

Malawi Public Health Emergency and Preparedness Workshop



3 – 6 September 2018, Sunbird Capital Hotel, Lilongwe, Malawi



Malawi Public Health Emergency and Preparedness Workshop

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Introduction

Over four days, workshop participants collaboratively identified opportunities to improve interagency cooperation, enhance the institutional framework, and strengthen capacity for public health emergency prevention and response in Malawi. The event included discussion on broad technical topics in water, sanitation and hygiene, preventive medicine, and societal issues. A one-day emergency response table top exercise allowed participants to work through a possible scenario and discover strengths and weaknesses of current plans. Findings and recommendations from the table top exercise focused on enhancing cooperation between civilian and military organizations in Malawi.

The first day of the event was kicked off by government officials who emphasized the critical nature of effective preparedness and response to public health emergencies. The panel of experts discussed the existing mechanisms that the Government of Malawi employs to address public health emergency preparedness and response. In the afternoon of the first day participants addressed enhancements to the existing public health emergency response framework in Malawi giving particular thought to civilian-military cooperation.

The second day of the event was focused on national and supra-national information, resources, systems and processes that can be harnessed to strengthen public health emergency prevention and response. The third day of the event consisted entirely of a table top exercise, with the final session of the third day consisting of a debriefing on the exercise.

The fourth and final day of the event included a tour of the Lilongwe Water Board facility in the morning, with participants validating findings and recommendations from the table top exercise in the afternoon. The fourth day concluded with the closing ceremony.



DAY 1 – Monday 3 September, 2018

08:00 - 08:30 Registration and Welcome

Expectations from participants expressed during introductions

- Money for processes like preparing a contingency plan
- Learn how to develop indicators for planning
- To learn how we can connect with different agencies in an emergencies
- Table-top exercise – how it will enhance capacity in Malawi
- National preparedness plan – how to
- Connect with different agencies
- Evaluate ourselves with regards to – we have plan – but add interagency plan aspect to it.
- Really understand the roles of the different agencies
- How we can strengthen relationships between partners and agencies – also link into military
- Partnership and co-ordination of activities during emergencies
- Increase the involvement of Malawian military and emergency services
- Co-ordination (enhance) with civilian agencies from military
- Realistic support for MDF challenges
- “Fire goes where the brush is” – identify where the fire is – and make the brush fireproof – find a way to minimize issues
- Juicy stories!
- Different stakeholders – work as a collective
- Working together to combat issues of disaster management
- Working towards supporting large scale preparedness for emergencies – link military into these plans.
- Refining the role of the military services during emergencies
- Preparedness activities – prepare, communicate, realistic solutions
- Help guide CDC in terms of needs and shape support
- Representing AFRICOM – interested in supporting partner countries – specifically countries who want to help also neighbouring countries
- Lessons learn here – take it into future engagements to share with other partner nations
- See improvement collaboration between different disciplines and sectors and to deal more effectively with health emergency scenarios
- Knowledge and skills – and work together with the military
- Enhance planning for emergencies specifically with regards to water supply
- Learn lesson ito preparedness
- Looking at the various players to come up to beset address emergencies specifically with regards to water
- Better understanding of partners in Malawi and how they can better work together
- To learn more about Malawi context re preparedness, and also water’s place in these emergencies
- Areas of realistic improvements
- Concrete actions – where do you go from here – further cooperation etc
- Combined responses – how do we come up with these
- Learning about the coordination frameworks in place and new collaborations we need to form
- Understand what are the gaps where CDC can support to detect and support Government of Malawi
- Identify weaknesses and strengthen these
- Identify our partners in the fight – when we fail we fail together as a population – thus need to strengthen our collaboration
- To see how the water sector in Malawi can reposition itself ito emergencies

- Water Board – co-host – see at the end how the networks and collaborations between the water board and present institutions can move forward.

Opening Plenary	
08:30 - 10:00	<p>Government Perspective on Public Health Emergency Preparedness and Opportunities for Enhancements Through Civilian-Military Cooperation - Remarks</p> <ul style="list-style-type: none"> • Lilongwe Water Board • CDC/ US Embassy • Malawi Defence Force • Ministry of Health
10:00 - 10:30	Coffee break and workshop participants photo

PUBLIC HEALTH EMERGENCIES PREPAREDNESS PLAN

PRESENTATION AT MALAWI PUBLIC HEALTH EMERGENCIES AND PREPAREDNESS WORKSHOP, LILONGWE MALLAWI 3 TO 6 SEPTEMBER, 2018

PRESENTATION OUTLINE

- B/ground to Malawi's experience to emergency preparedness and response
- Response systems to emergencies
- Recent public health emergencies in Malawi
- Factors considered in preparedness planning process
- The 2017/18 H/Cluster Contingency Plan
- challenges

B/ Ground to Malawi's Emergency Preparedness and Response

- The 1973 cholera outbreak takes probably a lion's share of not only Ministry of Health but the entire Malawi Government genesis of emergency preparedness and response planning and budgeting .
- Some form of preparedness and response planning has been about management of disease outbreaks, as stated, cholera has been dominant issue since the first outbreak in 1973,

Cont.

- Much as some of the public health emergencies have been impacts of natural disasters like floods and earth quakes, preparedness and response had predominantly and conspicuously been for the health sector to address health problems...
- Perhaps it was after national emergencies such as the Phalombe Floods disaster in the early 1990s that the nation saw establishment and operations of the Department of Disasters at the national level

Cont.

- Meanwhile, as financial allocation (to support preparedness and response to public health emergencies/ disease outbreaks management) to the EH section at national level seemed to dwindle and fade away ..., district health offices(DHO) got strengthened with the introduction of integrated disease surveillance and response(IDSR) strategy in the country in the early 2000

Response Systems to Emergencies

- Government established the Department of Disaster Management Affairs (DoDMA) at the national level
- Coordination structures called "clusters" established as well at the national level, replicating such at district level is being strengthened for various sectors concerned
- Recruitment and deployment of disaster management officers starting with disaster prone districts, done
- Facilitating formation and capacity building of civil protection committees (CPCs) at both district and community levels....

SYSTEMS IN THE HEALTH SECTOR

- The IDSR Strategy , introduced in 2003, captured disease outbreak management structures called epidemic management committees (EMCs) and technical committees called rapid response teams (RRTs) at the national, district and community levels
- Emergency preparedness plans have since been produced through these structures; activities in the plans have had a bias towards disease outbreaks control

Recent Public Health Emergencies in Malawi

- There has been dominance by natural disasters with related health impacts; questions on climate change issues for this trend
- The trend has also seen widening range of preparedness and response plan activities from disease outbreak management bias to broader health services provision such as RH, FP, continued treatment of clients of chronic conditions among others

Cont.

- Recent and frequent disasters in Malawi include the following:
 - Strong winds
 - Floods e.g. the 2015 floods
 - Major accidents (road traffic accidents)
 - Earthquakes
 - Disease outbreaks and threats such as cholera and Ebola Virus Disease (EVD) respectively
 - droughts

FACTORS CONSIDERED IN PREPAREDNESS PLANNING PROCESS

This is probably the most challenging task for the Health Cluster
 For quite some number of years, the practice in coming up with preparedness plans has taken some of the following factors:

- Trends of diseases prone to epidemics
- Known/established attack rates of some diseases
- Health impacts of identified hazards likely to occur in a given disaster prone season

cont

- Number of people likely to be affected by the identified hazards
- Groups of people and health services required when disasters have separated such people (internally displaced) from areas where health services are provided

THE 2017/18 H/CLUSTER CONTINGENCY PLAN

- This plan will be referred to because the 2018/19 contingency plan is not yet prepared

CHALLENGES

Quite a range of challenges are encountered in the course of preparing the plans and more conspicuously during implementation; some of them are as follows:

- Limited finances and related resources
- Tendency by some partners of supporting response and recovery activities than preparedness activities
- Weak coordination especially during response to disasters and health impacts

Cont.

- Delays to release resources in order to timely respond to disasters and concomitant health impacts
- Limited flexibility, if any, by many partners, to redirect resources to disaster response activities in their impact districts and areas

thanks/merci/zikomo/yewo

Strengths of our current situation

- Cluster systems and communication – sector plans
- Peaceful situation in the country (stability)
- Communication technology
- National leadership
- Ministerial/government buy-in and ownership
- Wide spectrum of partners
- Experience dealing with cholera
- Leadership at multiple levels – including local leadership and action
 - Role that surveillance at multiple levels play in terms of strengthening the response
- Experts
- Openness and willingness
- Progressive policy – may have taken time, but there has been an effort to get to those policies.

Challenges of our current situation


- Emergency response – bureaucracy to mobilize resources
- Dissemination of information to all levels
- Warning system
- Availability of resources specifically for preparedness – (resources immediately available)
- Good plans – but actioning them is a problem
 - To be ready for the inevitable – we keep resources for “actual” disasters
- Concrete solutions
- Cholera response maybe great – but beyond cholera preparedness?
- Operational issues such as transport – for example access and logistics
- Partner interests sometimes only in terms of response



Core business

- Sustained two-way relationship with stakeholders
- Two-way?
 - Science
 - Society
- Towards?
 - Sustainable use of natural resources, specifically water
 - Conservation of bio-diversity
 - Implementation of appropriate technology
 - Facilitate the collaboration between science and society through transdisciplinary research

"... walk the village..."



This is about an 'emic' understanding

Principles for working with a community

1. Understanding the context




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Principles for working with a community

2) Establishing relationships




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Principles for working with a community

3) Understanding who is who:




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Principles for working with a community

4) Cultural sensitivity




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Principles for working with a community

5) Using a poly-vocal approach



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"... science of the calabash..."

"In the old days the river did not run dry and the trees were very big. These days the river gets dry and the trees are not as big. These days there is less rain but I do not know why there is less rain. The river is getting dry because people are using the wrong calabash. In the old days we were taught that we must use the calabash. If not, then the river will run dry. These days people use plastic jugs and things like that, it's easier. Or the clay pot, some people also use a clay pot but many don't use the clay pot anymore because it breaks easily."


What are the different kinds of knowledge you use everyday?

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Knowledge systems

- Knowledge systems
 - Access to **appropriate** knowledge and the ability to apply that knowledge

Formal knowledge systems	Other knowledge systems
For example: engineering and science	Local knowledge (think place based)
Level of schooling	Experiential knowledge (incl. know how through life experiences)
Formal education system	Phenomenological knowledge (incl. bodily knowledge through practice and repetition)
Access to formal education (equity issues)	Religious systems (incl. beliefs and practices)
	Traditional knowledge (incl. norms and values)
	Indigenous knowledge (incl. indigenous norms, values and practices)



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Knowledge systems – ways of knowing:

Formal knowledge systems	Other knowledge systems
For example: engineering and science	Local knowledge (think place based)
Level of schooling	Experiential knowledge (incl. know how through life experiences)
Formal education system	Phenomenological knowledge (incl. bodily knowledge through practice and repetition)
Access to formal education (equity issues)	Religious systems (incl. beliefs and practices)
	Traditional knowledge (incl. norms and values)
	Indigenous knowledge (incl. indigenous norms, values and practices)

Lessons learned

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Lesson 1

- There is a linear relationship between behaviour change and knowledge

More **UNTRUE** knowledge = 'better' behaviour



2. Placing an over emphasis on rationality and objectivity

DO NOT ask what is 'real' or whether something can be proven scientifically

1. 2. 3. 4. 5.

RATHER, ask what is the impact of something on a person's life

Lesson 3

We forget that we too are part of communities – we share the human experience

We are individuals made up of multiple identity markers



Common mistakes (4)

We tend to judge others by using our own cultural parameters

(ethnocentrism)

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ZIKOMO!

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Session 1	Effectiveness of Existing Public Health Preparedness Frameworks	
13:00 - 13:30	Presentation on existing framework, operation and opportunities for civilian-military cooperation in Malawi, Malawi Defense Force representative.	Invited speaker



"You have a clear choice, either to learn Crisis Management Skills, or to be Managed by the Crisis....."

Jerry Adams

Awareness and commitment, unfortunately, usually come after a disaster strikes!



INTRODUCTION

Whilst the world has many wars taking place and causing unbearable human suffering, natural disasters and other man made disasters are also taking their toll

Health Emergencies will always occur any where in the world and are not spare the peaceful country of Malawi

Comprehensive approaches, pragmatic policies and the implementation mechanisms, as well as effective consultation, collaboration and coordination, are thus a prerequisite in dealing with health emergencies

On 14th of Jan 2015, the MDF responded to the declaration of State of National Disasters by deploying air, watercraft and land assets as well as personnel

- SCOPE**
- ▣ MDF MANDATE
 - ▣ MDF RESOURCES
 - ▣ MDF CAPABILITIES
 - ▣ CONSTRAINTS OF IMPLEMENTATION
 - ▣ THE EMERGENCY SERVICES AND OTHER KEY ORGANISATIONS
 - ▣ RECOMMENDATIONS

MDF MANDATE

Indeed, disasters can be an issue of the broad agenda - Primary role of defending the country and its territorial integrity & Secondary role to support the civil authorities

The MDF participates in management of disasters and emergencies since it is mandated by

- a The Constitution of the Republic of Malawi [Section 160 (1) (c)]
- b The Malawi Defence Force Act [Section 5]
- c The Disaster Preparedness and Relief Act of Malawi

Thus the MDF can duly provide technical expertise and resources to assist the civil authorities in the maint of essential services in times of disasters and emergencies

The MDF Commander is a member of the National Disaster Preparedness and Relief Committee of Malawi



- MDF RESOURCES**
- ▣ Personnel (including medical pers)
 - ▣ Transport
 - ▣ Equipment/Logistics
 - ▣ Engineer equipment

- MDF RESOURCES**
- PERSONNEL
 - infantry troops
 - medical
 - engineers
 - pilots
 - marines
 - paratroopers
 - logisticians
 - * Transport –land, air and water
 - * Tentage
 - * Engineer equipment (boats, rafts..)
 - Liaison officers

- MDF CAPABILITIES**
- ▣ Assist in search and rescue ops
 - ▣ Provide aircraft, boats and vehicles
 - ▣ Provide additional med services, sy and engineering services
 - ▣ Provide tents, body bags
 - ▣ Collaborate with Malawi Police Services regarding sy emergencies
 - ▣ Construction
 - ▣ Liaison



CONSTRAINTS OF IMPLEMENTATION DUE TO LACK OF RESOURCES AND TEAMWORK

- ▣ Lack of funding
- ▣ Problems in Maintenance or acquisition of equipment
- ▣ Lack of appropriate timeframes and critical success factors for each phase
- ▣ Lack of team work especially during relief operations & working just towards making an impression upon the victims or the general public

OTHER CHALLENGES


- ▣ Uncoordinated efforts which result in duplications
- ▣ NGOs focusing on areas close to urban areas at the expense of remote ones
- ▣ International relief agencies operating outside the government mechanisms
- ▣ Competition for mobility assets between International Agencies, Local NGOs and government

THE EMERGENCY SERVICES AND OTHER KEY ORGANISATIONS

Major Incidents Initial Response:
 Police
 Fire & Rescue Service
 Ambulance

supported by:
 Hospitals
 Public Health service
 Local Government
 Occupiers of the property
 Technical Experts
 Military
 Voluntary Organisations

Management of Emergencies is a massive task requiring the mobilisation of all key stakeholders and must not depend on the work of a solitary organization!



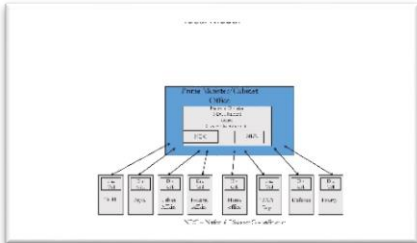
Objectives of the Combined Response

- Save and protect life
- Relieve suffering
- Safeguard the environment
- Protect property
- Limits its escalation
- Facilitate criminal investigation and/or judicial, e.t.c, inquiries

COORDINATE DISASTER MANAGEMENT FROM THE TOP

Principle 6.

National Disaster Planning and Management is best coordinated from within the President's(Prime Minister's) or Cabinet office. This location is to ensure effective coordination and actions by all concerned line ministries or departments.



RECOMMENDATIONS

- Provision of the necessary procedures, resources and funds to the leading agency and other stakeholders so that they can easily facilitate coordinated activities at national, region and district levels
- The Leading Agency to ensure that there is appropriate info and effective consultation with agencies, the locals and other stakeholders
- All institutions that have roles, both the govt and private sector, should be united and work together in the pre-disaster, during and in post-disaster phases
- Frequent testing of the response mechanism to fine tune response procedures
- Prior consultations with the MDF should be made especially during the recover phase

CONCLUSION

- Disasters will not cease to occur, mitigation is an expensive venture. Therefore it requires efforts beyond the ability of one single agency or community
- All agencies with roles in management of emergencies including the government and private sectors, should be united and work together in the pre-disaster, during and in post-disaster phases
- Contingency plans, clear and pragmatic guidelines, trained staff, leadership, critical facilities, as well as creating public awareness need no further emphasis



13:30 – 14:30 Facilitated discussion on civilian-military cooperation Moderator: Dr. Marius Claassen, CSIR, South Africa

The future we want: 2032

- Disease no longer linked to advent of disaster
- Early warning system (effective)
- Will have adequate resources (stand-by)
- Malawi becomes the benchmark
- Effective utilization of resources
- Prevention not cure
- Its going to be boring – can commit resources to other areas (stability)
- Established networks
- Be able to deal and be prepared for new challenges like climate change (government has capability)
- More resilient communities
 - Communities draw on different knowledge systems
 - Formal and informal support systems
 - Decreasing the threat
 - Have knowledge and capacity
 - Agency promoted to take part and affect change

What can we not do without?

- Prevention and surveillance
- Plans must be put into action
- Practical realistic plans.....
- We need to test these plans – maybe through scenarios???

Civil military cooperation:

- Military and community – coexisting – drills re what is happening
- MOUs that include both military and civilian

Session 2	Learning from the Past, Planning for the Future	
15:00 - 15:30	Perspectives on CDC operations in Africa.	Ms. Jennifer Brooks, US Centers for Disease Control, Office of Public Health Preparedness and Response, Division of Emergency Operations

CDC's Global Emergency Management Capacity Development Program
presented by:
Jennifer Brooks, MPH

Global Emergency Management at CDC

Mission:

- To develop capacity for public health organizations to mitigate public health response and emergency management globally

Vision:

- To be the global leader in public health emergency management capacity development

Why is CDC providing Technical Assistance in Public Health Emergency Management?

WHO Request for PHEM training → Building capacity for IIR implementation → Stimulated the creation of GEM/CDB → CDC Strategic Priorities in Global Health Security → Global Health Security Agenda

Overarching Approach to Emergency Management

- GEM/CDB focuses its efforts under four pillars to ensure that development in PHEM capacity encompasses all parts of emergency management rather than one specific area.

What We Do

We promote a single, integrated program where emergency management principles and public health practice intersect.

How We Do It

In-Country TA: Basic training, In-Country TA, Events

Atlanta-based training: Atlanta-based training, In-Country TA

In-Country Technical Assistance

Build current PHM capacity → Prioritize areas of capacity development → Create capacity development activities such as training and exercises

Where We Work

PHEM Implementation: Burkina Faso, Cameroon, Chad, DRC, Ethiopia, Ghana, Guinea, Kenya, Liberia, Madagascar, Mali, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, South Africa, Tanzania, Uganda, Zambia, Zimbabwe

PHEM Pilot: Bangladesh, Cambodia, China, India, Indonesia, Italy, Mexico, Pakistan, Philippines, South Korea, Thailand, United Kingdom, USA

Transforming Learning into Action

PHEM Fellows are trained in a variety of emergency management topics including: public health surveillance, outbreak investigation, risk communication, and more.

Success Stories

18 countries participated in the evaluation of the evaluation based on several PHEM activities:

As of May 2016, a total of 82 public health professionals from 29 countries, 15 in urban and 16 in rural locations, had completed the PHEM Fellowship.

CDC/CDB has provided 28 countries with 200 and 28 countries with a minimum PHEM Fellowship.

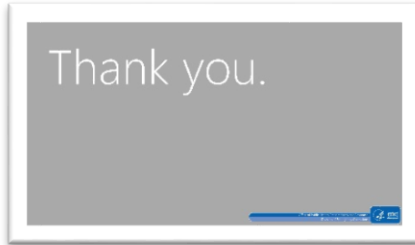
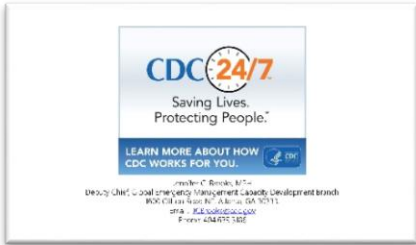
28 countries have identified a PHEM training location.

PHEM Fellowship in Ghana

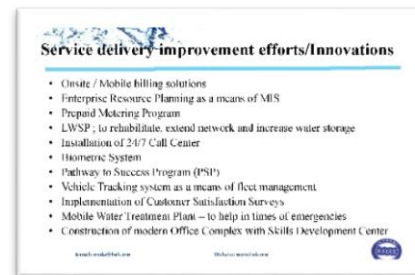
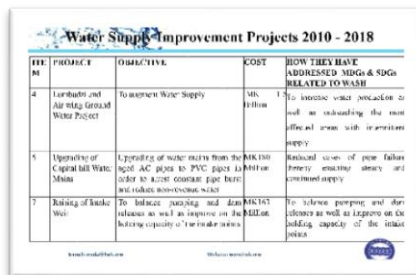
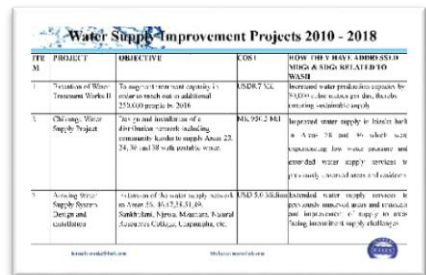
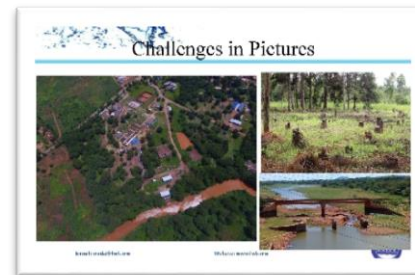
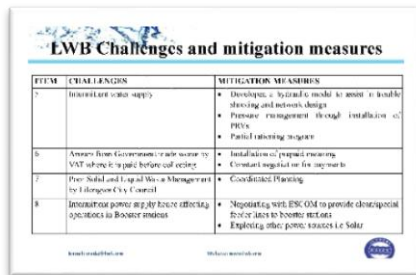
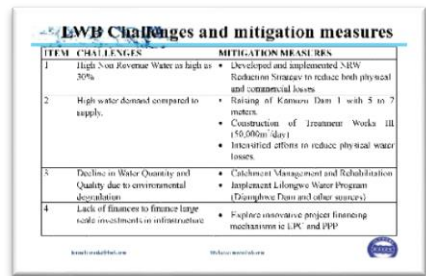
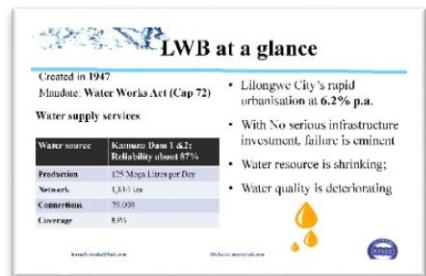
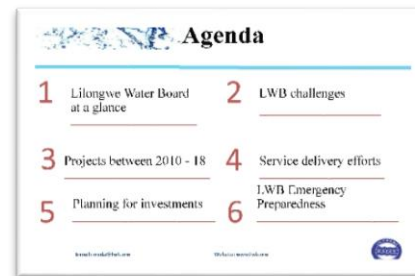
Top Priorities for the Future

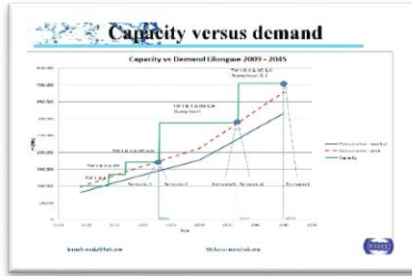
- Completing a comprehensive standardized PHEM curriculum
- Building PHM capacity in partner countries
- Promoting participation by PHM professionals in WHO's EDC-NE
- Developing a PHM Fellowship alumni network
- Continuing collaboration with key partners:
 - WHO/PAHO/WHO/AFRO/EMRO
 - WHO/EURO/WHO/SEARO
 - USAID
 - WHO/ECDC/ECDC
 - ECDC

Discussion & Questions



15:30 – 16:00 Local examples and priorities; Lilongwe Water Board, a brief history, current status and plans for the future. Invited speaker





Why Capacity has been Overtaken by Demand

Due to the following:

- Population growth
- Increase in supply area
- Lack of financing for investment
- Aged infrastructure

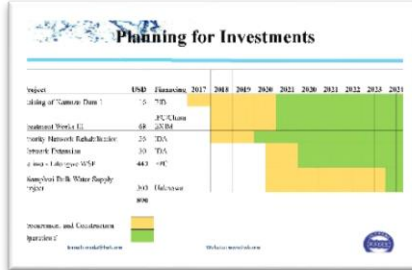
If nothing is done in terms of investment LWB has to intensify rationing in order to ensure continuous and equitable access of water to consumers

Year	Population	Urban	Rural
2013	1,237,138	79,443	1,157,695
2014	1,271,138	81,443	1,189,695
2015	1,305,138	83,443	1,221,695
2016	1,339,138	85,443	1,253,695
2017	1,373,138	87,443	1,285,695
2018	1,407,138	89,443	1,317,695

Planning for Investment

In the view of the outlined challenges, Lilongwe Water Board conceptualised the following Programmes:

1. Lilongwe Water Resource Efficiency Programme (Short-term);
2. Lilongwe Water and Sanitation Programme (Short to medium term)
3. Lake Malawi Water Source Programme Medium to long term).



Planning for Investments

Lilongwe Water Supply Programme (Diamphwe)

- New water source (234 MLD)
- Expand coverage from 75% -100% of population
- Quality of service (24 hours of service)
- Studies completed (FS, ESIA and RAP, DD)
- Financing (USD300 mil) not yet identified

Component	Description	Amount (USD Millions)
A	Water Storage Infrastructure and Management	150
B	Water Production and Treatment Facilities	150
C	Support to Institutional Strengthening	2
D	Programme Management Support	2
Total Financing Requirement		300

Planning for Investments

The Salima-Lilongwe Water Supply Project (USD440 million)

- 100 MLD to serve up to 2035 and beyond
- FPC Contract: 19th December, 2016; LWB & KCSZJV
- Progress:
 - SPV established as an operation model to secure loan repayment
 - No financing preferable to Government has been Failure to conclude the funding to jeopardize the Project;
 - All activities are on hold

Planning for Investments

- Kamuzu Dam 1 wall will be raised to increase volume to cater for 2021 demand
- Treatment Plant 3 will be constructed under PPP arrangement through assistance of the IFC or China Lxim Bank

PREPAREDNESS FOR EMERGENCIES

Interventions during Urban Floods and Cholera incidences or threats

- Supply of free safe drinking water using water bowsters or Mobile Treatment Plant
- Provision of chlorine for use to affected areas
- Donations of various relief items
- Civic education and awareness on water quality issues
- Frequent Water Quality monitoring (Testing)



16:00 – 16:30 WASH Cluster Malawi Invited speaker

MALAWI CHOLERA OUTBREAK 2017-2018

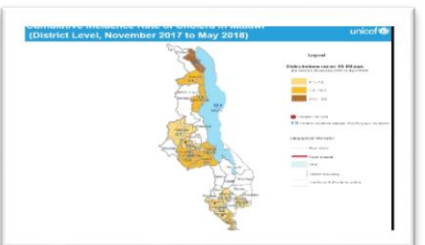
WASH CLUSTER RESPONSE AND RESILIENCE ACTIVITIES

By Emma Mbalame DWSS (WASH Cluster Lead)

September 2018

Districts which reported cholera cases from November 2017, to date - 13

- ▶ Karonga, Nkhatabay, Rumphu, Mulanje, Salima, Lilongwe, Kasungu, Dowa, Likoma, Chikwawa, Nsanje, Bantyre, Dedza.



Cholera prone/at risk Districts (MoH, DODMA) – 19 in number

- ▶ Balaka, Blantyre, Chikwawa, Dedza, Karonga, Kasungu, Lilongwe, Machinga, Mangochi, Mwanza, Neno, Nkhatabay, Nkhosakota, Nsanje, Ntcheu, Phalombe, Rumphu, Salima, and Zomba

Risk factors for cholera - WASH

- ▶ Contaminated water in boreholes, shallow wells, at household level, in rivers and streams, and lakes
- ▶ Poor sanitation, affected communities are not ODF
- ▶ Poor hygiene practices in affected communities/communities at risk
- ▶ Cross border and inter-district movements
- ▶ Communal gatherings like funerals – food and handling

Management of Emergency WASH response in affected Districts (Partnerships)

- ▶ Led by DEMC for general coordination
- ▶ MoH/DEHCs – hygiene and sanitation promotion, safe water
- ▶ MoAIWD/DWDOs, LWB – safe water
- ▶ MoAIWD/UNICEF – WASH Cluster coordination of emergency and post emergency activities
- ▶ UNICEF, MSF, MRCS, LINGOs, INGOs are participating

Emergency and post emergency WASH activities

- ▶ Water quality surveillance - bacteriological (lab tests, rapid field tests)
- ▶ Provision of safe water - water trucking, chlorination at household level and water points, rehabilitation of boreholes, drilling new boreholes
- ▶ Hygiene promotion and sensitization on cholera
- ▶ Promotion of community sanitation (CIS)
- ▶ Infection control at CTCs (dedicated latines, both shelters, hand washing facilities, chlorine for disinfection, soap, etc.)
- ▶ Distribution of WASH supplies (buckets, soap, IEC materials, etc.)
- ▶ Coordination - Cluster support of National level, and joint Health and WASH meetings

WASH CLUSTER COORDINATION

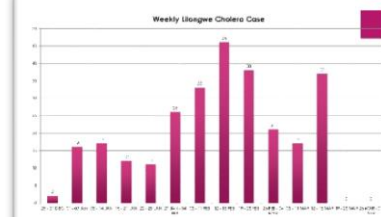
- ▶ WASH Cluster is chaired by MoAIWD, Co-chair is UNICEF
- ▶ During cholera outbreaks, meetings are held once a week at the peak, more often on demand
- ▶ Support in coordination and resource mobilization is provided to affected districts
- ▶ Dissemination of information (epidemiology, response, gaps, 3W)
- ▶ Produced and updates a concept note on emergency WASH response (resource mobilization)
- ▶ Participates in joint WASH and Health meetings on cholera

3W matrix: UN agencies and NGOs participating (most affected districts)

- ▶ Karonga: UNICEF, Water Missions, MRCS, WVI, CISP, PH360-H4CL, ONSE, FEED, MSF, PDI
- ▶ Salima: UNICEF, Water Missions, United Purpose, WVI, FEED, MRCS
- ▶ Lilongwe: UNICEF, Plan, Water Missions, H4CL, EXP, ONSE, MRCS, Oxfam, United Purpose, MRCS, LWB
- ▶ Nkhatabay: UNICEF, Water Missions, CPAR, MRCS
- ▶ Rumphu: UNICEF, Water Missions, PDI, MRCS

Case study: water trucking in Lilongwe, cholera hotspots – UNICEF/DHD/MoAIWD/LWB

- ▶ Was done at cholera hotspots in Lilongwe: Area 36 (Mlilengo), Mchikanjiru, Kan goma CTC, Kazizira, Madandwe, Chingira and Chikadzwe/Kulakwa wanthu
- ▶ Combined with hygiene and sanitation promotion and chlorination of water at household level, cases significantly declined in the locations above.



Beneficiaries of emergency/resilience WASH services:

- ▶ Affected communities
- ▶ Communities at risk
- ▶ Schools
- ▶ Cholera Treatment Centres (CTCs)

Challenges/gaps

- ▶ Some districts do not have sufficient NGO partners to support emergency response during and after the cholera outbreaks
- ▶ Insufficient funding for emergency response and sustained for emergency WASH interventions
- ▶ Some locations are not easily accessible during emergencies (Ikoma Island)
- ▶ Cultural beliefs hinder effective behavioural change (e.g. belief in witchcraft)
- ▶ Challenges of provision of safe water in peri urban areas, under city councils, it's not permissible to drill boreholes.

Way-forward/recommendations

- ▶ Government to budget for cholera response and preventive activities
- ▶ Development partners to continue to fundraise for cholera response and prevention activities
- ▶ WASH Cluster to continue to fundraise for cholera prevention and response activities
- ▶ WASH Cluster to make strategic partnerships with agencies like the military and LWB for promotion/provision of WASH services in the communities

Pictorial

Unsafe water source in Kauma - Lilongwe



Cholera affected village in Salima, water source



Intermittent water supply in Kauma at water kiosk



Unsafe water source in Kazizira, Lilongwe – cholera hotspot



Unsafe water source in Kazizira, Lilongwe – cholera hotspot



Unsafe water source in Mchilanjiru, Lilongwe – cholera hotspot



Unprotected shallow well in Area 36, Lilongwe, cholera hotspot



Water trucking in Mlilenge, Lilongwe (UNICEF/MoAIWD/INR)

Water trucking in Mlilenge, Lilongwe (UNICEF/MoAIWD/INR)



Provision of safe water at Chiganda Health Centre, Lilongwe



1% chlorine stock solution at household level – Kauma, Lilongwe



Water Missions – developing borehole for reticulation at Ndonde, Lilongwe



Water Missions – training a Water Point Committee



Water point committee trained at Choko village, Lilongwe



Pump testing at Nkwasa village, Salima



Sensitization on cholera – Phokoto village, Salima District



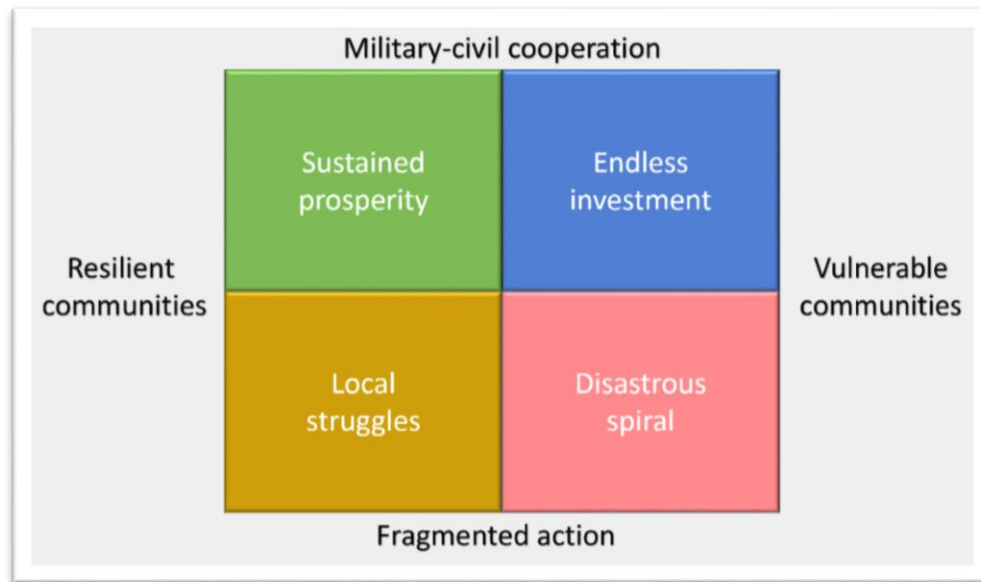
Water Point Committee training session at Chikumbi village, Salima District



Zikomo kwambiri,
thank you so much.

Questions?

Possible future scenarios, based on participants inputs on day 1



Session 3

Water-borne diseases

08:30 – 8:50

Water-borne diseases: Regional perspectives

Mr. Wouter le Roux and Ms. L Schaefer, CSIR, South Africa

MILANO, ITALY HEALTH EMERGENCY PREPAREDNESS WORKSHOP

Waterborne Diseases: Regional Perspectives

Wouter le Roux and Lisa Schaefer
Council for Scientific and Industrial Research (CSIR)
Water Resilience Competency Area

Public Health Emergency and Preparedness INTRO

Mortality: Top 10 Causes INTRO

WHO, 2016

Top 10 causes of deaths in high-income countries in 2016

Cause of Death	Number of Deaths (per 100,000 population)
Ischaemic heart disease	~240
Stroke	~180
Alzheimer disease and other dementias	~140
Trachea, bronchus, and lung	~120
Chronic obstructive pulmonary disease	~110
Lower respiratory infections	~100
Cancer of trachea, bronchus, and lung	~90
Diabetes mellitus	~80
Kidney diseases	~70
Heart failure	~60

Mortality: Top 10 Causes INTRO

WHO, 2016

Top 10 causes of deaths in low-income countries in 2016

Cause of Death	Number of Deaths (per 100,000 population)
Lower respiratory infections	~180
Diarrhoeal diseases	~140
Ischaemic heart disease	~120
Stroke	~110
Malaria	~100
Tuberculosis	~90
Preterm birth complications	~80
Maternal and neonatal conditions	~70
Heart failure	~60
Diabetes mellitus	~50

Waterborne Diseases INTRO

Why do we need to talk about this?

- 80% of wastewater from humans

WHO: Waterborne Disease is World's Leading Killer

The World Health Organization says that every year more than 1 million people die as a result of water-related diseases, making it the leading cause of disease and death around the world. Most of the victims are young children, the most vulnerable of humans to the diseases caused by organisms that thrive in water sources contaminated by excrement. WHO's partner Stratus has taken the steps.

SDG6 Clean Water and Sanitation

Presentation: Outline

- Introduction (Slides 1-6)
- Microbes...a world apart (Slides 7-8)
- VIPs...the primary killers (Slides 9-18)
- Conclusion (Slides 19-20)

Micro-organisms What are they?

How small are they?

- Protozoan Parasites: 100th of a mm, 10 μm
- Bacteria: 1,000th of a mm, 1 μm
- Viruses: 10,000th of a mm, 0.1 μm

Alive???

Waterborne Pathogens (Groups / Classes)

Process: Protozoa, Bacteria, Viruses, Fungi, Algae

More important (health) ← → Less important

Important Pathogens (Protozoa)

PROTOZOAN PARASITES

- Examples: Giardia and Cryptosporidium
- Why so important?
 - Low infection dose
 - Cryptosporidium: not readily treatable (HIV) (Nitazoxanide, not approved for immunocompromised)
 - Long lasting infections
 - Both eat cysts and oocysts

Water treatment: filter, not chlorination

Important Pathogens (Protozoa) continued

Cryptosporidium (*C. parvum* or *C. hominis*)

- One of the most commonly identified intestinal pathogens globally
- Est. 2.9 million cases occur annually in children aged < 24 months in sub-Saharan Africa
- Gastrointestinal illness (cryptosporidiosis) watery diarrhoea with or without a persistent cough
- Transmission: Water (via oocysts) and person to person (via faeces)
- Implicated in waterborne outbreaks
- < 10 oocysts needed for infection to occur

Giardia lamblia (intestinalis)

- Considered a re-emerging disease (outbreaks associated with child care centres)
- Estimated to cause 280 million cases per year (higher prevalence in developing countries)
- Gastrointestinal illness acute diarrhoea and abdominal cramps
- Usually self-limiting but can persist for months
- Treatable (different drug options available)

2 Lane and Lane 2002; Perry and Rice 2014

Important Pathogens (Bacteria)

BACTERIA

- Examples: Escherichia coli (E. coli), Salmonella sp., Vibrio cholerae
- The most widely used indicator organism is a bacterium.
- Why so important?
 - Many different waterborne diseases caused by bacteria (shivers, typhoid fever etc)
 - Bacteria are treatable (antibiotics) BUT resistance is on the rise
 - Polluted rivers may be a breeding ground for antibiotic resistance

Water treatment: filter, chlorination, UV etc.

Important Pathogens (Bacteria) continued

Cholera

Vibrio cholerae

Important Pathogens (Bacteria) *continued*

Salmonella (Typhoidal and Non-Typhoidal)

Salmonella enterica subsp. *enterica* (>2600 serovars)

Typhoidal

S. Typhi, S. Paratyphi S, Senftenberg

- Typhoid fever – systemic disease (bacterial invasion of the blood stream)
- Endemic in the developing world
- Faecal-oral route (often water-borne)
- >27 million cases with >200,000 deaths per year*
- Vaccine available for S. Typhi only


*Chen et al., 2015; Black et al., 2012

Non-Typhoidal

S. Typhimurium, S. Enteritidis

- Acute gastroenteritis & invasive systemic infections
- Worldwide, but mortalities mostly in developing world
- Person to person / contact with animals/ food & water
- >90 millions cases and > 150,000 deaths per year
- Invasive NTS likely to exceed typhoid incidence in Africa!
- No vaccines for humans

*Macedo et al., 2020; D'Amore et al., 2001





Important Pathogens (Viruses)

VIRUSES

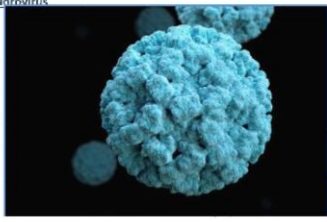

- Examples: Norovirus, Enterovirus, Rotavirus, Adenovirus (influenza and H5N1)
- Why so important?
 - Norovirus results in about 685 million cases of disease and 200,000 deaths globally a year (CDC, 2015) – a lot of waterborne diseases are caused by viral agents.
 - Not treatable (some preventable through vaccination)

Water treatment: Chlorination, UV, boiling, net filtration


Important Pathogens (Viruses) *continued*

Norovirus


Important Pathogens (Viruses) *continued*

Rotavirus



- Rotz = wheel
- Incubation 4 - 7 days, disease lasts approximately 7 days.
- Touted to be the 2nd most common IID agent after Norovirus
- Mostly occurs in children, rarely in adults (83% in <5 years, in one study)
- Cause of death in young children (potentially in the millions per year)*
- Immunity is long-lasting and disease frequency decreases with age.

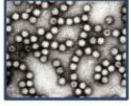
*Parashar et al., 2003



Important Pathogens (Viruses) *continued*


Astrovirus

- 2nd most common virus in children
- Illness generally mild
- Incubation 2 - 3 days, illness also 2 - 3 days
- Occurs almost entirely in children



Hepatitis A

- The most common cause of viral hepatitis
- Symptoms in older children and adults, infections in younger children tend to be symptom free
- Highly endemic in Africa
- Virus particles are hardy and persists in environment (Survival on NB)
- Vaccine available (not suitable for infants <2 years of age)



Other waterborne pathogens and toxins

PARASITES (OTHER) – VISIBLE TO THE EYE

- Examples: Helminths (like tapeworm), bilharzia
- Why so important?
 - Not diarrheal, but does affect quality of life ... sometimes severe health effects
 - Not always associated with polluted rivers (bilharzia)

Water treatment: filtration

ALGAE (ALGAL TOXINS)

- Examples: Microcystis, Blue-green algae
- Why so important:
 - Can produce neurotoxins and hepatotoxins, such as microcystin and cyanopeptolin

Water treatment: Prevention

What are they though? Plants or bacteria???




Waterborne Disease Challenges in the African Context

- Too little monitoring
- Lack of access to safe drinking water
- Poor sanitation & hygiene
- Inadequate diagnostics
- Not enough healthcare facilities & skills shortage
- Insufficient preventative measures (vaccines etc.)
- Lack of trans boundary cooperation & multi national initiatives




Concluding Remark

In Sub-Saharan Africa water-borne disease is still a major health concern.

This, sadly, is in contrast to the significant progress made elsewhere in the world.

However, "Coming together is a beginning; keeping together is progress; working together is success" Edward Everett Hale




Thank you



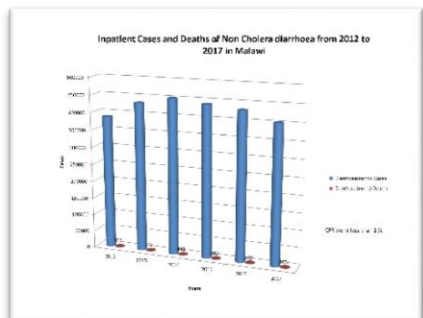
8:50 – 9:10 Local perspective: Malawi perspective Mr. Edward Chado, Epidemiology, Malawi

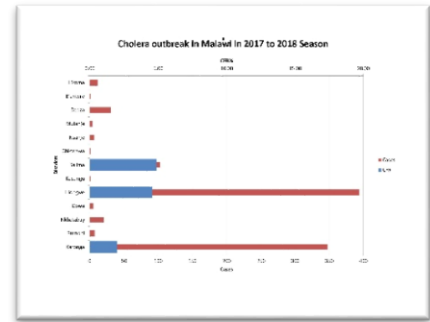
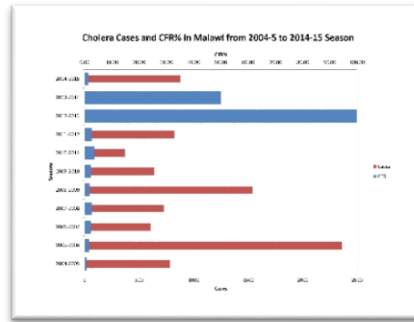
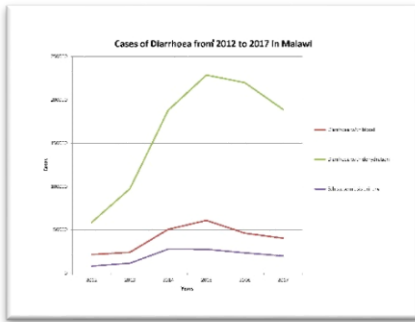
OVERVIEW OF DIARRHOEA IN MALAWI

Common Diarrhoea

- Dysentery
- Cholera
- Typhoid
- Schistosomiasis

Diagnosis and confirmation





Preparedness and Response

- Cholera season starts in November and end in October
- Districts plans are reviewed and consolidated at the end of season
- Some resources are prepositioned in regional hubs and Health facilities
- When suspicions are notified necessary investigations are instituted by all levels
- Response done with partners

PARTNERS

- Partners involved in preparedness and response
- Partners operate at national and district levels
- List include; WHO, Unicef, RedCross, MSF, MSH, CDC, NCA,

Thank you

9:10 – 10:00 Facilitated discussion Moderator: Dr. Marius Claassen, CSIR, South Africa

Radical Innovations (proposed by participants)

- Free vaccines
- Enforce policies – re zoning in terms of toilets – maybe by-laws
- Provide safe water
- Latrinasation at village or traditional authority level
- Effective public innovation

“I wish ...” (as above)

- During outbreaks water is accessible and free – not only where piped water is available
- Eliminate sources of pollution
- Water kiosks be free
- Decouple power and politics from water and water provision not only internal to countries but also between countries
- Stakeholders should plan and resource according to known peak seasons
- Community be at the center of the process – everything else should serve that
- Communities have awareness and act accordingly
- Washing hands
- Water of good quality of sufficient quality
- We acknowledge that prevention is better than cure
- Target beneficiaries are part of discussions – engage them (also at their places) and taking ownership of their own safety – behavior change in a culturally sensitive manner. And bring this knowledge into the preparedness plans.

WATER QUALITY ISSUES IN WEST AFRICA

Dr Lakhdar Boukerrou
Co-Director, International Program, INWI
Research Associate Professor, FIU
Affiliate Faculty, A&S
Miami, Florida
USAID/WASH Workshop
Lagos, Lagos
September 3-5, 2012

Water and sanitation are necessary to public health. I use to say that they are the basics, because the day we will guarantee drinking water and adequate sanitation to all regardless of any considerations, we will have made a huge progress in the fight against a great number of diseases.

Dr. Lee Jong-Wook, WHO Former Managing Director

Nearly A Billion People Still Defecate Outdoors

THREATS TO DRINKING WATER QUALITY

15.10% increase in water stress in 2010-2030

STUDY OBJECTIVES

The purpose of this study was to understand the environmental and behavioral factors which could result in water quality degradation through out the water distribution chain from the source, the transport, to the receipt in 15 districts of three regions (Boulouga du Mouhoun, Sud-Ouest and Centre). Specifically, it was to:

- Study hygienic conditions in the households with respect to water quality practices
- Pinpoint the steps along the water distribution chain which can be improved

WATER QUALITY STUDY VILLAGES-CENTRE, CENTRE OUEST, AND BOUCLE DU MOUHOUN

USAID WA-WASH WATER QUALITY SURVEYED VILLAGES AND REGIONS IN BURKINA FASO

MICROBIOLOGICAL PARAMETRES

The WHO standard is zero fecal contamination in a 100 ml drinking water sample

Source	Free of contamination	Contaminated
Boreholes	60%	40%
Wells	3%	97%

FURTHER CONTAMINATION OF WATER DURING TRANSPORT AND STORAGE

Water from a contaminated source remains polluted during transport and storage. Drinking water from boreholes becomes contaminated in 97% of cases during transport and 100% of cases during storage. Water from standpipes treated with chlorine from the source becomes contaminated in 36% and 55% of all cases during transport and storage, respectively.

WATER QUALITY STUDY IN THE SAHEL

Water quality has been analyzed in 9 villages in the municipality of Gompou and Zimbare.

- 58 human operated pumps and 8 traditional wells were analyzed in terms of their physico-chemical and bacteriological parameters
- 98% of the human operated pumps tested in the 2 municipalities were contaminated:
 - 72% natural contamination (sedimentation, degradation of organic matter, and interaction between water and rocks)
 - 26% - fecal contamination

The study reveals that 96% of the water was contaminated before consumption by the households.

WATER QUALITY OF NEWLY CONSTRUCTED WELLS BEFORE CONSUMPTION

LABORATOIRE AINA Scarf

Well	Location	Depth (m)	Flow (l/min)	Water Quality
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20

WATER QUALITY OF WELLS CONSTRUCTED BY USAID WA-WASH IN BURKINA FASO

93% of the water from the wells constructed meet WHO's standards. 7% does not meet the standards (turbidity and bacteria). Treatment of contaminated wells followed by a new test before consumption.

STRATEGIES OF USAID WA-WASH IN WASH SERVICES DELIVERY

- Increase directly or indirectly the number of people with access to drinking water for households and production needs, increase access to sanitation services and the number of households with adopted point of use treatment of water.
- Take into consideration development, implementation and replication of apparatus, which lower low cost ODFs systems and increase demand and supply for rural and peri-urban areas.
- Ensure water from wells are of good quality before use.

SOLUTIONS OFFERED BY USAID WA-WASH

- Low cost water facility close to households
- Extension of water distribution network in rural areas
- Establishment of a distribution network of water treatment units at the point of use

Training, granting of scholarships, and provision of internship opportunities

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SOLUTIONS OFFERED BY USAID WA-WASH

At the source level

- Establish water points, management committees, and maintain their capacity;
- establish a capitalization system of boreholes in order to ensure its permanent running and maintenance;
- include women in decisions taking, training, supervision, maintenance, and evaluation of water supply projects.

Behaviour change through out the water distribution chain

- Hold sensitization campaigns for behavioural change when handling water
- Encourage people to clean the containers used to fetch, transport, and store water
- Promote water treatment at the point of use.

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SUSTAINABILITY CHECK DURING PHASE II



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WATER QUALITY M&E FINDINGS



Contamination often occurs during the rainy season and the causes include:

- Lack of sanitation in some communities
- Discharges of waste water close to the water points,
- Presence of animals around the water points
- Falling of objects into the well
- Use of inadequate containers to fetch water
- Storage of water in inappropriate containers
- Inadequate handling of water at home

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WATER SAMPLES COLLECTED AND ANALYZED

Country	Burkina Faso	Ghana	Niger	Total
Number	41	28	38	107

Water quality from June to November 2016

Country	Contaminated water samples	Non Contaminated water samples
BURKINA FASO	13.2%	87.8%
GHANA	28.6%	71.4%
NIGER	0.0%	100.0%
TOTAL	13.2%	87.9%

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ACTIONS FOR IMPROVEMENT

Parameters	Burkina Faso	Ghana	Niger	Total
Number of repairers trained/refreshed	15	27	26	68
Number Water point treated	138	21	20	179
Chlorine (liters)	510	80	156	746
Number of Aquatabs Tablets	-	-	338,862	338,862
Number of beneficiaries	58,500	6,384	22,214	87,098
Total cost of chlorine (FCFA)	637,500	100,000	302,400	1,039,900
Cost of chlorine per person (FCFA)	10.89	15.66	13.61	11.94
Total cost of Aquatabs (FCFA)	-	-	1,044,960	-
Cost of Aquatabs/person (FCFA)	-	-	47.04	-
Total cost of water treatment per person (FCFA)	10.89	15.66	60.65	-

Cost are for a three month period

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ACTIONS IMPACTS

Water quality after the treatment strategy

Country	Contaminated water samples	Contaminated outer samples
BURKINA FASO	4.3%	95.7%
GHANA	10.0%	90.0%
NIGER	0.0%	100.0%
TOTAL	3.2%	96.8%

Parameters	Burkina Faso	Ghana	Niger	Total
Number Water point treated	138	21	20	179
Water point that met the national standards	132	17	20	169

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THANK YOU

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11:30 – 12:00 Culture, values and disciplinary perspectives as drivers of behavior Ms. Karen Nortje, CSIR, South Africa

Culture, values and disciplinary perspectives as drivers of behaviour

Karen Nortje
CSIR

Malawi Public Health Emergency and Preparedness Workshop

September 2018

CSIR

Understanding water security in South Africa



CSIR

Adaptation towards water security must increasingly manage the risk of divergent possible futures"

- We need to transcend the boundaries in our thinking about adaptation and adaptive capacity:
 - Knowledge is more than facts! Different types culminate into different understandings of the world.
 - Knowledge production is multi dimensional – having both "interior" and "exterior" views
 - We need to be aware of people's "blind-spots", perceptions and values, how one comes to see something not just made up of 'facts'!

(Vogel, 2015)

CSIR

Research to understand water security in SA

Having conversations with people to understand their context and how they understand water security in order live their lives, perform their jobs and make better decisions within the context of water security

groups and at least two focus groups in each of the case study areas.

CSIR

"Ensuring that freshwater, coastal and related ecosystems are protected and improved, that sustainable development and political stability are promoted, that every person has access to enough safe water of an affordable cost to lead a clean, healthy and productive life, and that the vulnerable are protected from..."

Ministerial Declaration: World Water Forum in the Hague (2000)

"The availability of an acceptable quantity of water for health, agriculture and production, coupled with an acceptable level of water-related risks to people, environments and economies."

Grey and Sadoff (2007)

"Water security is the capacity of a population to safeguard sustainable access to adequate quantities of and acceptable quality water for washing, livelihoods, human well-being, and socio-economic development, for ensuring protection against water-borne pollution and water-related disasters, and for ensuring ecosystems in a climate of peace and political stability."

United Nations Water Agency (2016)

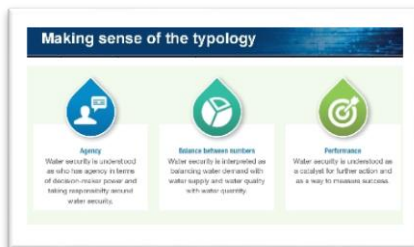
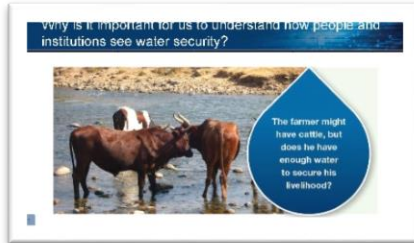
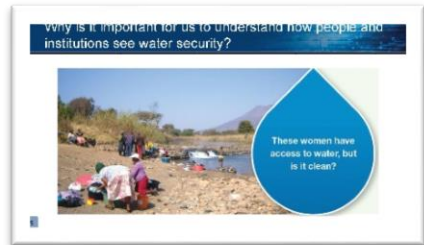
"Global Water Partnership (GWP) (2016)

"Through safe water at affordable cost to lead a clean, healthy and productive life, while ensuring that the natural environment is protected and enhanced."

A few examples of generated definitions of water security currently used

Society – who are we talking about?

CSIR



- 1 Water security is not only about what happens at the United Nations and what world leaders decide it to be.
- 2 There is no single "correct" way of interpreting water security. The concept of water security has evolved over it and it is more relevant to some contexts than others.
- 3 Gaining a deeper understanding about the concept of water security can be useful to different kinds of people: researchers, individuals, government officials at different scales.
- 4 Water security can be a state of mind based on context-specific perceptions held by an individual based on what we value about it and how this may affect their own and their surroundings.
- 5 Water security places the individual at centre stage in water-related matters because water is the most important of the humans need to survive.
- 6 Water security is not only a scientific concept, it also affects individuals who interact with water on a daily basis.
- 7 Water security is linked to water management practices, such as legislation of small holder crops for household food security, water use in mining operations, and water supply to large urban areas with complex economies.



13:00 – 15:00 Facilitated discussion on lessons learnt Moderator: Dr. Marius Claassen, CSIR, South Africa

Group work: “Unpack one innovation, i.e. components required

Group 4:

Community awareness

- Sanitation and hygiene
- Safe water use
- NB diseases
- Water treatment and treatment techniques
- Food safety and hygiene
- Channels available for support

How –

- Interface meetings with community
- Schools – using different kinds of media
- Extension workers
- Use of local and religious leaders
- Involvement of the military

Group 3:

Free Vaccines:

- Looking at malaria and cholera
- Logistics
- Tax on luxury items (tobacco and alcohol) to generate money for this
- Build a factory to produce the vaccines

Group 2:

Reinforcing policy and public education

- Water board need to set some minimum standards so it becomes a standard for all especially at water kiosks
- Look into allegations of bribery – for example in private homes
- Bylaws such as fishing boats and minimum standards for the fishing boats – people defecate in the water

Public education

- Use of different kinds of media
- Village education using the community
- Churches, and community radios
- Use the community structures as channels of information transfer.

Group 1:

Hand washing practices

- Baseline to understand what is happening and why
- Sustained behavioural change and communication
- Traditional and modern channels
- Opinion leaders, and other sectors
- Plus all kinds of media

- Provision of supplies for handwashing – locally available and easy to make. In future may be made through locally made
- Complete engagement of community – involved from inception to monitoring

15:30 - 16:30	Incident Management System and Emergency Response. (Introduction to Tabletop Exercise)	Ms. Jennifer Brooks and Mr. Eric Marble, US Centers for Disease Control, Office of Public Health Preparedness and Response, Division of Emergency Operations
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Participant list

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