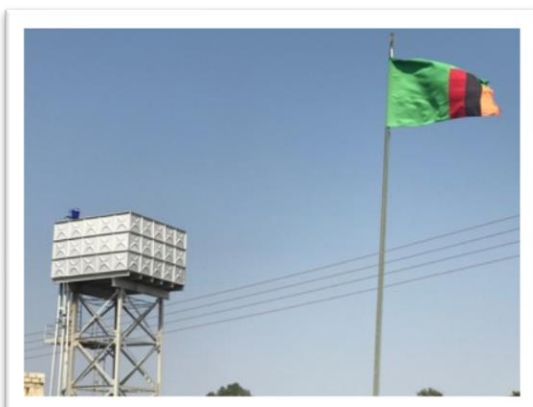
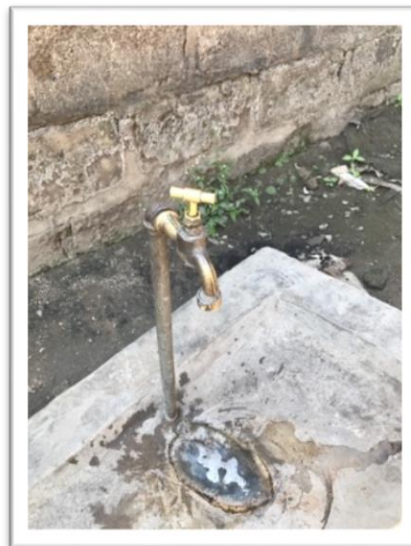


REPORT

LUSAKA LEARNING LAB 2

EXPLORING WATER ISSUES IN LUSAKA

RADISSON BLU, ON 6TH JULY, 2017





LEARNING LAB 2: EXPLORING WATER ISSUES IN LUSAKA

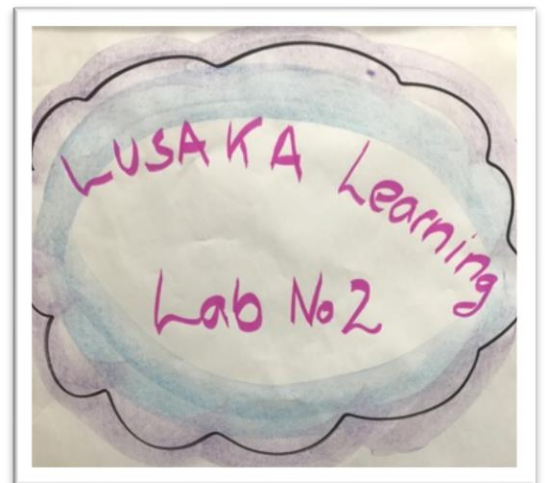
The second City Learning Lab for Lusaka was held on Thursday 6th July, 2017 at Radisson Blu hotel. Bettina Koelle from Red Cross Red Crescent Climate Centre (RCC) welcomed everyone present and thanked them for making an effort in attending the second learning lab. She apologized for starting the meeting late as the team had been waiting for participants to arrive.

Official opening

The opening statement was given by a representative from the office of the Town Clerk, Mr. Jones Chisoko. He welcomed the Future Resilience for African Cities and Lands (FRACAL) team from the Met Office Hadley Centre (MOHC), University of Cape Town (UCT) and other participants of the meeting.

This was followed by a speech from Dr. Mfunze, the Head of the department of Geography and Environmental Studies at the University of Zambia (UNZA).

The Head of the Department welcomed participants to the second learning lab of the FRACAL project. He stressed that when dealing with climate change, various actors must come into play. He mentioned that FRACAL had a focus on matters of city resilience, which borders on adaptation plans. He further mentioned that the focus of adaptation in the National adaptation plan was on rural dimensions. These rural dynamics were targeting rural livelihoods especially agriculture without engaging the urban sector. Urban populations are



vulnerable to stresses and shocks in the areas of water and climate change. He emphasized that he was happy that FRACTAL was taking a leading role in these issues of climate change in the urban areas and the city. The project is trying to bridge the gap between practitioners, planners and researchers. He raised his concerns on councilors not being part of the meeting to share the challenges being faced in the community and hoped that decision makers would be part of the next meeting. He stressed that the city is dealing with a matter that affects everyone. He further wished everyone the best for the rest of the day.

The meeting was then taken through the program of activities would be done collectively. Bettina emphasized that the participants of the learning lab would have to create a vision for the city of Lusaka. It was emphasized that it was necessary to create clear steps of where the city wanted to go with the learning process. The stepping stones would have to be identified.

Participants were then requested to introduce themselves, by mentioning their names, institutions as well as give one thought on water in Lusaka (see figure below).

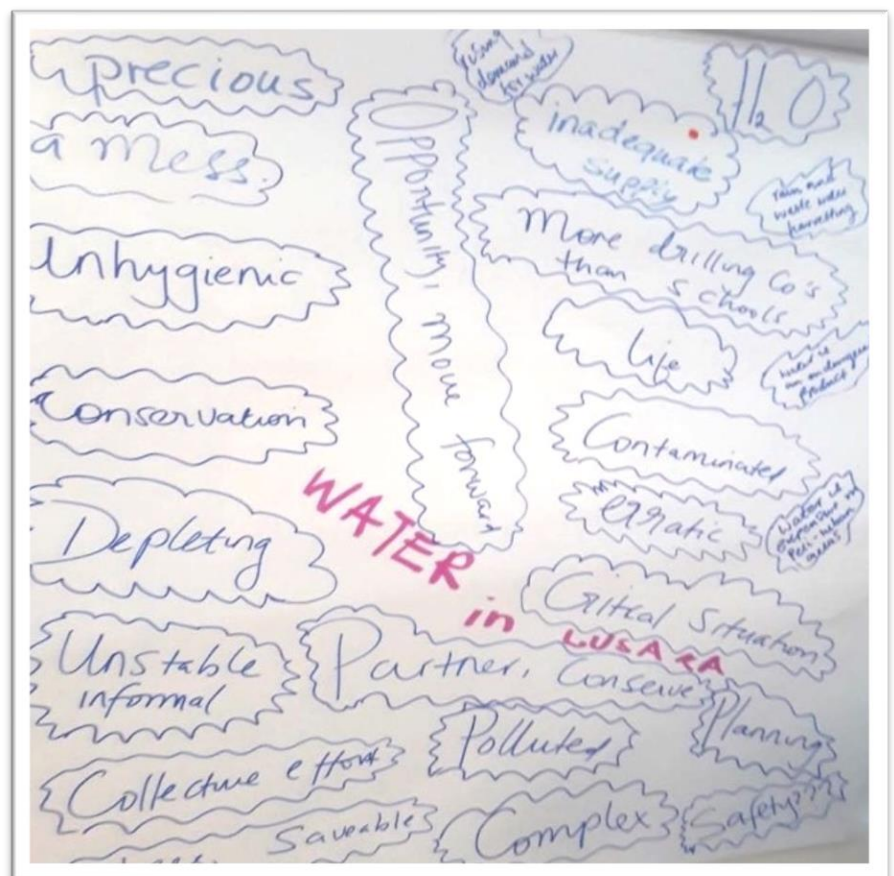
The one-worded thoughts put forward by participants are as follows:

Water is:

- Precious
- Unstable needs to be conserved
- Inadequate in supply
- Depleting
- Under stress
- Water is contaminated
- Need collective effort and we will get there
- A mess
- There are more drilling companies than schools
- In a critical situation
- Need for partners
- Scarce and expensive
- Need for partners
- Need to ponder on uses
- Planning
- Polluted
- Wastage
- It's complex need solutions
- Endangered commodity
- We need to start water harvesting
- Demand is rising

Figure 1: Depicting participant's perception on water

- Need for regulations for good supply
- Erratic
- Significant opportunity to do something



Report on progress and activities

An update was given by Brenda Mwalukanga the embedded researcher on the FRACTAL project. She mentioned that the project is for a period of 4 years (2015-2019) being implemented in collaboration with Lusaka City Council (LCC) and the University of Zambia. She mentioned that in the first learning lab held in September 2016 had participants identified issues that were most likely to be amplified by climate change. Initially, 8 issues were raised but later narrowed to 4 issues which included

1. Flooding
2. Unregulated abstraction
3. Low water supply and
4. Low quality of water

She further mentioned that the burning issues and any research in FRACTAL would focus on the peri-urban areas of Lusaka as that is where the issues are most prominent and where the majority of the population of Lusaka are living.

The researcher mentioned that there was also a focused project (funded by START within the GEC Africa project) called the, 'Understanding the interaction of municipal solid waste, flooding and planning in the city of Lusaka'. The methodology used was of a participatory nature, sampled residents were provided with 50kg sacks to fill with their waste over a period of one week. The research team would then collect these sacks after one week, sort the waste from each sack into plastics, food, diapers among other categories and weigh these categories. The aim is to understand the amount of waste as well as the type of waste being generated at a household level. Further the study aims at providing recommendations on how best the local authority can manage municipal waste. The other aim of the project is to understand whether the causes of flooding in the city are as a result of planning irregularities or solid waste is contributing to the flooding.

A highlight was given on the other activities that were undertaken under the FRACTAL project

1. A city dialogue to discuss the Lusaka water resources and climate change
2. A training of councilors on climate change information and the use of it for decision making
3. Research on understanding governance and decision making in water and energy sectors in relation to climate change.
4. A feedback session on the governance and decision making in the water and energy sectors to discuss the preliminary findings.
5. A training for decision makers in the water sector, meteorological department, local authority and other key decision makers in climate information, access and use for development decisions.

This update was followed by a summary of the governance and decision making in the water and energy sectors by Davison Muchadenyika from the University of Cape Town (UCT). He explained that the study was conducted in May 2017 to contribute to understanding how decision making in the water and energy sector were being in terms of climate change. He further explained that the study uncovered four types of decisions which included policy, project, operational and regulatory instruments. Davison informed the participants that the primary

focus was to see the link between governance and burning issues that were identified during the first learning lab (flooding, low sanitation, unregulated abstraction and inadequate water supply). He went on to further explain that there is a need to identify what informs decision makers in cities. He also explained that the research undertaken to date revealed that most of the decisions being made are influenced by national level decision making, with the city merely implementing them. He further explained that there is a need for the local authority to position itself at the center of decision making in the city.

The methodology used during this research was qualitative interviews. A total of 26 respondents were interviewed drawn from the water and energy sectors, from national institutions, government regulatory bodies, city institutions, research institutions, civil society and private organizations working in the water sector.

The lightning talks from the embedded researcher and Davison were followed by short presentations from the People's Process on Housing and Poverty in Zambia (PPHPZ) which is under Slum Dwellers International (SDI) the Lusaka City Council, National Water Council and the Zambia Meteorological Department (ZMD).

PRESENTATIONS

1. People's Process on Housing and Poverty in Zambia

A short talk was provided by the people's process on housing and poverty in Zambia (PPHPZ). The program officer Mr. Farai Shumba did this alongside Veronica Katulushi. This is a social grass-roots movement that deals with urban and rural housing development at a low cost.

Their presentation was on the perspective of water and sanitation and flooding in peri urban areas. The organization collectively deals with issues of housing, water and sanitation as well as poverty reduction through savings schemes.

They provide capacity building through training in constructing low cost housing and low cost eco-san toilets.

Farai and Veronica explained that 70% of the urban populations live in informal settlements. They explained that informal settlements are generally underserved with safe water. Water kiosks are the major source or point of water collection. A 20-liter container costs 50 ngwee and an average family of six needs 10 containers per day. Research had indicated that water from kiosks is more expensive than individual yard tap connections which are charged a fixed rate of K76. In comparison with Formal or planned settlements, the rate that Lusaka water and sewerage company charges is K48.32 for 0-6 liters which is inclusive of K20 for the meter charge.





Based on the high cost of water in informal settlements, people are pushed to desperation to dig shallow wells. Often times there is no water supply. In the month of June 2017, there was no water for almost 3 weeks. Women and girls walk for several kilometers in search of water.

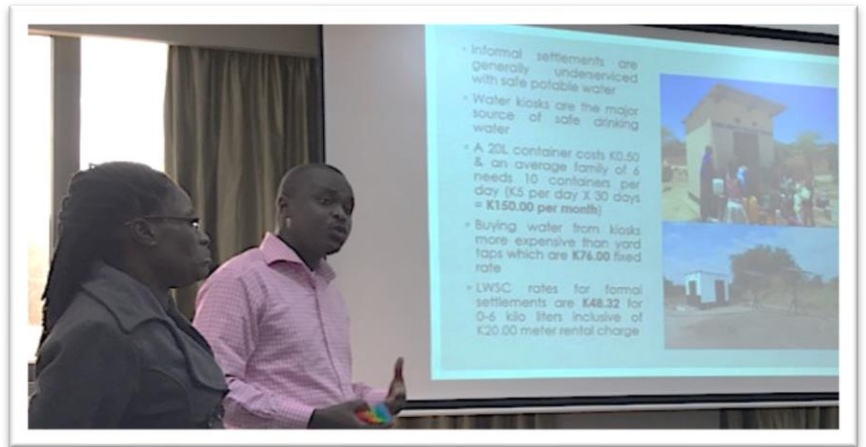
On sanitation, Veronica and Farai explained that the urban areas do not have access to proper sanitation. It is estimated that 60% of the urban areas have no improved sanitation. Pit latrines are the most common sanitation facilities in informal settlements owing to lack of sewer lines. PPHPZ and Zambia federation for poor and homeless people have

established a sanitation revolutionary fund. New toilets have been introduced which are environmentally friendly and low cost. Eco-san or dry toilets loans cost K2500 and in comparison, flush toilets with bath tubs cost K10, 000. These ecosan toilets are environmentally friendly and the faecal matter once treated can be used as fertilizer. Another sanitation model that the group uses is modeled from Uganda called the bio fuel. It has a similar design as the ecosan but organic worms are added to break down the waste. The fluid /water is harvested for gardening and has no odour. The biofuel toilet can be used by more than 30 households.



Flooding

Veronica and Farai informed the participants that peri-urban areas faced challenges in flooding as a result of several factors which include lack of adequate drainages and poor solid waste management. As a result informal settlements experience floods on an annual basis causing destruction of property and water borne diseases.



PPHPZ and Zambia Homeless People's Federation (ZHPPF) have constructed community led drainages with the support of UN Habitat under the 'building disaster risk reduction and resilience in communities' projects. Members of the federation also worked with Lusaka City Council and participated in the construction of drains. It was mentioned that there was need to sensitize communities against disposal of waste in drainages. PPHPZ is also working with Care International to encourage residents to subscribe to the community based enterprises who collect waste from communities and properly dispose it at the council land fill. PPHPZ is also involved in a pilot project on tariff bundling of water and solid waste in Kanyama through the initiative called 'Clean the community.'

Farai concluded by stating that the challenges in peri-urban communities are often addressed on a project basis with the possibility of upscaling being dependent on availability of finances.

A question was raised on the perception of community members on the use of waste from the bio fuel toilets as fertilizers. The meeting was informed that the communities had been adequately sensitized on the benefits of the use of the fertilizer and properly explained to that the waste is treated.

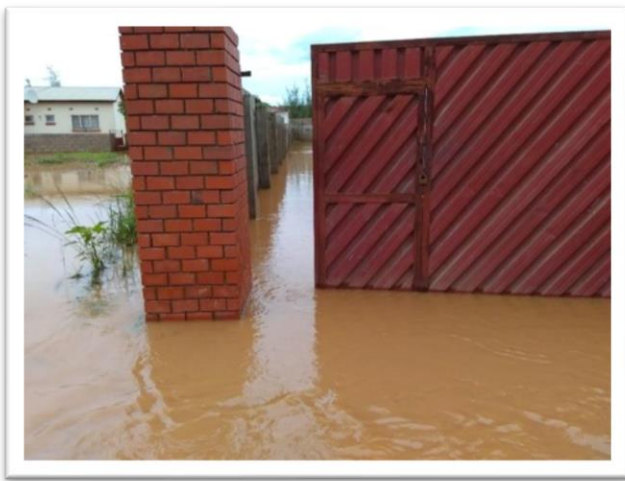
PRESENTATION FROM LUSAKA CITY COUNCIL'S DISTRICT PLANNING OFFICER - MR.TROPHIUS KUFANGA.

A presentation was given by the Acting District Planning Officer at Lusaka City Council (LCC); Trophius Kufanga. He explained that Lusaka has a population of 2 million people. He explained that the council has a comprehensive development plan. He further explained that since the last learning lab LCC has launched a disaster risk reduction strategy which emphasizes on the provision of flood proofing and sanitation facilities especially in peri urban areas. This is premised on the fact that Zambia has experienced



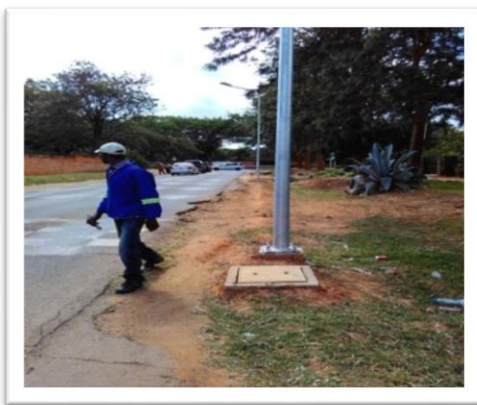
floods as well as droughts. He explained that floods and droughts both have a negative impact on food and water security as well as health and sustainable livelihoods. Trophius further explained that the National Climate Change Strategy also identified droughts and floods as events that are influenced by climate change and strain public health.

He mentioned that there was a National Decentralization Policy and a strategic plan that foster the local authority's mechanisms for infrastructure provision in the city. The council's strategic plan of 2010-2015 notes that in most of the slum areas there are inadequate stormwater drainage systems which contribute to flooding. He further explained that the presence of pit latrines in communities which overflow during floods contributes to the outbreak of diseases during the rainy season. He explained that the land in Lusaka is flat and the southern part has limestone which results in the water not permeating the soil quickly. The unplanned settlements that are located in these areas are therefore prone to flooding. The issues of poor drainage in both unplanned settlements is compounded by development encroaching on drainage reserves. Another factor contributing to inefficient drainage is poor waste management; which is often disposed of in the drainage. He further informed the learning lab participants that Lusaka had been experiencing flooding since the second week of 2007 up to January 2008 according to a study conducted by Japanese International Cooperating Agency (JICA).



Trophius informed the lab participants that the local authority receives its information for decision making from the Agricultural and Forestry Department, the Zambia Meteorological Department (ZMD), which are both sub committees of a district development coordinating committee.

Trophius showed the participants a picture that depicted the lack of sidewalks on the newly constructed roads and explained that the city had been receiving an upgrade in terms of road networks, but non-motorized transport had not been addressed.



After Trophius' presentation, a question was on how informal settlements can arise when there is a formal system for land allocation. The response was that the council is run by a board which is comprised of elected councilors. It has been realized that people with power often have vested interest in land allocation.

3. PRESENTATION: NATIONAL WATER AND SANITATION COUNCIL (NWASCO) - MR. KASENGA HARA

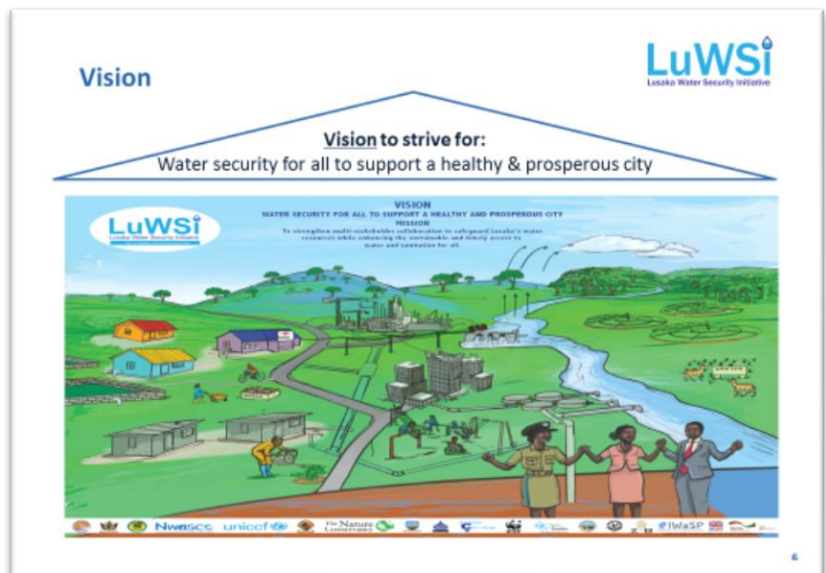
He explained that there was pressure on Lusaka's water security and the catchment areas in the city which led to the system being unable to cope and respond to vulnerable community. Variability in rainfall had become more pronounced and frequent, increasing land degradation and increasing water demand has resulted in pressure on the water system.

This then led to the creation of the Lusaka Water Security Initiative (LuWSI), which is a collaborative platform that focuses on holistic projects driven by partners to harmonize the water security agenda (of which FRACTAL is a member). He explained that the vision of the initiative is to strive for water security to support a healthy country. Kasenga also explained that LuWSI had four function areas

- Improving understanding
- Deliver projects
- Strengthen collaboration
- Education and Advocacy

Water security action focus was on the following;

- Ground water pollution prevention
- Sustainable water exploration
- Sustainable management of catchment areas
- Sustainable access to water and sanitation
- Urban flood risk management



The initiative has moved from GiZ which was responsible for stakeholder mobilization and formalization process of the LuWSI initiative. The initiative is currently being institutionalized under the National water and sanitation council. A coordinator and secretariat will be employed and the organization will be a standalone organization operating outside NWASCO.

Questions that were asked were;

1. What the link between LUWSI and Lusaka Water and Sewerage Company (LWSC) was? The meeting was informed that LWSC is a partner on the LuWSI as it had a mandate in water provision and treatment. It has the mandate on water. Active member

2. Another question was asked on whether LuWSI was focused on either ground or surface water protection?

Kasenga explained that LuWSI was focused on groundwater protection and the prevention of pollution to groundwater, Sustainable water exploration, Sustainable management of catchment areas, Sustainable access to water and sanitation and Urban flood risk management.

4. ZAMBIA METEOROLOGICAL DEPARTMENT - KENNETH SINACHIKUPO

Kenneth explained that the mandate of the Zambia Meteorological Department included;

Weather observation and the analysis of the data from weather observations stations is then used to come up with products and services for different users. The Meteorological Department is also responsible and mandated to disseminate product information. He explained that there are two types of network: manned stations in Lusaka at



Kenneth Kaunda International Airport, (KKIA) city airport and Mount Makulu and automated weather stations at KKIA, University of Zambia (UNZA) with the rest are located in Chongwe, Luangwa, Yatsani Radio and Radio Lusitu. The two modes observe and measure the weather elements like temperature, rainfall, radiation, wind speed, humidity and wind direction. The weather station at UNZA transmits data every 15 minutes.

Kenneth explained that the products and services that were provided by the MET Department were:

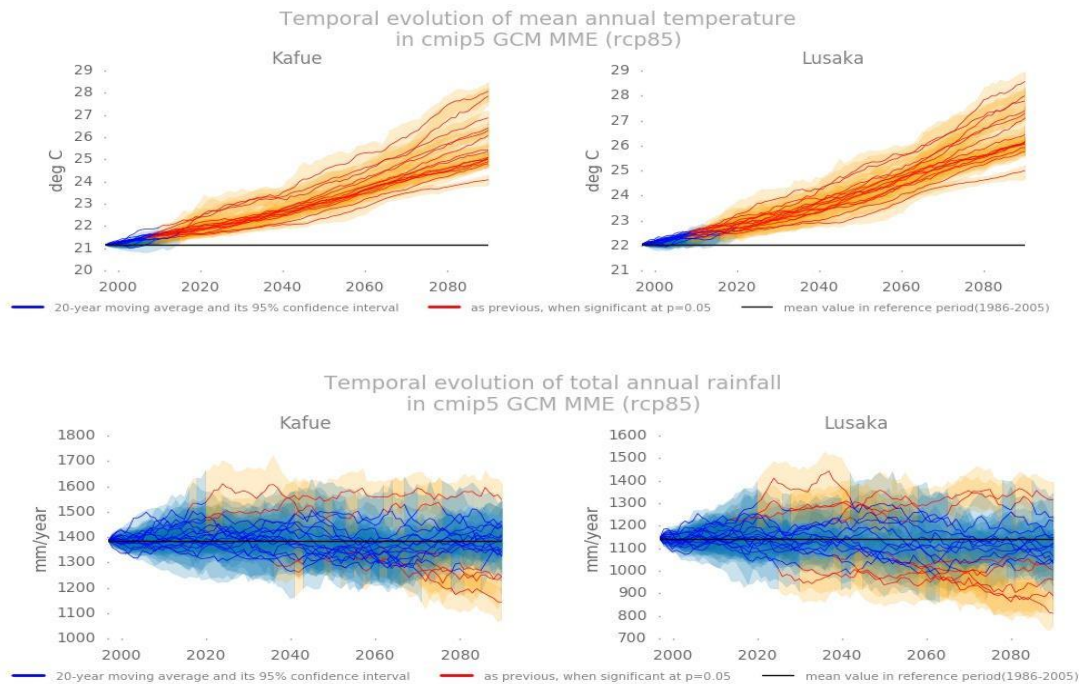
- Seasonal and rainfall forecast.
- Daily weather forecasts on websites
- Seven day forecast early warning advisories
- Climate data
- Crop weather bulletin every ten days
- Aviation products
- ENACTS Platform which provided Visual maps for weather patterns and performance.

Data and information is available at daily, weekly, monthly and annual timescales. The department also provides daily forecast, seven days forecast and bi-weekly forecasts.

Participants of the learning lab wanted to know what the website for the Zambia meteorological department was. It was given as www.zmd.gov.ZM

5. PRESENTATION BY CHRIS JACK FROM THE CLIMATE SYSTEMS ANALYSIS GROUP

Chris explained that Lusaka has become 1st warmer over the past decades. He explained that the models used indicate that the city will get warmer yet they do not agree on changes in rainfall variability and rainfall patterns. Chris explained that there was need for the city to adapt and become a climate resilient city. For example, there is a need to conserve water and ensure access to sufficient quantities. Chris also explained that projections show it is possible that the Kafue River will get drier in the future, though it is expected that rainfall events will intensify even though the frequency of rainfall may reduce.



6. VISIONING EXERCISE

After the lightning talks from the 5 presenters, Bettina took the learning lab participants through a visioning process. The participatory visioning process was aimed at surfacing important aspects of a joint vision, and allowing participants to agree or refine the vision at each step in the process. This dynamic process resulted in a somewhat generic vision that all participants could agree upon.

Below is the vision that was agreed upon by participants during the Lusaka learning lab process.

Vision

"Accessible and affordable quality water for the present and future generations in Lusaka for all."

After this, participants were requested to **identify stepping stones** on how best to achieve this vision. Participants were divided into 4 groups: Planning, Infrastructure, Research, Information and Health. Each was tasked to identify the challenges under their theme as well as the stepping stones that could contribute to achieving the vision under the theme that they represented.

❖ Planning

Challenges:

Informal decisions
Population growth as opposed to service capacity.
Weak institutional capacity
Mushrooming of settlements
Poverty levels we need to reach the vision
Devolution of power

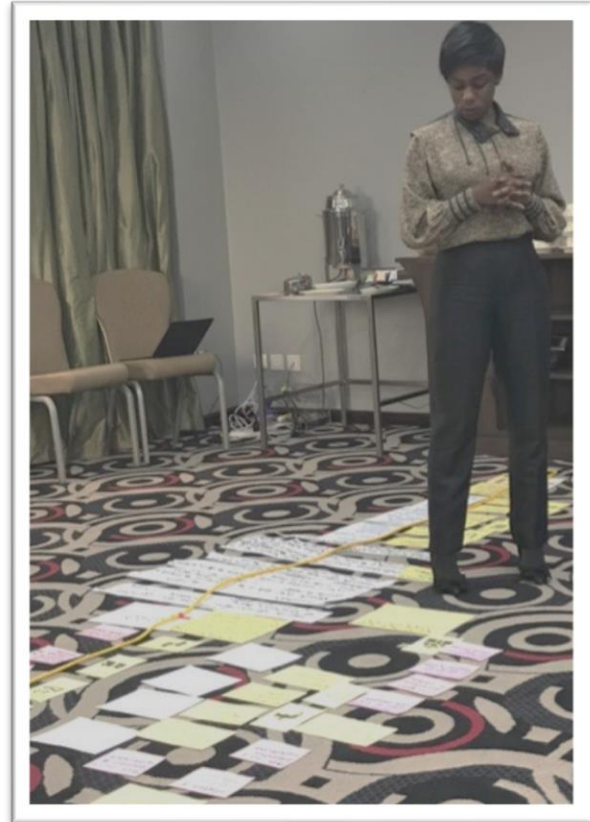
The planning group identified the stepping stones listed below to achieve the vision

- Awareness of water conservation
- Institutional mechanisms communication and coordination
- Empowerment of population
- Review and reform of legislation that govern authority
- Comprehensive approaches to upgrading. PPHPZ are good approaches but they are not integrated.
- Water resource reuse and management.

❖ Infrastructure

Challenges

- Weak uncoordinated institutions
- Inadequate and/or depleted physical storage for water
- Inappropriate technology.
- Inadequate financial resources for development of physical infrastructure
- Poor management and failure to maintain infrastructure



- Vandalism of public infrastructure property.
- Weak uncoordinated governance

The infrastructure group identified the following Stepping stones to achieve the vision

- Systematic upgrade of informal settlements
- Implementation of government policy
- Attitude change and sensitization on protection of infrastructure
- Investment of finances to implement the Lusaka master plan
- Research and development on appropriate infrastructure

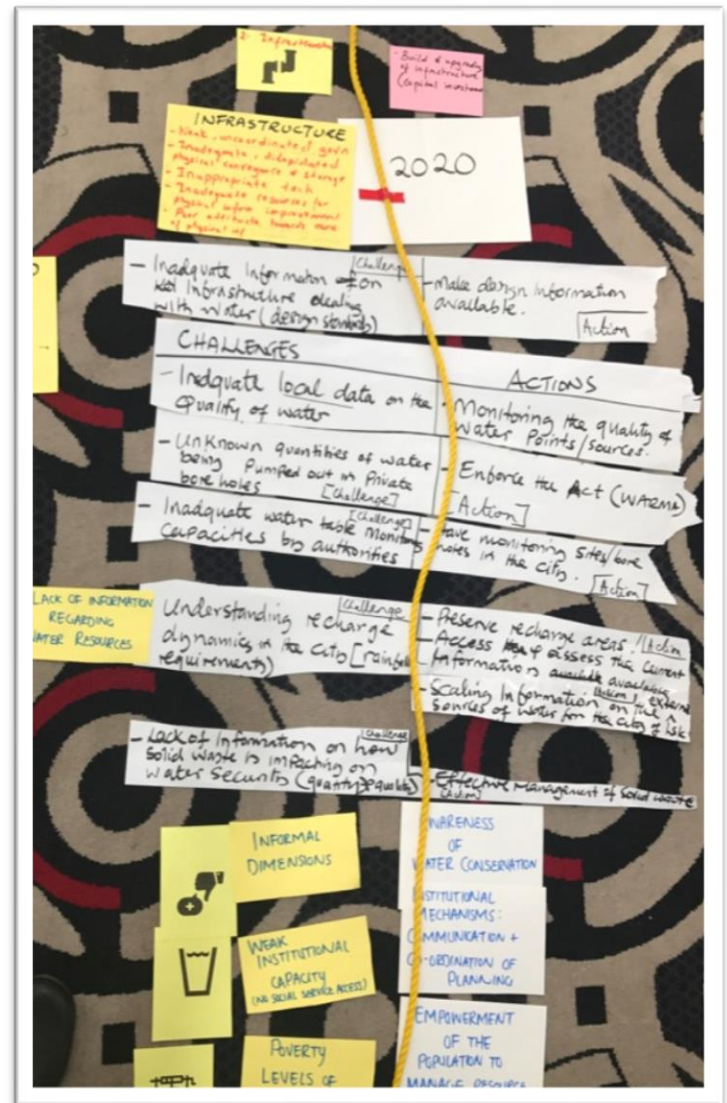
❖ Research and information

Challenges

- High temperature
- Low rainfall
- Major flooding
- Reduced rain
- There is inadequate information on key systems such as drainage design systems as well as standards of drainages and roads. There is need to have standard and maintain it.
- There is little access to information with regard to recharge areas
- Lack of information of how solid waste impacts quality and quantity of water in the city of Lusaka. Solid waste pollutes water sources and therefore water quality is compromised.
- There is little or no information on the quantity of water being abstracted from the ground

The research group identified the following Stepping stones to achieve the vision

- Monitoring of water sources to reduce uncertainty about ground water levels in the city.
- Enforcement of regulatory Act by Water Resources Management Agency
- Increase Water testing



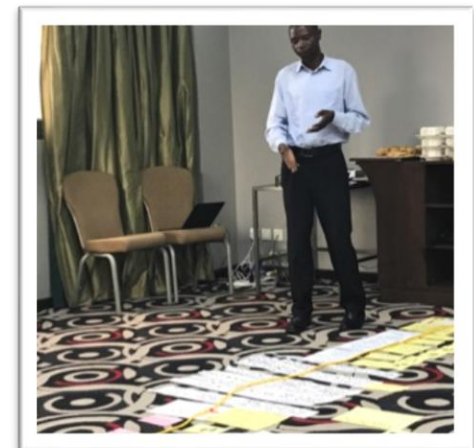
❖ Health

Challenges

- Ground water pollution. 70% of the city is informal and unplanned with a majority of households using pit latrines which pollute the groundwater. This increases the cost of treating water.
- Cost of water that was treated was unaffordable for significant number of the population.
- High cost of sanitation facilities and infrastructure and low income households could not afford this, hence using pit latrines.
- Existence of shallow wells due to high cost of treated water.
- Frequency of the occurrence of waterborne diseases due to groundwater pollution
- Insufficient inadequate waste management systems
- Equipment for waste collection is inadequate and in some cases inappropriate for the type of wastes being collected and where the waste is being collected. An example of trucks being unable to access certain parts of peri-urban areas due to lack of interconnected feeder roads.
- Lack of enforcement of the public health ACT and by- laws by the local authority

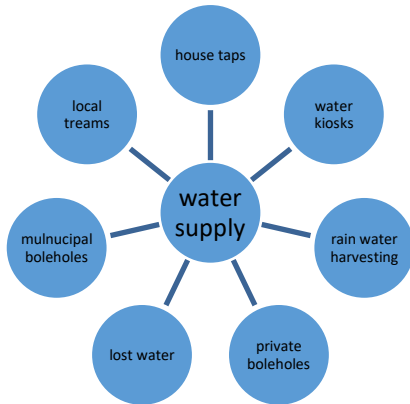
The health group identified the following Stepping stones to achieve the vision

- Purchase and use of appropriate technology
- Need to carry a property survey to know how many households there are in the city, what facilities are existing or omitted on the property and who owns these properties.
- Provision of affordable sustainable sanitation.



7. WATER SUPPLY STRESS TEST – BY REBECCA ILUNGA

Rebecca explained that the test was aimed at developing tools that support and assist in decision making and co-production. She explained how the WEAP model takes the burning issues and runs them through a model to assist in decision making based on changing climate.



She explained that the Water Supply Stress Test was a bottom-up approach that finds vulnerabilities in the water system (climate and non-climate) and then contributes to finding solutions that perform robustly for a wide range of future scenarios. More robust means finding ways to continue what is important under a more stressful future. The test uses the decision-scaling framework to identify climate changes that would result in risk and then identifies the likelihood of those climate changes using projections. It aims to give an indication of decision thresholds and system performance criteria. Based on the different water resources available from the image above she broke the lab participants into groups and each group had to brainstorm and mindmap components of each water source considerations included: Where does the water come from? Who uses it? How much? What affects it (climate and non-climate) etc.

8. PLANNING FOR NEXT STEPS

After the Water Stress Test presented by Rebecca, the participants of the learning lab proposed that;

1. There was a need to know whether the problems presented exist, validate these problems and provided solutions through dialogue sessions.
2. Questions were raised on whether disasters such as floods were climate induced and if the lab was snow leaving these out of focus.



3. It was agreed that four thematic areas based on each burning issues identified during the learning lab would be formed and think tank sessions held to discuss these.
4. We need to improve data sharing and make the data accessible.
5. We should include weather information therefore MET surveillance.
6. We need to have Scientific accurate synergies which looks at possible outcomes
7. It was agreed that there was a need to Know what elements are important for trajectory mapping
8. Attendants were informed that a report on the learning lab would be produced by the FRACTAL team.
9. Participants that attended the training on climate information and decision making would be given a certificate of attendance

9. NEXT LEARNING LAB

- The next Learning Lab is planned for **late November 2017**.
- Before we meet we don't need to finish tasks we can report on the progress.
- Training of climate data & analysis and use of tools in November.

10. REFLECTION & ACTION ITEMS

Action items

- We need to validate whether these challenges arise: have a dialogue and site visit
- Form thematic groups around initial 4 burning issues (WARMA, LCC, MWASCO, LWSC), UNZA to facilitate. To identify gaps.
- Improve information sharing through LUWSI . NWASCO database
- Identification of gaps in climate information for Zambia
- FRACTAL team to produce training and learning lab report
- FRACTAL team to send out training certificates and materials (for training and learning lab)
- Training in climate data, analysis and use of tools: November 2017
- Next Learning Lab: November 2017

Participants were also requested to state what they liked about the workshop.

- Presentations, projections on Lusaka's future rainfall and temperature
- Presentation on Lusaka, water security for the next generation,
- The visioning and stepping stones activity,
- The free and open communication,
- The informal engagements,
- The games and the way learning was made simple

What to change/ improve before next meeting

- Keeping of time
- Include a lucky draw for participants who are on time
- Produce materials prior to workshop and send it to participants before the meeting
- Send the agenda of the meeting with the invitation letter

11. WORD OF THANKS AND CLOSURE

The FRACTAL team thanked all participants, participating organisations and donors for making the event possible. The Learning Lab was followed by a high-level breakfast, sharing the outcomes of the Learning Lab 2 and a field trip to an informal settlement (see photo impressions below).



**ATTENDANCE LIST FOR THE LUSAKA LEARNING LAB 2:
EXPLORING WATER ISSUES HELD ON 6TH JULY 2017 AT RADISSON BLU**

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Kasenga Hara	National water and sanitation council	Khara@nwasco.org.cm	0967108246
Brenda Mwalukanga	FRACTAL		
Bettina Koelle	Red Cross Red Crescent Climate Centre	Koelle@climatecentre.org	+27 5243916

List of Acronyms

FRACTAL	Future resilience for African CiTies and lands
KKIA	Kenneth Kaunda International Airport
LCC	Lusaka City Council
LuWSI	Lusaka water security initiative
Nwasco	National Water and Sanitation Council
PPHPZ	Peoples Process on Poverty and Housing in Zambia
Climate Centre	Red Cross Red Crescent Climate Centre
SDI	Slum Dwellers International
UCT	University of Cape Town
MOHC	Met Office Hadley Centre
UNZA	University of Zambia
ZHPPF	Zambia Homeless and Poor Peoples Federation
ZMD	Zambia Meteorological Department