happen.

<p>3. What opportunities to you see during policy review process that you harness to make them more climate sensitive?</p>	<ul style="list-style-type: none"> • Promote science fair for the youth to come up with solutions to global warming, • Involvement of everyone in the policy development, • Basic awareness in informal settlement.
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After the group discussions, each group had to choose a representative to share and present the groups discussion outcomes.



Figure 6: Group 1 representative giving feedback from the discussion



Figure 7: Group 2 representative giving feedback from the discussion

10. Reflection on action points and needs

Prof. John Mfunne, University of Namibia, FRACTAL-Namibia Principal Investigator

Concluding the workshop, Prof. Mfunne highlighted the following points from the group discussions:

- Politicians or leaders need to have knowledge about the policies, otherwise it will be hard for you to question anything in them, and that may affect the decisions you make for the city. Simply because you may not be aware whether your decision contradicts the policy or not.
- Policy developers need to involve councilors from the initial stage of policy development.
- There is a need for a simplified version of climate change policy.
- Youth involvement is important.
- Translation of policies into local languages.

11. Closing remarks

Mr Matheus Amadhila, Chairman of the City of Windhoek management council, City of Windhoek Council

A conclusive remark to the workshop was done by Mr Amadhila who thanked his worship the Mayor of city of Windhoek Mr. Muesee Kazapua, for attending the workshop. He stated that “The presence of the Mayor indicates some political will towards tackling the issues of climate change”. Climate change is a universal problem, one that requires integrated effort from everyone. He also thanked all the honourable councillors for making time to learn from the workshop and urged them to share the knowledge with their respective communities.

Mr Amadhila also acknowledged the presence of the Windhoek NMS, CoW, Think Namibia and MET, and urged these institutions to continue supporting climate based science knowledge for the benefit of the city and its community. He further thanked the FRACTAL project and the colleague from Cape Town for organising an informative and information sharing platform to inform decision makers of their role and responsibility in ensuring a resilient city. He concluded by saying “politicians, it’s our time to implement environmental sensitive policies and councilors you need to be involved in all stages of policy development, especially the initial stages”

12. Next steps for FRACTAL

- To conduct urban governance research on water and energy sector. The respondents to the research is to include past and current councillors of City of Windhoek council.
- Small Opportunity Grant: Windhoek –Lusaka city learning exchange to include the Mayor.
- Councillors requested for simplified versions of City of Windhoek climate change related policies / legislations (local and national).
- A follow up session on Councillors training on climate change.
- FRACTAL Project to share overall research findings with the councillors and the city of Windhoek.

Annex 1: Attendance list and participants' details

	Name	Position and Organization	Email address
1	His Worship Cllr Muesee Kazapua	Mayor, City of Windhoek	-
2	Cllr Chistopher Likuwa	Tobias Hainyeko Councillor, Khomas Regional Council	clikuwa@komasrc.gov.na
3	Cllr Fanuel San Shivute	Samora Machel Councillor, Khomas Regional Council	-
4	Cllr Hileni Ulumbu	City of Windhoek: Councillor	Hileni.Ulumbu@windhoekcc.org.na
5	Cllr Agatha K Iiyambo	City of Windhoek: Councillor	agatha.iiyambo@gmail.com
6	Cllr Matheus J Amadhila	City of Windhoek: Councillor & Chairperson of Management Committee	matheusa@iway.na
7	Cllr I Semba	Councillor, City of Windhoek	-
8	Cllr Mathilde Ukeva	Councillor, City of Windhoek	matrideukeva@yahoo.com
9	John Mfune	UNAM-FRACTAL Project	jmfune@unam.na
10	Olavi Makuti	City of Windhoek	Olavi.Makuti@windhoekcc.org.na
11	Selma Kalili	City of Windhoek	Selma.Kalili@windhoekcc.org.na
12	Lesley-Anne van Wyk	Think Namibia	enviropoject@hsf.org.na
13	Paulus Ashili	Ministry of Environment and Tourism	paulusashili80@gmail.com
14	Vekaama Tjitjo	City of Windhoek	vekaama89tjitjo@gmail.com
15	Mekondjo Shanyenganye	City of Windhoek	Mekondjo.Shanyenganye@windhoekcc.org.na
16	Izidine Pinto	University of Cape Town - CSAG	izidinep@csag.uct.ac.za
17	Simon Dirkse	Namibia Meteorological Services	simondirkse@gmail.com
18	Jeniffer Moetie	Namibia Meteorological Services	moetiej7@yahoo.com
19	Kornelia Ipinge	UNAM-FRACTAL Project	kniipinge@unam.na
20	Elise Nghalipo	-	nghalipo.elise@gmail.com
21	Erikka Mokanya	-	emokanya@gmail.com

Annex 2: Workshop programme

Time	Session	Facilitator
08:30-09:00	Registration and Tea/Coffee	Ms. Kornelia Iipinge, UNAM
09:00-09:15	Official opening by His Worship the Mayor Mr. Muesee Kazapua	City of Windhoek
09:15-09:45	Overview of FRACTAL Project in Windhoek	Prof. John Mfunne, UNAM
09:45-10:15	Overview of the climate system and climate information in Namibia	Mr. Simon Dirkse, Namibia Meteorological Services
10:15-10:25	Tea Time (and Group photo)	Ms. Kornelia Iipinge, UNAM
10:25-11:15	Introduction to Climate Change: Impacts of climate change, climate change policies, strategies and action plans Greening micro-business: The Eco-entrepreneurship Training and Mentorship Programme	Mr. Paulus Ashili, Ministry of Environment and Tourism Ms. Lesley-Anne van Wyk, ThinkNamibia Environmental Awareness Campaign
11:15-11:45	Climate-related challenges and opportunities in the city of Windhoek	Mr. Friedrich Koujo and Mr. Olavi Makuti, City of Windhoek
12:00-12:40	Decision makers to identify climate related issues and the roles of decision makers in making Windhoek resilient to climate change	Mr. Izidine Pinto, FRACTAL
12:40-12:50	Reflection on action points and needs	Prof. John Mfunne, UNAM
12:50-13:00	Closing remarks	City of Windhoek
13:00-14:00	Lunch	