HUMAN CAPACITY DEVELOPMENT IN THE WATER SECTOR AT JUNIOR PROFESSIONALS AND TECHNICIANS LEVEL, ZAMBIA

ACEWATER PHASE II

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ABBREVIATIONS AND ACRONYMS

CBU	Copperbelt University
COE	Centre of Excellence
DPI	Department of Planning and Information
DWA	Department of Water Affairs
DWRD	Department of Water Resources Development
GRZ	Government Republic of Zambia
HCD	Human Capacity Development
MEWD	Ministry of Energy and Water Development
MLGH	Ministry of Local Government and Housing
NEPAD	New Partnership for Africa's Development
NGO	Non Governmental Organisation
NISIR	National Institute for Scientific and Industrial Research
NORTEC	Northern Technical College
NRDC	Natural Resources Development College
NWASCO	National Water Supply and Sanitation Council
TEVET	Technical Education, Vocational and Entrepreneurship
UNZA	University of Zambia
WARMA	Water Resources Management Authority
ZEMA	Zambia Environmental Management Authority

This project is funded by the Commission of the European Union

EXECUTIVE SUMMARY

The NEPAD-SANWATCE, through support from the UNESCO-IHP, is implementing a project entitled “NEPAD African Network of Centres of Excellence on Water Sciences and Technology (ACEWater2)”. The project supports the implementation of the African Water Ministers' declaration urging the AUC and NEPAD Centres of Excellence to develop a "Human Capacity Development Programme for junior professional and technician level capacity challenges in the water sector" at national level in the CoE countries. Building on the experience and working arrangement among the CoE in Southern Africa through NEPADSANWATCE, the University of Stellenbosch through the NEPAD-SANWATCE Secretariat is coordinating the Human Capacity Development Programme at national level in five countries of southern Africa hosting CoE. These countries include Botswana, Malawi, Mozambique, South Africa and Zambia. In each country, the programme was prepared in close consultation with all key water related stakeholders. The Centre(s) of Excellence in the country, in partnership with national IHP committees, oversaw coordination and the preparation of the programme. Specifically, the project had the following objectives:

- identify needs and define priorities with national governments through a multi-stakeholder participatory approach.
- Define an implementation framework together with an M&E framework Activities Identification of priorities for the implementation framework with partners and stakeholders in the framework of the national dialogue for capacity building in the water sector

The University of Zambia (UNZA), as a centre of excellence under the AU/NEPAD SANWATCE, conducted a scoping study which gave a situational analysis of the water sector’s human capacity development initiatives and indicative human capacity development needs of junior professionals and technicians in Zambia. Subsequently, a stakeholder dialogue was held to identify priorities and point towards what could be implemented in the short to medium term. As a follow-up to these activities, a framework that proposed a structure and approach for identified priority activities, has been developed. It is however, implied through this report that the CoE is only facilitating a process, on behalf of water sector stakeholders especially government, on how capacities of junior professionals and technicians can be enhanced.

A logical framework approach (LFA) has been used to develop the human capacity development programme that addresses junior professional and technical level capacity challenges in Zambia. The LFA is used because it has the necessary components that such a programme would require, such as responsible institutions, assumptions, outputs and monitoring and evaluation aspects. Priorities for the framework are:

1) Development of a training plan/strategy as a document to direct potential funders and uphold priorities for capacity enhancement;

2) The need to explore mechanisms that allow for the recognition of experience as a formal qualification, apart from knowledge-based certification such as diplomas; and

3) Formalise and support internships/apprenticeship programme.

The log frame outlines who will be responsible, how monitoring will be undertaken and what indicators will be used. Time lines and budgets are difficult to propose as this requires further engagement with relevant government agencies. The framework has an M&E component that proposes how these priorities will be monitored and evaluated. Possible activities for implementation are:

1) development and certification of prior learning (priority must be drillers);
2) develop an internship programme for both technicians and Junior Professionals.
3) Strengthen existing laboratory facilities through for example software tools or appropriate training aids at training institutions.

The process and outcome of this work, shows that under current conditions in the water sector, Zambia is threatened with a lack of/limited skilled technicians and professionals as there is no deliberate effort to ensure continuity. This problem is further compounded by new legal frameworks that have given the water sector new mandates. These mandates will not transform into meaningful development without skilled human capital especially at Junior Professional and Technician level. This programme responds to this gap by providing a road map of human capacity development at the highest impact through priority areas. This work has also raised the voice to government, that we must not forget this critical group that form the bedroom of operational activities.

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1. Introduction

The ACEWater2 project, funded by the European Commission and coordinated by UNESCO-IHP, supports the implementation of the African Water Ministers' declaration urging the African Union Commission and NEPAD Centres of Excellence to develop a "Human Capacity Development Programme for junior professional and technician level capacity challenges in the water sector" at national level in the Centres of Excellence countries. The human capacity development component aims to support the preparation of national frameworks on Human Capacity Development addressing junior professional and technician level capacity challenges in five NEPAD CoE countries from southern Africa including an implementation plan framework together with a monitoring and evaluation (M&E) framework. This is aimed at establishing national Human Capacity Development Programmes addressing junior professional and technician level capacity challenges in at least five NEPAD CoE countries in southern Africa.

In this pilot phase, CoEs in Botswana, Malawi, Mozambique, South Africa and Zambia have coordinated, a process to identify needs and define human capacity development priorities in the water sector with national governments through a multi-stakeholder participatory approach. In Zambia, the process was implemented through the University of Zambia as a CoE in the country. This report gives a country perspective for Zambia.

2. Overview of Country Process

The activities in this project (as per the terms of reference) were aimed at developing a human capacity development programme that addresses junior professional and technical level capacity challenges in the water sector. The process entailed the following:

i) Conducting of a study on sector needs at national level including consultation of national partners and stakeholders (scoping study).
ii) organization and implementation of national dialogue for capacity building in the water sector with all stakeholders and partners so as to define priorities from the needs.
iii) designing and validation of a national framework for capacity building in the water sector
iv) organization and facilitation of a national validation workshop.
v) defining an implementation framework together with an M&E framework.

2.1. Scoping study

The scoping study presented a situational analysis of the water sector human capacity development initiatives. It was designed to inform an HCD plan/framework that addresses junior professional and technician level capacity challenges.

Tasks associated with the scoping study were:

a) Review relevant water sector instruments to identify provisions on human capacity development.

b) Identify, review and summarise previous sector human capacity development studies.

c) Conduct a stakeholder analysis to identify existing human capacity development initiatives.

d) Identify capacity development needs) through document reviews and stakeholder interviews) and highlight gaps.

e) Compile and submit a national human capacity development scoping study report to inform a national dialogue.

The key findings were that:

a) Technicians were defined as persons with a certificate or diploma operating machinery or equipment. Junior Professional is a graduate degree holder with less than 3 years' experience at post.

b) An enabling policy framework for skills development is in place; the problems lie with the implementation of skills development policies due to a variety of problems especially financing.

c) Studies conducted in the past by the Department of Water Affairs and other sector partners have made practical recommendations for meeting the skills and capacity needed to support the implementation of the New National Water Act and the Water Services Act, but only a limited number of these recommendations have been implemented. Part of the recommendation for the then Department of Water Affairs was on specific short courses.

d) Rural municipalities, which have the highest water and sanitation services backlog, are the worst affected by the shortage of skills.

e) The lack of a coordinating body for training and capacity building for the water sector is hampering the effective development of skills required to achieve sustainable water and sanitation service delivery in municipalities.

f) There is a mismatch between the water-related courses offered by tertiary institutions and the skills required by the water services institutions and / or including industry?

The study recommended that:

a) Training and development interventions must be relevant, systematic, coordinated and evaluated to meet the competency and skill requirements of the relevant institutions in the water sector and not *per* donor driven agenda.

b) Since the Department of Water Resources Development and Water Resources Management Authority are new institutions with specific mandates, there will be need for orientation courses to refocus the vision, mission and objectives of the Ministry and institutional mandates. There is also need to train DWRD and WARMA staff in the developed/revised operational systems, procedures and

processes to enable them to build job specific skills and acquire the knowledge required for effective job performance.

c) The Government should forge partnerships with other training institutions in and outside the country and implement policies of sponsorship, part time training and development, counterpart training, integrating learning with work, etc. - to effectively meet water sector skills and knowledge requirements.

d) In order to realise the benefits of capacity building and training activities, the Government should finance training and development activities through adequate budgetary allocations.

A full scoping study report is attached in appendix 1.

2.2 Stakeholder Dialogue

The national dialogue was meant to develop a priority list to inform the development of an HCD framework for junior professionals and technicians as well as an inform an implementation framework and M&E framework. The following were resolved as priorities:

- Establishment and activation of a water trust to finance capacity development at different educational levels. Short term courses, however, were regarded as immediate interventions that would support changes in the mandate of the ministry.
- Development of a training plan/strategy as a document to direct potential funders and uphold priorities for capacity enhancement.
- Explore mechanisms in which experience would be recognized as a formal qualification (i.e. recognition of prior learning) besides knowledge-based certifications.
- Internships must be supported to allow graduates to acquire some industrial experience. The water sector, in general, must continue to budget for internships to empower and share experiences with future water sector personnel.
- Capacity building institutions must also continue to engage with industry to ensure that material is updated and responds to modern trends and demands.

A list of stakeholders and dialogue meeting report is attached in appendix 2 for reference.

2.3 Development of the HCD Framework

Based on the findings from the dialogue, stakeholders reaffirmed that the implementation of HCD must address national planning aspirations. The framework would then aim at strengthening human capacity development for junior professionals

and technicians in the water and sanitation sector to support national development plans. In view of the aforementioned, a Logical Framework Approach (LFA) was drafted and presented for discussion during the validation workshop (the validation workshop report is contained in appendix 3). LFA is a highly effective strategic planning and project management methodology with wide application. It is particularly valuable for water management and sanitation projects, especially because water — the resource base — has diverse and competing uses. The approach comprises an integrated package of tools for analysing and solving planning problems and for designing and managing their solutions.

The product of this analytical approach is the log-frame (the matrix), which summaries what the project intends to do and how, what the key assumptions are, and how outputs and outcomes will be monitored and evaluated. Advantages of a log-frame are:

- during initial stages, it can be used to test project ideas and concepts for relevance and usefulness;
- It guides systematic and logical analysis of the key interrelated elements that constitute a well-designed project (The World Bank, 2000);
- It defines linkages between the project and external factors;

- During implementation, the log frame serves as the main reference for drawing up detailed work plans, terms of reference, budgets, etc (Wageningen, UR 2010);
- A log-frame provides indicators against which the project progress and achievements can be assessed (Wageningen U.R, 2010); and
- It provides a shared methodology and terminology among governments, donor agencies, contractors and clients (The World Bank, 2000).

2.3.1 Stakeholders

Stakeholders that will be pertinent to implementation of the framework include:

1. Training institutions at tertiary level and Technical Education, Vocational and Entrepreneurship (TEVET) Institutions such as: Copperbelt University, Mulungushi University, University of Zambia, Natural Resources College, Chainama Hills College, Evelyn Hone College.

2. Government ministries – Ministry of Water Development and Sanitation and Environmental Protection, Ministry of Health, Ministry of Higher Education, Ministry of Local Government and Housing. Labour (in which ministry does government department for human resources planning sit?)

3. Regulators including National Water Supply and Sanitation Council (NWASCO), Water Resources Management Authority (WARMA).

4. Cooperation Partners such GIZ, the World Bank, DFID and other donor institutions

5. Non-governmental institutions such as World-Wide Fund for nature (WWF)

6. Networks such as SADC WaterNet

The log frame outlined below will detail how implementation will be done and monitored, as well as indicate the responsible stakeholders.

2.3.2 Log frame.

Table 1 shows a logical framework developed as a planning tool to implement capacity building at junior professional and technician level. This frame was subjected to some stakeholder consultation meetings (Appendix 3) to validate it and ensure it can be acceptable by various stakeholders. It is, however, clear that government must take the lead to ensure this programme can be executed and for sustainability.

Table 1:: Logical framework for human capacity development in the water sector in Zambia – Junior Professionals and technicians

ACTIVITY DESCRIPTION	INDICATOR (Outputs (1), outcomes (2), impacts (3))	SOURCES & MEANS OF VERIFICATION	ASSUMPTIONS	RESPONSIBLE
Goal: Strengthen human capacity development for junior professionals and technicians in the water and sanitation sector to support national development plans.	Increased and sustained human capacity at junior professionals and technician level	Human resources statistics from the Ministry of Water Development, Sanitation and Environmental Protection.	- Continued political will and timely release of funding from central government. - The mandate of various departments/ units remains the same with no policy review	Ministry of Water Development, Sanitation and Environmental Protection supported by tertiary and TEVET institutions such as the Natural Resources Development College (NRDC) or **NORTEC.**
Activities 1) Enhanced knowledge and skills in the following specific areas: a) Modelling of groundwater and surface water using GIS based approaches. b) Hydrometry c) Water quality assessment d) Hydrogeological assessments e) Hydro-informatics f) Water security g) Enforcement of regulation on water and sanitation	- number of staff trained (1,2) - number of trainings conducted (1,2) - training materials developed (1,2) - number of training institutions available and involved (2,3) - number of information products produced from the data collected as result of capacity built	- Human resources assessments/ recruitment surveys within the various units/ departments responsible within the water sector - Course modules produced - training institutions graduating staff from the water sector within the proposed short trainings. - Information products from data collected being used to direct policy.	- Human resources to take up these trainings have been recruited and are in post. - funds are available and managed through a water trust initiative. - Logistics available such as software, equipment	• Government through the Ministry of Water Development, Sanitation and Environmental Protection but can be complemented by cooperating (donors) partners. • Government agencies • Training and research institutions (CBU, UNZA, TEVET) • Private institutions

h) Climate friendly sanitation (feacal sludge management)	and uptake in policy reviews (1.2,3)			
2) Internships and apprenticeship in water and sanitation related programs to ensure knowledge transfer and mentorship.	- number of persons enrolled in either internships or apprenticeships (1) - number of institutions offering these internships or apprenticeships (1, 2) - number of institutions adopting policies on internship and apprenticeships (2,3) - Professional skills assessments post internship (2)	- Student reports documenting internships. - Institutional reports	- funding is available - effective career guidance - Adequate incentives to institutions supported by policy change - Collaboration between industry and academia	• Training & research institutions • Government departments (DWRD, DPI) and agencies (WARMA, NAWASCO) • Private sector and Parastatals
(3) Development of an accepted training plan	- Developed Skills of technicians and junior water professionals (2,3)	- implementation report in place	- Government is willing to support this imitative as it will ensure directed funding in capacity development.	• Training & research institutions • Government departments (DWRD, DPI) and agencies (WARMA, NAWASCO) • Private sector and Parastatals
(4) Recognition of prior learning	- Number of plans developed (1) - number of revisions on the plans (2)	- Certificates provided through criteria developed.	- Government is willing to support this imitative as it will ensure directed funding in capacity development.	• Training & research institutions • Government departments (DWRD, DPI) and agencies (WARMA, NAWASCO)

	- number of structured training in line with the training plans (2,3) - number of skilled personnel certified (1,2) - Development and use of an assessment criteria guideline /framework (2,3) - number of skilled personnel certified (2,3) - number of thematic areas in which skills certified (2,3) (numbers alone speak to output. Impact has to be more substantive more qualitative)			• Private sector and Parastatals • Engineering Institute of Zambia
Implementation approach 1. Development and certification of prior learning (specific to drillers). In order to do this the following steps are required: a) stakeholder mapping so as to identify who must be part of this b) various workshops with stakeholders to develop a criterion for assessment. c) Identification of assessors and testing d) Full operationalization of the certification process.	- number of stakeholders identified (1) - number of workshops to develop criteria (1) - testing of the proposed criteria to fine tune it (2) - adoption of the proposed criteria by relevant stakeholders (2)	- minutes from various workshops - Certificates provided through criteria developed.	Skilled manpower is available.	Ministry of Water development, sanitation and environmental protection (through DPI), Ministry of Higher Education, Ministry of Labour, Drillers Association. Zambia Qualifications Authority.

	- number of candidates assessed using the criteria (2) - adoption of the certification into policy (3)			
2. Internship and apprentice Programmes will be implemented in the following steps: - prioritising financing of the water trust - development of a guideline on how funds from the water trust will be used, managed and sustained. - providing incentives to private sector such as tax rebates if they provide evidence of internships and apprentice.	- amount of money available to support internship and apprentice (1) - guideline of how internships and apprentices will be managed (1). - number on internships and apprentices financed (1) - number of policies that support internship programmes (2,3)	- financial records and the national budget - guideline report - reports from both companies and institutions about the number of interns supported. - Policy publication.	Financing to support this activity provided through government or any other partner or donor	• Training & research institutions • Government departments (DWRD, DPI) and agencies (WARMA, NWASCO) • Private sector and Parastatals

3. Strengthen training aids in training institutions such as UNZA. Activities such as: - Software in water resources modelling and remote sensing/GIS - update of text books and manuals used as reference material -	- Purchase of software tools (1) - Increase in the number of new text books (1) - students that are well vested with trends in the industry (3)	- Reports from institutions - tracer surveys of students	Financing to support this activity provided through government or any other partner or donor	• Training & research institutions • Government departments (DWRD, DPI) and agencies. • Private sector and parastatals

3. Institutionalisation and Value Preposition

It was agreed at the validation meeting that the Ministry of Water Development, Sanitation and Environmental Protection through DPI must take the lead during implementation of proposed actions. The ministry further agreed that further engagement was required to ensure the outcomes of this work are incorporated in capacity development plans. DPI will take the overall responsibility to ensure capacity needs of technicians and junior Professionals are prioritised.

As a matter of priority, the certification of prior learning would be the first task that would be implemented. Further, stakeholder engagement is required to ensure ownership and sustainability of the program. Specifically, the Ministry of Higher Education, Zambia Qualifications Authority, Engineering Institute of Zambia, Drillers Association of Zambia and the Water Resources Management Authority must be part of this process. This certification of recognition of prior learning (RPL) would come at an opportune time when Zambia is now implementing groundwater regulations. These regulations define skills required to operate as a driller in Zambia. However, no drilling School exists, and most drillers have acquired skills through experience. Attracting a pool of stakeholders to support RPL would provide a basis for mobilising funds for greater intervention effort.

The process and outcome of this work, shows that under current conditions in the water sector, Zambia is threatened with a lack of/limited skilled technicians and professionals as there is no deliberate effort to ensure continuity. This problem is further compounded by new legal frameworks that have given the water sector new mandates. These mandates will not transform into meaniful development without skilled human capital especially at Junior Professional and Technician level. This programme responds to this gap by providing a road map of human capacity development at the highest impact through priority areas. This work has also raised the voice to government, that we must not forget this critical group that form the bedroom of operational activities.

Based on the finding of this report, the next steps are around engagement of stakeholders to foster ownership (short term), resources mobilisation (medium) and policy change (long term). Stakeholder engagement cannot be over emphasised in this context. Resources are required mainly from central government as a sign of commitment. It will also become important in the long-term policy documents must align activities towards a supportive direction that empowers junior professionals and technicians.

4. References

THE WORLD BANK (Editor) (2000): The Logframe Handbook: A Logical Framework Approach to Project Cycle Management. Washington DC: The World Bank.

WAGENINGEN UR (Editor); PPM&E Resource Portal (Editor) (2010): Participatory Planning Monitoring & Evaluation, Managing and Learning for Impact in Rural Development

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APPENDIX 1

NEPAD Networks of Centre of Excellence in Water Sciences PHASE II

A C E W A T E R 2 p r o j e c t 2 0 1 6 - 2 0 1 9

Human Capacity Development (HCD) Component

NEPAD SANWATCE

Zambia National Scoping Study Report

EXECUTIVE SUMMARY

The Water Sector in Zambia has undergone reforms which were aimed at ensuring sustainable development and management of water resources to facilitate social and economic development and sustenance of the environment. To this effect various activities and programmes have been carried out which include the review of the Water Act, Water Policy and development of the Water Resources Action Plan which formed the bases for the development of the new legal framework, the Water Resources Management Act No. 21 of 2011. The Water Resources Management Act provided for the realignment and reallocation of roles, functions and operational systems and procedures under the Ministry of Energy and Water Development MEWD. The Act abolished the Water Board and created the Water Resources Management Authority (WARMA) to undertake the water resources management functions in Zambia. At the same time the Government abolished the Department of Water Affairs (DWA) and created in its place the Department of Water Resources Development (DWRD) to undertake water resources development functions (water resources infrastructure development such as dams and ground water exploration, as well as management of international waters).This restructuring has caused changes to organization structures, organization culture, operational systems and procedures. Furthermore, the reforms also transferred the water sanitation and supply policy mandate to the Ministry of Local Government and Housing. Water utilities are now regulated by the National Water Supply and Sanitation Council (NWASCO). The expectations of Government and the public from the new institutions is improved service delivery.

To meet these expectations a skilled and proactive workforce is required that can effectively deliver on the vision of the water sector reforms and the mandates of the new water institutions. In this regard, there is need to build capacity in the water sector to support the effective and sustainable water resources development and management at the very basic level – Junior Professionals and technicians. It entails an analysis of existing skill gaps and delivering training programmes developed to "fill the gaps". In addition to filling the gaps, a long-term programme of upgrading and developing skills and experience of all levels of personnel, through a human capacity development (HCD) plan is required. This scoping study reviews existing literature on human capacity development and documents the results of interviews with key stakeholders to draw input for development of an HCD Plan specific to Junior Professionals and technicians.

Key areas for capacity development in water development and management for Junior Professionals and Technicians include operational hydrology, dam safety, hydrological modelling, unmanned aerial surveying and information management. In water supply and sanitation, there is a need for capacity development to be focused on regulation of Water Supply and Sanitation tools, tariff setting processes and economic regulation.

As part of the water sector long term skills development strategy, the Integrated Water Resources Management (IWRM) Centre of the University of the Zambia (UNZA)was established as one key intervention in bridging the skills gap in the sector by undertaking sector specific technical training. The centre has made a positive impact in this regard. The Department of Civil and Environmental Engineering, School of Engineering, UNZA is also making a similar contribution albeit in a smaller way. However, in order to bridge the huge skills gap the Government should forge partnerships with other training institutions in the country. Implementation of the Government policies of sponsorship, part time training and development, counterpart

training, integrating learning with work, etc. will also contribute to meeting water sector skills and knowledge requirements.

The main recommendations of this report are:

a) Training and development interventions must be relevant, systematic, coordinated and evaluated in order to meet the competencies and skill requirements of the relevant institutions in the water sector and not per donor driven agenda.

b) Greater focus is needed on institutional capacity development for the water sector, especially for the new DWRD and WARMA for junior professions and technicians to build capacity for negotiations, conflict resolution, water resources modelling monitoring and compliance tailored to educational levels and skills; and effective horizontal and vertical inter-agency coordination amongst water management institutions. Specific Institutional training plans with set priorities are a critical element to ensure this is archived.

c) Since the DWRD and WARMA are new institutions with specific mandates there will be need for orientation courses to refocus on the vision, mission and objectives of the Ministry and institutional mandates. There is also need to train DWRD and WARMA staff in the developed/revised operational systems, procedures and processes to enable them to build job specific skills and acquire the knowledge required for effective job performance.

d) The Government of Zambia should forge partnerships with other training institutions and networks (such as Zambia Water Partnership) in and outside the country and implement policies of sponsorship, part time training and development, counterpart training, integrating learning with work, etc. to effectively meet water sector skills and knowledge requirements.

e) There is also need for incentives for technicians who have the experience but no formal qualifications. It is proposed there is need for qualifications that recognizes the experience that an individual has acquired over the years.

f) In order to realise the benefits of capacity building and training activities the Government should finance training and development activities through adequate budgetary allocations.

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ABBREVIATIONS AND ACRONYMS

CBU Copperbelt University

COE Centre of Excellency

DISS Department of Infrastructure Support Services

DPI Department of Planning and Information

DHID Department of Housing and Infrastructure Development

DWA Department of Water Affair

DWRD Department of Water Resources Development

GRZ Government Republic of Zambia

HCD Human Capacity Development

IWRM Integrated Water Resources Management

MEWD Ministry of Energy and Water Development

MLGH Ministry of Local Government and Housing

NEPAD New Partnership for Africa's Development

NGO None Governmental Organisation

NHCC National Heritage Conservation Commission

NISIR National Institute for Scientific and Industrial Research

NORTEC Northern Technical College

NRDC Natural Resources Development College

NWASCO National Water Supplyand Sanitation Council

PSTDP Public Service Training and Development Policy

RWSS Rural Water Supply and Sanitation

RWSSU Rural Water Supply and Sanitation Unit

UNZA University of Zambia

WARMA Water Resources Management Authority

WRAP Water Resources Action Programme

WRDP Water Resources Development Plan

WRUAs Water Resources Users Associations

ZEMA Zambia Environmental Management Authority

ZWP Zambia Water Partnership

1. Introduction

1.1. Background

The ACEWater2 project, funded by the European Commission and coordinated by UNESCO-IHP, supports the implementation of the African Water Ministers' declaration urging the African Union Commission and NEPAD Centres of Excellence to develop a "Human Capacity Development Programme for junior professional and technician level capacity challenges in the water sector" at national level in the Centres of Excellence countries. The human capacity development component aims to support the preparation of national frameworks on Human Capacity Development addressing junior professional and technician level capacity challenges in five NEPAD CoE countries from southern Africa including an implementation plan framework together with a monitoring and evaluation (M&E) framework. This is aimed at establishing national Human Capacity Development Programme addressing junior professional and technician level capacity challenges in at least five NEPAD CoE countries in southern Africa.

In this pilot phase, CoEs in Botswana, Malawi, Mozambique, South Africa and Zambia will coordinate a process to identify needs and define human capacity development priorities in the water sector with national governments through a multi-stakeholder participatory approach. CoEs will need to undertake a scoping study of sector needs at national level including consultation of national partners and stakeholders. In this regard, this report gives a country perspective for Zambia.

1.2. Goal and scope of the study

The scoping study will present a situational analysis of sector human capacity development initiatives in order to come up with an HCD plan/framework that addresses junior professional and technician level capacity challenges

Tasks associated with the scoping study

a. Review of relevant water sector instruments in order to identify provisions on human capacity development
b. Identify, review and summarise previous sector human capacity development studies
c. Conduct a stakeholder analysis in order to identify existing human capacity development initiatives
d. Through document reviews and stakeholder interviews, identify capacity development needs and highlight gaps
e. Compile and submit a national human capacity development scoping study report to inform a national dialogue

1.3. Objective of the report

This report presents the current Human Capacity Development (HCD) context for Zambia, highlighting the status and needs for junior professional and technician level staff in the water sector.

1.4. Conceptual framework

In order to create a human capacity development plan, it is necessary to perform several assessments on which conclusions can be based. First, the required level of education and additional qualification for each position within the organization (according to its mandate) needs be established. Second, for those positions that are filled, the education level and qualifications of staff need to be assessed. Third, the gaps between required and actual qualification need to be identified. The result is a comprehensive overview of the training needs of the organisation at hand. Interview guides and an in-depth literature review was used as a data collection approach. This study focuses on junior professional and technical level capacity needs in the water sector. The term Junior professional refers to recent graduates from University with less than three years' experience. A technician would then be an individual whose role involves working with a machine or equipment typically with a diploma or Grade 12 certificate with some on the job training experience.

1.5. Water in the national development context - key challenge and priorities

Water resources management is the practice of making decisions and taking actions on how water should be managed. These decisions and actions relate to river basin planning, development of water harnessing infrastructure, controlling of reservoir releases, regulating floodplains, and developing new laws and regulations. It also promotes the rational and optimal utilisation, protection, conservation and control of the water resource in order to secure supply of water resources (Water Policy, 2010). This improves access to water for various uses.

Although the institutional and legal frameworks for the management of water are in place, management of water resources is a challenge mainly due to lack of skilled man power, inadequate water resources data and information systems, poor coordination of various ministries, lack of monitoring and evaluation of programmes and projects relating to water and inadequate funding to the water sector. The development of water resources refers to the harnessing of water resources from different sources such as rivers, lakes, rain and underground for purposes of various uses, by means of works such as dams, weirs, boreholes, wells and canals so that the water can be accessed at the desired locations. The development of water resources is undertaken by various players that include the Government, private organisations, local communities and individuals. Zambia has only built 5 very large dams and has approximately 1,490 small dams in spite of the existing potential for the development of such facilities. This state of affairs is attributed to limited funding to the sector. The state of the dam facilities is not accurately known due to inadequate information and a regulatory framework to monitor their development. The lack of adequate information on boreholes and dams negatively impacts on strategic planning for water resources and also affects efforts to regulate groundwater development. Rainwater harvesting is not fully developed in Zambia. It is however being introduced in rural schools and communities. This will greatly assist these communities during times of water shortage and reduce walking distance to water points. Plans are also underway to encourage the local communities to harness rainwater in properly designed structures.

7th National Development Plan, 2017-2021 envisions “accelerating development efforts towards Vision 2030 without leaving anyone behind,” which calls for a fundamental shift in the way resources are being allocated, taking into account global and regional trends. The plan has five pillars:

- Economic diversification and job creation
- Poverty and vulnerability
- Reduced developmental inequalities
- Enhancing human development
- Conducive governance environment for economic diversification

1.6. Methodology

This situational analysis has been developed following extensive consultations with various stakeholders. During the consultative process, meetings and discussions were held with management and key officials from the Ministry of Water, Sanitation and Environmental Protection. The organizational structures, systems, policies and processes delegated to Department of Water Resources Development (DWRD) and Water Resources Management Authority (WARMA) and also Water Supply and Sanitation Council (NWASCO). The list showing the people consulted is shown in Annex 1. The Interview guide is attached in Annex 2.

In addition, various documents including current strategic plans, the Public Service Training and Development Policy (PSTDP) and Procedures and Guidelines for Human Resource Development in the Public were reviewed. The full list of documents reviewed is presented in Annex 3.

1.7. Limitations of the study

The major limitation of the study was time to take a proper stock of the current capacity challenges in the water sector. The second challenge was the resources envelop which limited the stakeholder consultations. This situation analysis (which, in the expert opinion of the authors), requires the much needed interventions in human capacity development and subsequent human capacity development plan/framework.

2. Policy and legislative context

The Government of the Republic of Zambia (GRZ) has been implementing water sector reforms since the early 1990s which led to the development of the National Water Policy of 1994. The main thrust was to optimally harness water resources for the efficient and sustainable utilization to enhance productivity and reduce poverty. The 1994 policy provided guidelines for reorganization of the Water Sector into two sub sectors, namely the Water Supply and Sanitation Sub Sector, and the Water Resources Development and Management Sub Sector. The first phase of the water sector reforms witnessed the separation of water supply and sanitation functions from water resources and development as outlined in the policy document of 1994. The water supply and sanitation functions were transferred to the Ministry of Local Government and Housing (MLGH), while the water development and management functions remained with the Ministry of Energy and Water Development (MEWD).

The second phase of the water sector reforms in Zambia involved the formulation of the National Water Policy in 2010 and repealing of the Water Act of 1949 and replacing it with the Water Resources Management Act of 2011. It started with the

implementation of the Water Resources Action Programme (WRAP), whose overall objective was to establish a comprehensive legal and institutional framework to promote the efficient equitable and sustainable use, development and management of water resources in Zambia to enhance economic development. The Government under the WRAP adopted the National Water Policy (2010) and enacted the Water Resources Management Act (2011) as a prerequisite for the implementation of the water resources management reforms and management of international waters as well as raising of awareness and capacity building amongst stakeholders on IWRM. The Water Resources Action Programme (WRAP) came to an end in December 2011, after putting in place a new legal framework; the WRM Act No 21 of 2011. Therefore, the Ministry of Water Sanitation and Environmental protection is implementing the water sector institutional framework as the culmination of the second phase of the water sector reforms.

The Water Resources Management Act provided for the realignment and reallocation of roles, functions and operational systems and procedures under the Ministry of Energy and Water Development (MEWD). The Act abolished the Water Board and created the Water Resources Management Authority (WARMA) to undertake the water resources management functions in Zambia. At the same time the Government abolished the Department of Water Affairs (DWA) and created in its place the Department of Water Resources Development (DWRD) to undertake water resources development functions (water resources infrastructure development such as dams and ground water exploration, as well as international waters).

It is the expectation of Government that the creation of WARMA and DWRD would bring the much needed effectiveness, coordination and efficiency in the management and development of water resources in Zambia. In addition, MEWD has recently been restructured to the Ministry of Water, Sanitation and Environmental Protection to bring about effective and efficient implementation of government programmes. Details of realignment of functions, structures, objectives and goals of departments are still undergoing cabinet approval at the time of this report.

Although there is an enabling legislation, the Water Resources Management Act of 2011, which has put in place institutions necessary for effective and efficient development and management of water resources in Zambia, water sector reforms need to be supported by a more skilled workforce that can deliver effective services and achieve outcomes. Capacity building and training of staff are central in sustainable water resources development and management. Capacity building of water institutions encompasses the development of the institutions' technological, organizational, and institutional and resource capabilities. There is already in place the Government Public Service Training and Development Policy (GRZ, 2004), which relates to a structured learning experience directed towards acquiring specific knowledge, skills and attributes required for effective job performance, while for WARMA a training and development Policy has been developed to support its training and development initiatives.

As part of various initiatives aimed at bridging the skills gaps in the water sector, in 2014 the Zambia Water Partnership (ZWP) in partnership with the lead water ministry held a stakeholders meeting, in Lusaka, Zambia to obtain views from key developmental sectors in the post-2015 development agenda for water and sustainable development. The meeting noted that capacities needed for implementing

national activities in the water sector were at individual and institutional (policy and legislative framework) levels. The meeting also noted a shortage of personnel and the following specific fields that need serious attention: geologists/hydrogeologists, hydrologists, water engineers and social scientists. The meeting further noted that the capacity gaps were greatest at district level. Water management areas identified major challenges that included water law, water rights (to be converted to water permits) management, groundwater, floods management, infrastructure development, governance and research. Additional critical areas of capacity building needs include water resources assessment and data and information management and dissemination. The shortage of skills in the water sector poses a risk to the effective development and management of water resources in Zambia. These areas of capacity constraints should therefore be the main focus of both short and long-term training.

Other critical issues relate to the retention of qualified personnel in the water sector. As with many other sectors in the country requiring engineers, technicians, artisans and scientists, the water sector faces major challenges in the recruitment and retention of suitably qualified staff including addressing the remuneration of this category of employees in the Civil Service. Of particular concern are the challenges in retaining skilled engineering personnel in the districts. Greater focus is needed on institutional capacity development for the water sector especially for the new DWRD and Water Resources Management Authority, Local Authorities and community based institutions for building capacity for negotiations, conflict resolution, monitoring and compliance; and effective horizontal and vertical inter-agency coordination amongst water management institutions. In addition, and as highlighted in the Integrated Water Resources Management and Water Efficiency Implementation Plan (IWRM/WE 2008), with the enactment of the WRM Act of 2011, “there is need to develop capacity in the skills and knowledge required to integrate the water sector policies and strategies with other policies such as irrigation, environmental policy and legal instruments for water resources management.”(GRZ, 2008).

As part of the reforms on the water supply and sanitation The Ministry of Water and Sanitation and Environment was formed to be in charge of sector policies. Within the Ministry the Department of Water Supply and Sanitation is responsible for water supply and sanitation infrastructure planning and resource mobilization. Before the water supply and sanitation was handled by the Ministry of Local Government and Housing in which the Department of Housing and Infrastructure Development (DHID) was responsible for water supply and sanitation infrastructure planning and resource mobilization. The DHID had established a specific Rural Water Supply and Sanitation Unit (RWSSU) in 2003 and shortly thereafter also a unit for peri-urban water supply and sanitation.

According to the 1994 National Water Policy seven principles govern the state's policy in water and sanitation

- Separation of water resources management from water supply and sanitation
- Separation of regulatory and executive functions
- Devolution of authority to local authorities and private enterprises
- Achievement of full cost recovery for the water supply and sanitation services in the long run
- Human resources development leading to more effective institutions.
- The use of technologies more appropriate to local conditions
- Increased budget spending to the sector

By 2008 at least the first three principles had been put into practice. However, full cost recovery was far from being achieved and budget spending remained far below what is needed to achieve the Millennium Development Goals for the sector. In 2010 the national water policy was revised in order to take into account "current international developments", to integrate cross-cutting issues such as gender, HIV/AIDS and climate change, and to introduce modern principles of water resources management.

The Water Policy (2010) and the WRM Act of 2011 have emphasized the use of IWRM interventions to plan, develop and manage the water resources of Zambia. Therefore, the scope of the water sector has changed from the sectoral approach to the introduction of Integrated Water Resources Management. This in effect calls for producing a totally different workforce that will be able to manage the water resources in a holistic well-coordinated manner. There is need therefore to have a workforce that is conversant with IWRM interventions in the WRDP, WARMA and Department of Planning and Information (DPI) units of the Ministry Energy and Water Development. Currently, there is only one institution in Zambia that offers a basic diploma or degree in IWRM that is the IWRM Centre at UNZA. This means that employees of the three (3) institutions past, present and for future will continue to hold the sectoral qualifications mainly coming from universities offering first degrees (e.g. UNZA, CBU) and diplomas (e.g. NRDC, NORTEC). IWRM does not include only physical sciences but social sciences as well. Because of this, the workforce in the 3 units, should be familiar with IWRM and therefore, they require training in IWRM interventions. It was for this reason why UNZA IWRM Centre was established to provide human resources at postgraduate levels (postgraduate diplomas, masters and PhD in IWRM). At the time only Water Net at the regional level based in Zimbabwe could offer such training with an allocation of 2 Zambians per year.

2.1 Analysis of capacity building provisions, institutional arrangements and resource needs for capacity development

In 2005, though tracer studies of college and university graduates are non-existent in Zambia, a human resources study was undertaken by Prof. Nyambe whose recommendation to Danida through MEWD was used to set-up the IWRM Centre. At that time, there were about 500 people who were employed in the Water Sector and related areas in Zambia which were broken down as indicated in Table 1 (below).

From Table 1, in 2005, it was observed that:

(i) The vacancies at Water affairs and Geological Survey Department (GSD) indicated that, the two departments were operating at half capacity, and actually at a much lower capacity for Water Affairs Department. The establishment of about 100 staff approved during re-structuring was not fulfilled. GSD on the other hand, experienced a lot of migration of geologists to private exploration and mining companies on the Copperbelt and other parts of Zambia, who offer better conditions of service such as salaries. In 2016, the anticipated increase numbers in 2010 and now in 2016 has not changed, which still leaves a large shortage of sectoral trained manpower.

(ii) There are fewer graduating Masters (less than 5) and zero PhDs from the core areas of the Water Sector (Civil and Geology) at UNZA but higher numbers in the

related fields of agriculture and natural sciences. For geology as a core field for groundwater, for example, the numbers quoted include mining and metallurgical engineers resulting in less than half for each year as geology graduates. Geology as a career was until a few years ago, only given at the University of Zambia's School of Mines and nowhere else in the country. Unfortunately, this is similar for the core field of civil and geomatic engineering resulting into low Bachelors outputs that find their way into the sector.

(iii) As indicated earlier, in 2005 there was no training in the country either at diploma or degree level in IWRM, a core focus of the Water Resource Management Act 2011. In 2016, the scenario was the same but with a new institution added (WARMA). This requires training of 500 or more human personnel at Diploma, Bachelors, Masters and PhD levels in order to feed the planning units in provinces, districts and the catchment councils, plus the commercial utilities by 2030.Unfortunately, using the core fields of civil engineering and geology at UNZA at bachelors level, the two departments produced only 137graduates in the last 5 years before 2005, giving an average of 27 per year. In 2015, geology and civil produced only 31 graduates - an increase of only 4 graduates from 2005. Therefore, to reach 760 personnel, there is a need of producing 72 graduates per year including those candidates that may emigrate whilst still on training. The migration and switching of employment is due to low salaries in government.

(iv) In 2005, there was no funded water sector research or training at UNZA or NISIR. The reported research activities were outside the core areas of IWRM except for the CIDA supported IWRM process. The core areas of generating basic water resources data (surface and groundwater) that would feed into WARMA and DWRD are mainly done through projects funded outside by cooperating partners, with little involvement of Zambians such that they do not provide any capacity building. The lack of such has continued in 2016, leaving little room for training and yet many require significant IWRM interventions.

(v) In order to address the above skill gaps, MEWD took the initiative and collaborated with Danida and UNZA to establish the Integrated Water Resources Management (IWRM) Centre at the University of Zambia (UNZA) in 2006. According to Professor Imasiku Nyambe (2016), the UNZA-IWRM Centre has been conducting courses identified by MEWD which are designed to enhance human capacity building among identified staff of varying disciplines in the water sector. Professor Nyambe pointed out that since its inception, with support from MEWD and other organizations, the Centre has continued to build capacity in the water sector in the following areas:

- PhD projects – PhD in IWRM.
- MSc. projects (Master of Science in IWRM)
- Postgraduate Diploma in IWRM.
- Basic Hydrogeology/Drilling Course
- Rural Water Supply and Sanitation (RWSS) Certificate Course

In view of the above, it is clear that there is an enabling environment through policies and legislation that seeks to ensure a sustainable water sector. However, effective implementation of these policies and legislation still needs to be checked. For example, the WARMA Act, 2016, has provisions that provide for the establishment of

a water trust that will address capacity needs. To date, there is no framework of how this will be implemented and the systems that will coordinate it as not established. Most of the revenues collected by WARMA are used for operations. Efforts are clear in terms of capacity mainly targeted at junior professionals and technicians through the IWRM Centre. The question still begs if these efforts are sufficient. It is clear in this section that a skills gap still remains in DWRD, DPI and WARMA. For example, the recent Phase 1 Recruitment and Selection exercise conducted in September 2016 for the DWRD left all three (3) positions of Hydro-informatics Officer and three (3) positions of Senior Water Engineer unfilled because there were no suitable candidates within the former DWA to fill the positions. Going forward, there will be challenges in filling the remainng positions of District Water Development Officer (33) and Techicians mainly Engineeering Assistant (19), as the former DWA staff list has been exhausted. The same goes with WARMA who will have to fill all their technical positions for Luapula, Tanganyika and Zambezi catchments mainly from the open market. These human capacity needs extend to commercial water utilities across the country. Simple maintence works have proved to be a charge such that companies are sometimes forced to outcome the service.

Table 1: Analysis of Human Resource Capacity in the Water Sector in Zambia

	Training and Research Institutions		**Government**								**Private Sector**		**Planning Units**		**Catchment Councils to be worked on**
	UNZA	NISIR	WARMA	DWRD	DPI	Water Affairs	GeolSurv	DISS / DHID	Agric	REG. Insts	11 Comm. Utilities	Private Comp.	Province	Dist	3 out 6
2005	24	4	-	-	-	40	22	11	16	24	300	60	-	-	-
Vacancies 2005	-	-	-	-	-	55	14	-	-	-	-	-	-	-	-
Anticipated numbers in 2010	50	10		-	-	25 (authority + DWA)	40	20	30	40	500	100	12	77	100
2016	26	-	442	645	41	492	15								
TOTALS															
Current					Estimated Needed Manpower 5 years from now										
~ 500					**~ 1000**										
Graduates at UNZA in last 5 years															
CORE AREAS					**IWRM**						**OTHER DISCIPLINES**				
Engineering	**Geology (including, miming & metallurgy)**				**Postgraduate Diploma**	**Masters Degrees**	**PhD**				**Years (Graduation)**	**Agriculture**	**Natural Sciences**		

				(2005) 0	0	0					
Bach	Mas	Bach	Mas								
				(2013) 11 (2014) 14 (2015) 0	4 5 1	0 3 0		Bach	Mas	Bac	Mas
95	3	42	3				2005	119	36	139	14
100	5	52	3				2013	102	6	117	6
82	1	24	0				2014	81	28	114	2
71	1	33	3				2015	81	6	118	5
No Tangible Research or Support Fund to Water Research at UNZA or NISIR											

Key: GeolSurv = Geological Survey; REG Insts = Regulatory Institutions; Comm. = Commercial; Dist = District; Bach = Bachelors; Mas = Masters; PhD = Doctor of Philosophy

3. Review of water sector junior professional and technical level capacity studies

In Zambia, two government institutions involved in the development and management of water resources are DWRD and WARMA as mentioned in section 2. The primary mandate of DWRD is undertaking water resources development functions (water resources infrastructure development including dams and ground water exploration, as well as international waters).

Specifically, functions of the DWRD include:

a) Developing hydraulic infrastructure such as dams, weirs, levels, canals for harnessing water resources to support all sectors;
b) Carrying out exploratory drilling to facilitate development of well fields and production boreholes for strategic interventions;
c) Carrying out research and management of water resources development, and developing and managing an inventory of dams and exploratory boreholes;
d) Carrying out functions related to the management and development of international waters; which include facilitating cooperation over shared waters (developing strategies for development of international water resources);
e) Overseeing implementation of programmes emanating from regional and international agreements on shared water resources;
f) Undertaking environmental impact assessments aimed at ensuring adherence to regulations and facilitating the implementation of water infrastructure development projects; and
g) Managing contracts for water infrastructure projects.

Effective implementation of the above functions will particularly contribute to water security for rural livelihoods and urban programmes as well as to national development and poverty reduction. DWRD has three units, water infrastructure and development, international waters and underground water exploration. The Water Infrastructure and Development section undertakes and/or supervises and coordinates water infrastructure development projects and programmes. The International Waters section manages transboundary water courses which Zambia shares with neighbouring countries, specifically, Zambezi, Congo and Lake Tanganyika basins. The Underground Water Exploration section is responsible for: (a) undertaking underground water exploration, drilling of groundwater monitoring boreholes, and many others. (b) undertaking feasibility studies, site investigations, topographical, geotechnical, hydrological and hydraulic analysis, carrying out environmental and social assessments, archiving of survey data, dam designs and as built drawings, conducting reconnaissance and geophysical surveys to identify potential sites, ground water and aquifer mapping, production of hydro

geological and other thematic maps, among other functions. The key positions that will be necessary to fulfil the mandate of DWRD at Junior Professional and Technician level are District Water Officers, Hydro-informatics and Hydro-technicians respectively. A summary of capacity needs (SATCO, World Bank, 2016) in DWRD is given in Table 2 (below).

Table 2: Capacity needs in DWRD based on SATCO, 2016

DEPARTMENT/SECTION	TRAINING REQUIRED	POSITION (S)
Non-technical		
All sections	Induction/orientation course Annual Performance Appraisal system (APAS)	All members of staff
Technical Training		
Infrastructure Development Section	Dam survey, design and development	All members of staff
	Software Application (AutoCAD, MIKEs BASIN etc)	Hydrologists, Civil Engineers and Hydro-technicians
	Hydrogeology (basic/engineering geology, soil mechanics) and Hydrology	Hydrologists and Hydrogeologists
	Data and Information/GIS,	Hydro-informatics Officers
	Geo-informatics engineering/Surveying	Hydro-technicians, Hydrologists
International Waters Section	i) Water law and Water economics ii) International Waters management iii) International Relations iv) Policy Formulation v) Negotiation Skills in Trans-boundary Waters	All members of staff
Underground Exploration	i) Environmental and social assessments ii) Water assessment iii) Groundwater modelling iv) Water balance modelling	Hydrogeologists

	v) Aquifer monitoring vi) Data and information collection	
All sections	i) Economic Accounting for Water ii) Contracts/Project Management iii) Water Resources Management iv) Water Governance	All levels

Note: Hydrologists, hydrogeologists and civil engineers are Junior Professionals whereas hydro-technicians are technician level

The Water Resources Management Authority (WARMA) is a corporate body created by the Water Resources Management Act of 2011 as a lead agency in the national water resources management. As provided in the WRM Act, WARMA is responsible for managing and regulating water resources in Zambia based on the principles of Integrated Water Resource Management (IWRM), which also takes into account gender and climate change dimensions. The IWRM approach promotes equity, efficiency, sustainability and stakeholder and community participation in the management of water resources. Implementation of IWRM at catchment level will be ensured through the constitution of Catchment Councils in the six catchment areas of Chambeshi, Kafue, Luangwa, Luapula, Tanganyika and Zambezi. At Sub Catchment level, Water Resources User Associations (WRUAs) will be established to provide a forum for cooperative management of water resources and conflict resolution. The Water Resources Management Act fully recognizes IWRM as a national priority with obligations for participation and empowerment of stakeholders and decentralized management at the lowest appropriate level. Work has started on the formulation of Catchment Management Strategies (CMS) that provide a long term vision for the future, goals, objectives, actions and targets for all the catchment areas. The IWRM approach will need to be backed by a programme for IWRM capacity building at various levels run by WARMA to ensure success of intended outcomes which include mainly:

a) Water resources management
b) Integrated water resources management information system
c) Development of water resources management regulations

A summary of training needs assessment for WARMA is given in Table 3 (below).

Table 3: Capacity needs in WARMA based on SATCO, 2016

DEPARTMENT/SECTION	TRAINING REQUIRED	POSITION (S)
Non-Technical Training		
All sections	Induction/orientation course Annual Performance Appraisal system (APAS)	All members of staff
Technical Training		
Water Resources Management and Information	Water Assessment	Hydrologists & Hydrotechnicians
	Water Balance Modelling	Hydrologists & Hydrogeologists
	GIS	Hydrologists & Hydrogeologists
	Water Management and Hydrology	Water Resources Inspectors
	Prosecution	Water Resources Inspectors
	Specialised training on Dam Safety and Inspections	Water Resources Inspectors
	Hydrological Station Operations and Maintenance	Gauge Readers
	Unmanned Aerial Surveying	Hydrotechnicians
	GeODin information system	Hydrologists & Hydrogeologists
	Integrated Water Resource Management Information System (IWRMIS)	Hydroinformatics Officers

4. Questionnaire Interviews findings.

Based on questionnaire interview and discussions with key stakeholders, the following was observed:

- Internships for Junior professionals (JP) and technicians (T) need to be strengthen using appropriate government policy.

- Some government departments such as WARMA have employees without job descriptions and this needs quick actions to resolve.

- the water trust funding has not been well formulated, and implementation is rather slow.

- financing towards capacity building is still rather poor especially from central government. Most donor training is agenda focused which may not be appropriate.

- JP are regarded as degree holders with less than three years' experience whereas technicians have a diploma working with instruments or machines.

- training plans are non-existent and need to be developed.

- most respondents felt the human capacity plan must focus on strengthening the relationship between the academia and industry.

- majority of people interviewed regarded Universities and Colleges in Zambia as having the capacity to meet there needs. However, sometimes training aids are missing making the course impractical.

- participants in the interviews felt the opportunity such a human capacity development plan focusing on JP and T would do is ensure skills transfer and ensure a cadre of experts are available to meet the growing needs of the water sector.

5. Concluding remarks

The major conclusions that emanated from the assessment of training programme and capacity needs for the water sector include the following:

- An enabling policy framework for skills development is in place; the problems lie with the implementation of skills development policies due to a variety of problems that are highlighted in the main report.
- Studies conducted in the past by the Department of Water Affairs and other sector partners have made practical recommendations for meeting the skills and capacity needed to support the implementation of the New National Water Act and the Water Services Act, but only a limited number of these recommendations have been implemented.
- Rural municipalities, which have the highest water and sanitation services backlog, are the worst affected by the shortage of skills.
- The lack of a coordinating body for training and capacity building for the water sector is hampering the effective development of skills required to achieve sustainable water and sanitation service delivery in municipalities.

- There is a mismatch between the water-related courses offered by tertiary institutions and the skills required by the water services institutions.

6. Recommendations

The following are recommendations to operationalise capacity building efforts at junior professional and technician level:

e) Training and development interventions must be relevant, systematic, coordinated and evaluated in order to meet the competencies and skill requirements of the relevant institutions in the water sector and not per donor driven agenda.

f) Greater focus is needed on institutional capacity development for the water sector, especially for the new DWRD and WARMA, Local Authorities and community based institutions for building capacity for negotiations, conflict resolution, monitoring and compliance; and effective horizontal and vertical inter-agency coordination amongst water management institutions.

g) Since the DWRD and WARMA are new institutions with specific mandates there will be need for orientation courses to refocus on the vision, mission and objectives of the Ministry and institutional mandates. There is also need to train DWRD and WARMA staff in the developed/revised operational systems, procedures and processes to enable them build job specific skills and acquire the knowledge required for effective job performance.

h) The Government should forge partnerships with other training institutions in and outside the country and implement policies of sponsorship, part time training and development, counterpart training, integrating learning with work, etc. to effectively meet water sector skills and knowledge requirements.

i) Since all water resources development and management activities in the country will be governed by regulations developed by WARMA and which will, among others, set standards for service delivery, health and safety and technical norms, there is need to prioritize the building of internal capacity for drafting regulations and Statutory Instruments (SIs) in WARMA which is currently lacking. The case in point is where regulations on general management, dispute resolution; and ground water have been delayed due, in part, to lack of internal capacity to draft regulations and Statutory Instruments (SIs).

j) In order to realise the benefits of capacity building and training activities the Government should finance training and development activities through adequate budgetary allocations.

7. References

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Annexes

Annex 1 List of stakeholders consulted

1. Assistant Director, Department of Water Resources Development
2. Acting Director General, Water Resources Management Authority
3. Acting Director, WRM & I, Water Resources Management Authority
4. Senior Hydroinformatics Officer, Water Resources Management Authority
5. Water Resources Management Specialist, ZWRDP
6. Human Resources and Administration Manager, WARMA
7. Assistant Coordinator, UNZA – IWRM Centre
8. NAWSCO
9. Lusaka Water and Sewerage Company
10. Kafubu Water and Sewerage Company
11. Lukanga Water and Sewerage Company
12. Chambeshi Water and Sewerage Company
13. Mulonga Water and Sewerage Company
14. Nkana Water and Sewerage Company
15. National Rural Water Supply and Sanitation Program coordinator
16. Academic Institution (UNZA Engineering Head of Department Civil and Environmental Engineering)
17. Natural Resources Development College Water (NRDC Engineering Department)
18. Copperbelt University
19. Mulungushi University
20. Department of Water Resources Development
21. Ministry of Local Government
22. WaterAid Zambia
23. Water Resources Consulting (WRC) Limited

Annex 2: Interview guide/questionnaire

NEPAD SANWATCE
Interview guide

Introduction

Provide a brief background to the project and why you are conducting the study

In the email seeking an appointment, you may use the following text as an introduction

The ACEWater2 project, funded by the European Commission and coordinated by UNESCO-IHP, supports the implementation of the African Water Ministers' declaration urging the African Union Commission and NEPAD Centres of Excellence to develop a "Human Capacity Development Programme for junior professional and technician level capacity challenges in the water sector"at national level in the Centres of Excellence countries. The human capacity development component aims to support the preparation of national frameworks on Human Capacity Development addressing junior professional and technician level capacity challenges in five NEPAD CoE countries from southern Africa (Botswana, Malawi, Mozambique, South Africa and Zambia) including an implementation plan framework together with a monitoring and evaluation (M&E) framework. This is aimed at establishing national Human Capacity Development Programme addressing junior professional and technician level capacity challenges in at least five NEPAD CoE countries in southern Africa.

In this pilot phase, [CoE name] is coordinating a process toidentify needs and define human capacity development priorities in the water sector with national governments through a multi-stakeholder participatory approach. to this end, [CoE name] is undertaking a scoping study of sector needs at the national level including consultation of national partners and stakeholders….

Objective of the meeting

This meeting is sought to gather in-depth information on water sector human capacity needs important for inclusion in the national human capacity development programme that addresses junior professional and technical levelcapacity challenges

Ethical considerations

1. all information provided will be used for purposes of the report and to inform coming stages if the current HCD component as well as subsequent phases of the overall project

1. name of interviewee will not be disclosed

- the stakeholder has the right to not respond to whichever questions or to stop the interview altogether

Name of organisation and contact details	
Water sub-sector (if relevant)	
Name and signature of interviewee	

Interview guide

General

What opportunities do national water sector instruments present to human capacity development relevant to your organisation/sub-sector?

In your opinion, what are the gaps between the what is proposed at the policy level and reality on the ground?

Junior professional

- How do you define a junior professional in your sub-sector/organisation?
- Are junior professionals important in your sub-sector/organisation?
- What are the typical roles/designations of junior professionals in your sub-sector/organisation?
- What capacity gaps exist in your sub-sector that can be filled by junior professionals

Technical level capacity

- how do you define technical level capacity in your sub-sector?
- Are technical capacities important in your sub-sector/organisation?
- What are the typical roles/designations of technical personnel in sub-sector/organisation?
- What capacity gaps exist in your sub-sector/organisation that can be filled by technical personnel

General

- Does your organisation have a human capacity building plan or programme?
- Are there resources allocated to the organisations'human capacity development plan?
- What are the challenges/gaps with the existing HCD initiatives in your organisation?
- Does your organisation have a relationship with any capacity building institutions?

- Are existing capacity building institutions in your country able to meet your capacity building needs?
- In your opinion, what should a national HCD programme focusing on addressing junior professional and technical level capacity look like for your sub-sector/organisation?
- What are the opportunities that such a programme would bring to your organisation and the water sector as a whole?

Annex 3 Documents reviewed

1. Public Service Training and Development Policy (PSTDP)
2. Procedures and Guidelines for Human Resources Development in the Public Service.
3. The Water Resources Management Act No. 21 of 2011
4. National Water Policy 2010
5. Zambia National Water Resources Report for WWWDR3
6. The National Vision 2013
7. The revised Sixth National Development Plan
8. Integrated Water Resources Management and Water Efficiency (IWRM/WE), Implementation plan, Volume 1: Main Report (2007-2030), April 2008.
9. Restructuring Report for the Ministry of Mines, Energy and Water Development of 2015 by Management Development Division of Cabinet Office
10. Report on the Restructuring of the Water Sector Institutions Under the Ministry of Mines and Water Development by Support Unit, MMEWD
11. MMEWD Strategic Plan 2014-2016
12. WARMA Strategic Plan 2015-2016
13. Organisation structures for DWA, DWRD and WARMA
14. Establishment Lists for DWA and WARMA
15. Job Descriptions for DWA, DWRD and WARMA
16. Terms and Conditions of Service for the Public Service, by Secretary to the Cabinet

APPENDIX 2

DIALOGUE MEETING – 23RD AUGUST, 2017

Institution	Attendant	Position	Email
Water Resources Management Authority	Rowen Jain	Manager – Kafue Catchment	mphande_goodfellow@yahoo.com
DPI – Ministry of Water, Sanitation and Environmental Protection	Winford Sikapula	Officer	winfordsolega@gmail.com
Department of Water Resources Development	Simon Kangomba	Deputy Director – International Waters	kangoma@yahoo.com
Department of Water Resources Development	Kenneth Nyundu	Director	kennethnyundu@gmail.com
UNZA – IWRM Centre	Namafe Namafe Goodfellow Mphande Muka Simaubi	Water Officer and MSC student Water Officer and MSC student Water Officer and MSC student	namafe86@gmail.com Goodfellow_mpande@yahoo.com mukasimaubi@yahoo.com
NRDC – Natural Resources Development College	Stanislaus Mulenga	Head of Water Engineering	stanichisakuta62@gmail.com
NWASCO - National Water Supply and Sanitation Council	Chrispin Lukwanda	Training Officer	clukwanda@nwasco.org.zm
MLGH	Manangi Abel	Deputy Director - NRWSS	manangiabel@gmail.com
Zambia Water Partnership	Chimwang'a Maseka	Consultant	cmaseka@gmail.com

ACE-WATER/NEPAD Secretariat	Joanna Fatch	Network Manager	joannafatch@gmail.com
Secretariat – ACEWATER - UNZA	Daniel Nkhuwa Kawawa Banda Joel Kabika Ingrid Kawesha		

Title of Workshop : National Dialogue on Junior Professional and Technician Level Capacity

Number of members Present : 16
Workshop Director of Ceremonies: Mr C. Maseka

Workshop Chairperson : Prof. DWC Nkhuwa

Workshop Presenters (name, title, organization, email, presentation contents)

1) Joanna J. Fatch, Project Manager, University of Stellenbosch, joannafatch@sun.ac.za, (Presentation on Project Background and Expectations)
2) Dr Kawawa Banda, Lecturer, UNZA Team, kawawabanda@yahoo.co.uk, (Presentation on Scoping Study)

Workshop Objective(s)

- To present an overview of a situation analysis of existing skill gaps and delivering training programmes developed to fill the gaps.
- To consult key stakeholders on the short comings of human capacity development with a view of developing a long term programme of upgrading and developing skills and experience of all levels of personnel through a human capacity development initiative.
- To establish areas seen as priority for the implementation of a capacity building plan.
-

Key Points from Proceedings

- **Director of Ceremonies (DOC) Mr Maseka,** called the meeting to order at about 09:00hrs. He later allowed members to introduce themselves. Soon afterwards,

he called upon the Chairperson, Prof Nkhuwa who is also the Project Coordinator for the Zambia Water Partnership to give his opening remarks.

- In his remarks, **Prof Nkhuwa** welcomed members to the meeting and he advised members to contribute effectively to the proceedings.
- Mr Maseka, then called on Joana Fatch to present
- In her presentation, **Ms Joana Fatch** described what the NEPAD Networks of Centre of Excellence in Water Sciences is and what they do i.e. networking in water research projects and capacity building. She also indicated that there is also capacity building network in the SADC region called WATERNET. Furthermore, she revealed that NEPAD has 11 centres based in 8 countries and that they endeavour to spread these centres to the rest of the SADC countries. Ms Joana indicated that the biggest project currently being implemented by NEPAD is the ACE water Project and she also took time to describe its components. She stressed the need to address junior technical developmental initiatives.
- **TheDOC** then welcomed the Guest of Honour who is the Director of Department of Water Resources Development (DWRD). Mr Maseka then allowed the Director, Mr Kenneth Nyundu to give his official opening remarks.
- In his opening remarks at 09:33hrs, the **Guest of Honour** began by acknowledging the presence of government officials present at the meeting, the Project Coordinator of NEPAD, distinguished guests, ladies and gentlemen. He called on partners to continue to support the initiative of human capacity development which he described was vital in the water sector in ensuring the effective and sustainable water resources development and management. He revealed that HCD will significantly help the Ministry of Water Development, Sanitation and Environmental Protection in achieving its mandate and ultimately achieve the vision 2030 objectives. He emphasized that government recognizes that water is a vital element in achieving the vision 2030.He called on stakeholders to come on board because government has provided an enabling environment and in addition, government has in recent past initiated water sector reforms all in a bid to improve performance in the water sector. He challenged academic institutions to consider revising their approach of training to aim at producing young professional who would contribute effectively in the water sector.**The GOH**was quick to acknowledge the role the Zambia Water Partnership plays in the promoting Integrated Water Resources Management which led to the development of IWRM Water Efficiency and Implementation plan of which human capacity development is recognized as a significant component in implementing IWRM. He concluded by describing the role different stakeholders play in promoting human capacity development which is “Working together” and not that of “Competing.”He thanked UNESCO IHE for supporting Human Capacity Development and finally declared the meeting officially opened at 09:49hrs.
- **TEA BREAK**

- After this the **Director of Ceremonies (DOC) Mr Maseka**, called on **Dr Kawawa Banda** to make his presentation.
- **Dr Banda** made a presentation on the scoping study undertaken giving an overview of the motivation, objectives, methodology, conceptual framework, the focus and results of the study. He briefly explained that the main motivation behind undertaking the scoping study was that following the water sector reforms, it was realised that this process needed to be accompanied by a more skilled and proactive workforce that can effectively deliver on the vision of the water sector reforms. Hence the need to build capacity in the water sector at the very basic level of junior professionals and technicians to meet expectations. He indicated that the main objective of the scoping study was to analyse existing skill gaps in the water sector and the methodology involved conducting a stakeholder analysis in order to identify existing human capacity development initiatives with a view of compiling a national human capacity development scoping report. Meanwhile, he said focus was placed on Junior Professionals and Technicians. Coming to the findings, it was observed that there is no growth pattern for individuals coming from academic institutions to follow once they join the industry, and that there were a lot of Professionals with sufficient academic background but lacked sufficient operational knowledge which the industry demands of them. In addition, it was also observed that there are evaluating constraints of human skills, financial constraints for implementation despite having good policies and our training is not usually aligned to our human resource developmentplans. Furthermore, in most institutions, there is poor coordination in human capacity building and instead this is usually dictated by donor funding and interests, a situation he described as unfortunate. **Dr Banda** also explained that there are limited training institutions in the country and only cited Natural Resources Development College (NRDC) as the only institution. Following these challenges some of the recommendations presented by **Dr Banda** were:

1) Training initiatives should be coordinated preferably in line with institutional training plans;
2) Funding should be adequate for human capacity development;
3) Strengthen working networks among stakeholders;
4) There's need to prioritize internal institutional capacities; and
5) Coordinate Human Capacities Development initiatives with those of funding agencies e.g. Bursaries Committee.

REACTIONS

- **Mr Kangoma** added with a comment that there's need to develop individuals once they entered the industry through human capacity development

- **The GOH Mr Nyundu**, wanted to find out on what happened to the industrial attachment initiative where students were exposed to industrial experience at an early stage because he said once these matured into Junior Professionals in the industry, there appeared lost
- Secondly, **Mr Nyundu** wanted reactions as why incentives in Zambia were limited to qualifications and not experience/skills an individual possesses unlike in other countries
- **Prof Nkhuwa** reacted by saying once time had come for industrial attachment, institutions would indicate that there are no incentives to accommodate those students. As a result, he appealed to government to set aside budgetary allocations for this purpose to accord students some practical experience. In addition, he also wondered that once a student joins the industry, are there deliberate progression plans for those individuals.
- In addition to **Prof Nkhuwa's** comment, **Ms Joana Fatch** wanted to be advised on how best to maximize the benefits from the ACE Project.

- **THE FOLLOWING WERE REACTIONS FROM THE DIRECTOR:**

1) When it comes to issues of budgeting, there are limited resources and he further explained that no wages are paid to students on industrial attachment, however, as a way of supporting them, the department sometimes provides them with some incentives when they go in the field. He further highlighted that whilst with the department, an individual is made to evolve in all the departmental units so as to equip them with the knowledge of the departmental operations;
2) Regarding progression of staff, he indicated that despite each ministry having a training plan, availability of resources is highly dependent on donors and even when you have resources there are difficulties finding an institution to train individuals at that stage.In his reaction to **Ms Joana**, he acknowledged that it is through programs such as the ACE that human capacity development needs would be identified. The GOH also revealed that as a department, they had specific needs and that it is practically difficult to find someone who meets all the requirements demanded of them by the job at hand.

- **GOH SEEKS PERMISSION TO LEAVE TO ATTEND TO OTHER COMMITMENTS AT 10:57hrs**

- **Mr Lukwanda Chrispin from NWASCO** revealed that human capacity was adversely affecting operations of commercial utilities (CU's) across the country

such that certain CU's were failing to conduct simple maintenance works which sometimes forced them to outsource for skilled labour professionals such as electricians and this would be costly. Mr Chrispin explained that as NWASCO, they greatly support human capacity initiatives and that as an institution they have come up with a sector internship programme where CU's admit interns from various academic institutions. He however acknowledged that there are financial constraints which sometimes pose challenges on this process.

- **Ms Joana Fatch** posed a question as to why water levies prescribed in the act are not supporting human capacity developmental needs
- In response, **Mr Rowen Jani from WARMA** responded by saying that despite provisions of water Levies in the Water Act being there, the process was not implemented because the Water Trust Fund is practically not yet set up (established)
- Further, Ms Joana Fatch wanted to find out to what extent human capacity development was significant.
- In response, **Prof Nkhuwa** explained that despite institutions training individuals, we haven't reached a stage of respecting informed decision making.
- **The DOC** posed a question as to whether there is a provision for bulk billing and whether this is being done
- **Mr Jani from WARMA** confirmed that bulk billing is being done, and that the revenues collected are fully exhausted for operational costs for WARMA.
- **Mr Chrispin from NWASCO** also confirmed that in a bidto bridge the gap between students and the industry, they have initiated what they call a Performance Enhancement Fund. He however indicated that this fund wasn't developing into a water fund.
- **AT THIS STAGE, THE DOC CALLED FOR RESOLUTIONS GOING FORWARD AND THE FOLLOWING WERE THE REACTIONS:**

1) **Mr Mwanza Davies from NRDC** recommended that there's need to have a Bachelor of Water Engineering Programme established to address human capacity challenges, and in response, **Mr Joel Kabika** highlighted that the University of Zambia was heading in that direction by splitting into University Colleges
2) **Prof Nkhuwa** recommended that working relationships among stakeholders needed to be strengthened.
3) **Mr Jani** proposed that seminars needed to be regularly conducted so to share knowledge of institutional operations to students. He emphasized the need to link research work to institutional operations and that this is one way research budget allocations can be made active. He further recommended that aside academic

supervisors, there was need to have professional supervisors incorporated as well if need arises when a student was conducting research.

- Finally, a group resolution was then made that various stakeholders will be contacted to indicate what their key priorities for human capacity needs.
- THE DOC then called on the Project Coordinator to issue his closing remarks
- In his closing remarks, Prof Nkhuwa urged institutions to be proactive in responding to questions that would be directed to them regarding their key priorites as regards human capacity development. He thanked Ms Joana Fatch and members for attending and contribution and wished everyone the very best travelling mercies and the meeting officially closed at 13:40hrs

APPENDIX 3

REPORT ON THE VALIDATION WORKSHOP ON JUNIOR PROFESSIONALS AND TECHNICIAN LEVEL CAPACITY HELD AT CRESTA GOLFVIEW HOTEL IN LUSAKA ON 31ST JANUARY, 2018 AND 28TH MARCH, 2018

1.0. Introduction

The validation workshop on junior professionals and technician level capacity development was held at Cresta Golfview Hotel on 31st January, 2018. The main aim of the workshop was to validate the identified Human Capital Development (HCD) programme priority tasks and log frame to support implementation of the identified priority areas by government for junior professionals and technicians for the water sector. The workshop was officially opened by Mr. Simon Kang'omba, Assistant Director, Department of Water Resources Development (DWRD) who stood in for the Director (DWRD). In his speech, he called upon all the participants to fully support the validation dialogue and come up with meaningful resolutions. The workshop later focused on the project background and expectations of the validation exercise.

2.0. Presentation of the log-frame and implementation plan

Dr. Kawawa Banda led the UNZA team in presenting the log-frame and implementation plan. After the presentation, there was a discussion followed by group work.

3.0. Issues raised after presentation on the Log-frame and Implementation plan

- Participants wanted to find out if the Ministry of Health (MoH) was involved in the scooping part especially that the Environmental Health Technicians (EHTs) are major players

- The definitions and differences between the words Technician and Technologist were made. It was clarified that Technicians are normally Technical personnel that are educated up to Grade 12 level or Certificate level while Technologist have a minimum of a Diploma qualification.

- A question was raised on what the Ministry of Water Development, Sanitation and Environmental Protection (MWDSEP) was doing in terms of developing capacity for the junior professionals and Technicians. A follow up question was made on what training plans the Department of Planning and Information (DPI) had developed.

  In response to the above stated question, the DWRD reported that the former Department of Water Affairs (DWA) exposed its staff to a number of capacity building programmes. It was heard that fresh university graduates who were interested in water resources management and development were engaged as interns and oriented on a number of specialties. The DWRD and DPI reported that, they had training plans for all the newly employed graduates.

- A question was raised on how the DPI and DWRD were interlinked?

  The response given was that the two departments work with the Department of Human Resources and Administration (DHRA) to identify and recommend staff for capacity building in the ministry.

- Who defines training needs for officers?

  Response: Supervisors should identify training needs for their respective subordinates.

- The DWRD reported that training needs for staff in WARMA and DWRD through optimisation of Hydromet monitoring networks was underway. It was further stated that the Optimisation of Hydromet monitoring networks consultancy was addressing the structures in the above mentioned institutions in order to facilitate capacity building of the respective technical staff.

- It was also learnt that NWASCO has been facilitating the placement of interns in the respective water utilities so that they can acquire practical skills during studies and immediately after completing studies.

- Members stressed the need to expose interns more to the industry so that they can acquire practical skills.

- It was also highlighted that institutions should clearly state the conditions of service for interns.

- Participants agreed that issues of safety for interns in places of work must be clearly defined

- Participants stated that the Government must come up with a policy on how to deal with interns both in the public and private sectors.

4.0. Dialogue Closure

Before the closure of the dialogue, remarks were made by SANWATCE secretariat who thanked the participants for their fruitful participation. The closing remarks were given by the MWDSEP representative Mr. Simon Kang'omba. As there was no other business to discuss, the validation workshop closed at 13: 30 hours.

This project is funded by the Commission of the European Union

Annex 1

Group 1 Presentation

Logical Framework for Water Resources Management

ACTIVITY DESCRIPTION	INDICATOR	SOURCES & MEANS OF VERIFICATION	ASSUMPTIONS	RESPONSIBLE
Outputs Enhanced skills in the following specific areas; 1. Modelling (GIS, S & GW) 2. Hydrometry 3. Water Quality assessment 4. Hydrogeological assessments 5. Hydro-informatics	Improved and reliable data quality for planning and decision making	Quality of reports	• Logistics available such as software, equipment • Funding is available • Conducive working environment • Effective career guidance • Adequate incentives	Government Government agencies Training & research institutions Private institutions
Activities Develop a plan Identify gaps in the technical skills Identify a conducive training institution(s) and programmes	Implementation will require Human and financial resources and conducive working environment	Adequate funds allocated for training	• Basic qualification (Grade 12, Certificate, Diploma) • Personal Interest in technical skills • Adequate incentives	Training & research institutions Government Private sector

Annex 2

GROUP 2 Presentation

ACTIVITY DESCRIPTION	INDICATOR	SOURCES & MEANS OF VERIFICATION	ASSUMPTIONS	RESPONSIBLE
Outputs				
Internships for students studying water related programs to ensure knowledge transfer and mentorship	# of students # of viable researches completed and implemented	Assumptions from training institutions Topics picked for R & D	Government funds available Budgetary allocation	Water utilities, Govt depts., MoH, Private sector, UNZA, NWASCO,UNZA
Development of an accepted training plan	Multi sector training plan	• Reports • APAS	Review of GIZ report Coordination and engangement of private sector	Govt depts. Govt Agencies
Upgrade of skills in assessments management, monitoring and dissemination through short and medium term training as outlined in the scoping study	# of trainings identified #of personnel identified	• Materials • Certificates • Reports	Availability of govt funds	UNZA CBU Mulungushi Chainama NRDC TEVET
Certification of experience as an alternative qualification	Identification of staff Recommendations	Certificate	Reports HR	Supervisors

The following are the key challenges identified by Group 2:

1. There is a gap in terms of time. The students have less time for industrial training
2. There is a gap between theory and practice among learners
3. Lack of training aids and practical exposure in training institutions
4. The water safety plans should be a priority (dam safety, sanitary inspection and water quality)
5. Laboratory facilities should be availed to training institutions
6. There is no budgetary allocation for interns who get attached in institutions
7. There should be training in water safety plans, water quality and climate friendly sanitation.

This project is funded by the Commission of the European Union

Annex 3

NEPAD/SANWATCE-HCD VALIDATION AND FRAMEWORK WORKSHOP (31st January, 2018)

Name	Organisation	E-mail	Contact
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Annex 4

Programme for the Validation Workshop on junior professional and technician level capacity,

31st January, 2018

Time	Activity	Presenters/Facilitators/Participants
7:30 -8:30	Arrival of Participants	Secretariat
8:30 – 09:00	Registration	Secretariat
09:00 – 09:15	Welcome Remarks & Introductions	Director of Ceremonies
9.15 – 09:30	Project Background and Expectations of validation workshop	SANWATCE Project Secretariat
09.30 - 9.35	Remarks	Project leader – SANWATCE Zambia
09.35 – 9:40	Remarks	Dean of School of Mines
09.40 - 9.50	Official Opening	Director of Water Resources Development
9.50-10.00	Group Photo	Secretariat
10.00-10.30	Health Break	Secretariat and Hotel
10.30-10.55	Presentation of the log-frame and implementation plan	UNZA-Team
10.55-11.10	Plenary Discussions	All participants
11.10-11.20	Introduction to Group Work & Group Formation	Facilitator
11.20-11.40	Group Work	All participants
11.40-12.15	Group Presentations	All participants
12.15-12.30	Dialogue Closure	Remarks from SANWATCE Remarks from Ministry of Water Closing
12.30-13.30	Lunch Break	Secretariat and Hotel
13.30	Departures	All invited participants