DEVELOPMENT OF AN INTEGRATED WATER RESOURCES MANAGEMENT PLAN FOR NAMIBIA

Theme Report 6

INTEGRATED FRAMEWORK FOR INSTITUTIONAL DEVELOPMENT AND HUMAN RESOURCES CAPACITY BUILDING

AUGUST 2010

PREPARED FOR:

MINISTRY OF AGRICULTURE, WATER AND FORESTRY

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EXECUTIVE SUMMARY

Integrated Water Resources Management (IWRM) is for **all stakeholders** in the water sector in Namibia, i.e. for **all** water service providers and related management and governance entities and **all** water users. Capacity building and institutional development were found to be the key elements for implementation of Integrated Water Resources Management (IWRM) in Namibia. During the process of establishing the IWRMP it was also found that Namibian stakeholders have a **wealth of knowledge and experience** which must be shared amongst all stakeholders and water users.

The key-objectives of IWRM capacity building are informed and improved decision-taking with regards to the whole water cycle and the responsible implementation of these decisions, reducing dependency on foreign development partners and to build new and anchor existing capacity within the country to alleviate poverty and to create wealth for the people in Namibia.

IWRM capacity building brings **sustainability** to all four dimensions: **economy, society, environment and technology**. IWRM capacity building for human resources and organisations is iterative in nature and is focused on all stakeholders and water users to ensure **water resource security**. Managerial and technical capacity building is the pivotal goal ensuring that **water demand management** and **integrated water resources management** are successful.

The IWRMP proposes bringing into force, strengthening or establishing the following institutions and water governance structures for which capacity is required:

1. the revised WRM Act and Regulations in terms of the Act,
2. the Water (and Sanitation) Advisory Council (WaSAC),
3. Performance Support Teams (PSTs),
4. the Water Regulator (WR) function,
5. a Water Research Council (WRC),
6. a National Irrigation Water Efficiency Group (NIWEG),
7. Basin Management Committees (BMCs) and
8. Water Point Committees (WPCs).

During the IWRMP process and stakeholder consultations it was elaborated that the **existing policy landscape is supportive** to the revised WRM Act although capacity to implement the policies is inadequate.

The IWRMP proposes to **engage** all stakeholders and the following **set of enabling strategies** to meet the goals of IWRM and the available policies:

a) a groundwater protection strategy and management plan,

b) an ephemeral and perennial river catchment and integrated basin management strategy,

c) a clear communal land and water use strategy,

d) a national water demand management strategy,

e) a strategy on national pollution control and effluent discharge quality and appropriate regulations,

f) an effective strategy on tariff setting,

g) an effective strategy on water metering and data monitoring,

h) a strategy on integrated coastal management

i) an effective strategy on the reduction of bush encroachment to enhance groundwater recharge and surface run-off,

j) a strategy on gender participation and engagement on all levels in IWRM/WDM,

k) a **suite** of strategic planning and management support mechanisms.

A series of **technical and managerial training modules**, including **training manuals** for developing and maintaining people's skills are proposed to meet the goals of IWRM and to enhance our organisational capacity. IWRM is regarded a **highly complex** and **interconnected system** with numerous mutual and simultaneous impacts between critical issues. A broad skills mix is therefore needed to master such an interconnected system.

Four elementary capacity levels for IWRM were identified:

i. The **system level** addresses key requirements related to policies and the legal framework and includes initial investment.

ii. The **organisational level** addresses managerial effectiveness with a specific focus on decision taking and responsibility allocation.

iii. For human resources capacity maintenance and building new capacity, the **individual level** was identified with key-requirements relating to a broad knowledge and skills mix.

iv. At the **technical level** required capacity ranges from integrated resource planning and demand management to maintenance management on top of profound engineering and science knowledge.

From the key-required skills spectrum it can be noted that **organisational and individual managerial effectiveness** and a sound understanding and knowledge of **policy application**, **Water Demand Management** and **integrated resource management** are essential. However, these must be complemented with engineering and science knowledge related to water infrastructure and resource conservation as well as budgeting and controlling skills. A **broad skills mix**, with aggregated skills levels in IWRM performance, capacity maintenance and capacity building are required. Such a broad skills mix calls for balanced **interdisciplinary cooperation** between specialists based on **well managed** and competent teams which are carefully designed and their capacity maintained.

The **Polytechnic of Namibia** is identified as one key technical educator and capacity builder and was therefore chosen as an example for this report. The Polytechnic currently offers twenty-eight IWRM relevant formal study programmes. The Polytechnic of Namibia further provides **research capacity building** and support.

IWRM capacity anchoring and outreach to stakeholders is seen as an important element of capacity building. The IWRMP process proposes development, re-activation and proactive use of the multiple, existing awareness raising materials to reach Namibian stakeholders in urban and rural areas on all levels.

Financial resources are essential to maintain and develop further the human resources capacity for Government/ Local Authorities/ Regional Councils and other service providers as well as industry. Financial estimates are provided for development of Namibian capacity ***de novo***.

The financial resources estimate for human resources capacity building assumes that appropriate awareness is raised on all levels concerning the **importance** of the water sector and the opportunities for employment it offers. The financial resources estimate also assumes that DWAF, NamWater and other relevant institutions develop a **career path programme** to ensure that trained candidates are adequately integrated into appropriately rewarded professional development pathways and thus retained for a long time.

A fluctuation rate for human resources of **50%** was assumed. The report elaborates on the number of people required in different disciplines to be trained ***de novo*** per annum, for government and the private sector, over the coming 20 years (until 2030). IWRM-relevant human resources capacity building as estimated for the next 20 years, including an annual 7.5% cost escalation and a fluctuation rate of 50%, is estimated to be approximately N$ 54,000,000- for government and N$ 126,000,000- for the private sector, **per annum**.

Government, Local Authorities and Regional Councils and the private sector should **engage in sharing the costs for human resources capacity building** and maintenance of existing capacity. A proportion of **30% for the state** and **70% for the private sector** was estimated. The private sector should be actively used for **mentoring** and **capacity building** and **capacity maintenance**.

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LIST OF ABBREVIATIONS

ACEN	Association of Consulting Engineers in Namibia
BMC	Basin Management Committee
CART	Centre for Applied Research and Technology Development
CED	Centre for Entrepreneurial Development
DFID	Department for International Development
DRFN	Desert Research Foundation of Namibia
DTVET	Department of Technical and Vocational Education and Training
DWAF	Department of Water Affairs and Forestry
DWSSC	Directorate for Water Supply and Sanitation Sector Coordination
ECN	Engineering Council of Namibia
EIA	Environmental Impact Assessment
HRDC	Habitat Research and Development Centre
ICT	Information and Communication Technologies
ILMI	Integrated Land Management Institute
IRPM	Integrated Resources Planning and Management
IT	Information Technology
IWRM	Integrated Water Resources Management
IWRMP	Integrated Water Resources Management Plan
LA	Local Authority
LUP	Land Use Planning
MET	Ministry of Environment and Tourism
MIB	Master for International Business
MLR	Ministry of Lands and Resettlement
MoF	Ministry of Finance
MRLGHRD	Ministry of Regional and Local Government, Housing and Rural Development
MWT	Ministry of Works Transport and Communication
NamWater	Namibia Water Corporation
NGO	Non-Governmental Organisation
NIED	Namibian Institute for Education Development
NISD	Namibia Institute for Sustainable Development
NIWEG	National Irrigation Water Efficiency Group
NNF	Namibian Nature Foundation
NQA	Namibian Qualification Authority
NQF	National Qualification Framework
OPM	Office of the Prime Minister
PON	Polytechnic of Namibia
PST	Performance Support Team
RC	Regional Council
REEEI	Renewable Energy and Energy Efficiency Institute
RSSC	Regional Science Service Centre

S&AP	National Water Development Strategy and Action Plan
SADC	Southern African Development Community
UNAM	University of Namibia
VTC	Vocational Training Centre
WaSAC	Water and Sanitation Advisory Council
WDM	Water Demand Management
WPC	Water Point Committee
WR	Water Regulator
WRC	Water Research Council
WRM	Water Resources Management
WSASP	Water Supply and Sanitation Sector Policy

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1. INTRODUCTION

This theme report is an integral part of the Integrated Water Resources Management Plan for Namibia. The development path of this Integrated Framework for Institutional Development and Human Resources Capacity Building follows the three initial theme reports *Review and The Assessment of the Existing Situation*, The *Assessment of Resources Potential and Development Needs* and the *Water Demand Management Strategy and Guidelines* and is connected to the theme report *National Water Development Strategy and Action Plan*. A key-element for the development of this framework however was the **stakeholder input** received from thirteen regions of Namibia during consultations for the Water Development Strategy and Action Plan.

Integrated Water Resources Management (IWRM) is for all stakeholders in the water sector, i.e. for all water service providers and related management and governance entities and all water users in Namibia. IWRM has a **great potential** to alleviate poverty and to **create wealth** for all Namibians *inter alia* through skills development addressing water infrastructure installation and maintenance jobs in rural and urban areas, in sustainable agriculture and in the tourism sector.

The successful implementation of the proposed integrated water resources management plan (IWRMP) will depend to a large extent on

1. Adopting the proposed plan in principle,
2. Prioritising the most urgent aspects of the plan for a phased and well coordinated step-by-step implementation over time,
3. Establishing the organisational functions and structures required in each of the different institutions responsible for communities involved in implementing the plan,
4. Assessing existing capacity and developing new capacity of the existing staff employed in the different institutions and to educate and train additional staff to fill the positions created in the new governance structures and
5. Providing adequate funding for the different activities earmarked for implementation.

At the core of the challenge to implement the IWRMP are the functions, skills, knowledge and capacity required to achieve the objectives. The most critical functions have been identified as part of the plan and it is now the responsibility of the different institutions (The Department of Water Affairs and Forestry (DWAF), Regional and Local Authorities, NamWater, private sector water suppliers and all other key stakeholders involved) to ensure that appropriate institutional structures are created to establish the staff positions required to implement the Plan. The main functions required are listed in Figure 4.2: Proposed functional layout for organisational capacity building and connection of governance system.

It is suggested that the DWAF, which is regarded as the custodian of the Water Sector, takes the necessary steps to initiate and steer the process of establishing appropriate organisational and staff structures and to engage with all the identified institutions and stakeholder groups to do the same. Each institution will follow its own procedures to improve

their staff establishments and that should primarily be based upon the functions that each institution has to perform to meet its commitments in terms of executing the plan.

In the case of Government institutions the Office of the Prime Minister must be approached to assist with the investigation to analyse the functions to be performed to implement the plan, to agree with the different Government institutions what staff capabilities are required and to determine the structure of the most appropriate organisations and offices to execute the functions.

Once an appropriate organisational and staffing structure is in place, existing staff must be trained or retrained or suitable staff must be recruited or young people must be educated at tertiary academic and technical institutions to fill the staff complement. Once the staff establishment has been approved, the other activities such as work planning and programming, budgeting for remuneration and operations, mentoring and on-the-job training or providing funds for bursaries, can be attended to.

As far as the existing staff capacities are concerned, it was noted that substantial competencies exist, but must be expanded or improved while others need to be developed. The retention of competent staff is essential to minimise delays in implementing the plan and to optimise information and knowledge flows. Most of the posts for senior management staff (directors, deputy directors etc) are filled, i.e. capacity maintenance and building of additional capacity could start without delay. This would bring a great benefit to middle-management in terms of time saving and exposure to IWRM.

Training of middle managers combined with a well designed and managed career path system could then enable these managers to perform and the respective organisations to retain them in their fields of activity for an extended period of time.

2. WHAT IS CAPACITY BUILDING?

Capacity building[1] is

- discovering the necessity for change and adaptation;
- the creation of an enabling environment in which mistakes are identified and corrected without downgrading those who made them*;*
- fostering community participation and engagement, of women and youth in particular;
- integrating individual and organisational development based on key-interfaces;
- engaging in human resources development and strengthening of managerial systems;
- connecting appropriate policy and legal frameworks.

Capacity building leads to strengthened knowledge, abilities, skills, attitudes and behaviour of individuals **in improved organisational structures and processes** such that an organisation can efficiently meet its purpose and objectives in a sustainable way.

> *"All through school we are taught that making a mistake is a bad thing. We are downgraded for them. When we graduate and enter the real world and the organizations that occupy it, the aversion to mistakes continues. As a result one tries either to avoid them or, if a mistake is made, to conceal it or transfer blame to another. We pay a high price for this because one can only learn from mistakes by identifying and correcting them."* *Russel L. Ackoff, 1919-2009, system scientist and management scientist, from "A major mistake that managers make"*

2.1 WHY IS CAPACITY BUILDING NEEDED?

Humans cannot exist in isolation. They can only exist in an **organisation**. An organisation is established and maintained through the **interactions** of its **members** and its interaction with the **environment**. I.e. organisational processes are embedded in their resource-providing environment and people through their interaction are embedded in connected processes. Organisational success is a constant stream of interactions between all members of an organisation and its environment. Improving the interactions between members of an organisation and its environment is the focus of capacity building.

2.2 DEVELOPING A COMMON UNDERSTANDING FOR IWRM CAPACITY BUILDING

IWRM capacity building goes **beyond the traditional, top-down,** and **reductionist approach** of solely enhancing skills and knowledge through mere training and provision of technical advice and to measure in turn the four countable M's (*men, materials, machinery, money*). IWRM capacity building primarily **focuses on enhancing genuine community engagement and interaction** in all aspects of water resources use and management, from planning and managing complexity to on-the-ground actions. Therefore, in addition to the transfer of technology and the establishing of technical capability, capacity building **fosters appropriate knowledge, attitudes and managerial effectiveness** in an organisation to

[1] The EU also uses the term capacity development

cope with complexity and establishes **social cohesion** within communities, and builds both human resources and organisational capacity. For the purposes of this *IWRM Capacity Building Framework*, human resources capacity refers to the capability and strengths of individuals, and organisational capacity refers to the level to which social networks, relationships, interactions and well managed processes within a community support individuals to exercise their capabilities to meet agreed organisational objectives.

The main objectives of IWRM capacity building are informed and improved decision-taking with regards to the whole water cycle and the responsible implementation of these decisions, reducing dependency on foreign development partners and to build new and anchor existing capacity within the country to alleviate poverty and to create wealth for all people in Namibia.

The process of IWRM capacity building starts with a discovery of the **priority issues** (*systemic bottlenecks*) and is charted towards a management framework. An IWRMP must be result focused and guided by manageable objectives. Building commitment to the reform process follows **engaging people** and establishing a **political will** (*refer to the IWRMP theme reports Review and Assessment of Existing Situation*. *and National Water Development Strategy and Action Plan*). Given the current policy and legislation, the institutional situation, the capabilities and the overall goals, gaps in the current water resources management framework can be analysed in the light of the management functions required by the priority issues. A strategy and action plan maps the road towards completion of the framework for IWRM (*refer to the focus of the IWRMP theme report National Water Development Strategy and Action Plan*) and subsequent development of related organisational and individual capacity and infrastructure. The capacity building framework is connected to the *National Water Development Strategy and Action Plan* and the latter needs to be adopted at highest political level to support stakeholder engagement and to commit financial resources. IWRM capacity building brings **sustainability** to all four dimensions: economy, society, environment and technology.

The H_2O cycle checklist in Figure 2.1 on the next page provides a brief overview of key results of IWRM capacity building: the shift from supply side management to demand side management.

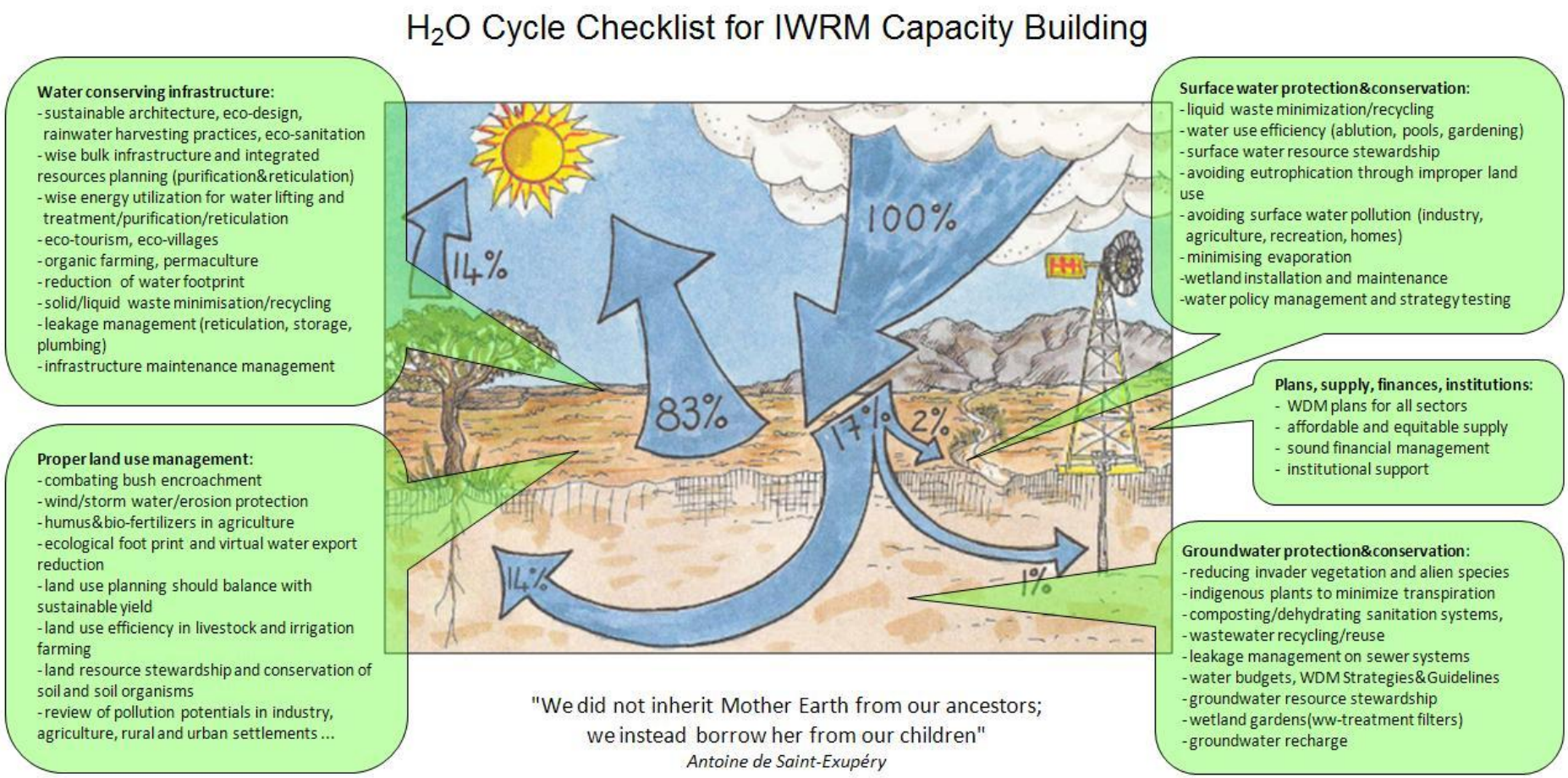

Figure 2.1: The water cycle checklist outlining key results through IWRM capacity building

2.3 THE COMPONENTS OF SUCCESS OF CAPACITY BUILDING

For IWRM capacity building to be successful it should:

- be based on principles of mutual trust, mutual reciprocity and ethical norms of action and should be accessible to all the people of Namibia
- ensure that the key stakeholders and priority issues are targeted to meet the integrated resource planning and IWRM objectives
- encourage partnerships and interaction between all levels of stakeholders and their environment
- value and build on existing knowledge and capacity involving local expertise and knowledge
- encompass learning by doing to enhance experience and knowledge
- be based on learning from each other through sharing resources, experience and expertise, mistakes made and lessons learnt;
- be based on access to accurate, scientific and technical information and adequate academic and technical education.

Capacity sharing and building: how could one get started?

"Often organisations and people claim that there are no free resources to embark upon capacity building to improve the individual and organisational effectiveness and efficiency. Such claims are always unfounded and are commonly used to maintain a pseudo risk-free status quo most commonly leading to omission errors".

Establish a work list of what needs doing. The work list for the IWRMP is submitted in the form of the National Water Development Strategy and Action Plan which reflects not only on what (*objective, actions*) needs doing but also how (*strategy, indicators, time lines*) things are best connected.

This *work list* can be a simple searchable online list of objectives/actions/jobs that need meeting and doing. Every member of an organisation (DWAF, NamWater, Local Authorities, Municipalities, and Industries) should have access to their respective in-house list and should be empowered to bid for doing a job or contributing to an action besides her/his daily duties. The different in-house lists must be coordinated which is best done through the steering agency DWAF.

What counts besides a qualification is the competence and commitment to participate and contribute. Each respective *work list* also shows what was done and who did it, enabling people to seek support for related actions. IWRM capacity building should ideally be based on a bottom-up self-initiative rather than on a top-down allocation of a specific task.

3. OVERVIEW AND CONNECTION

3.1 ROADMAP FOR INTEGRATING THE CAPACITY BUILDING FRAMEWORK INTO THE IWRMP AND S&AP

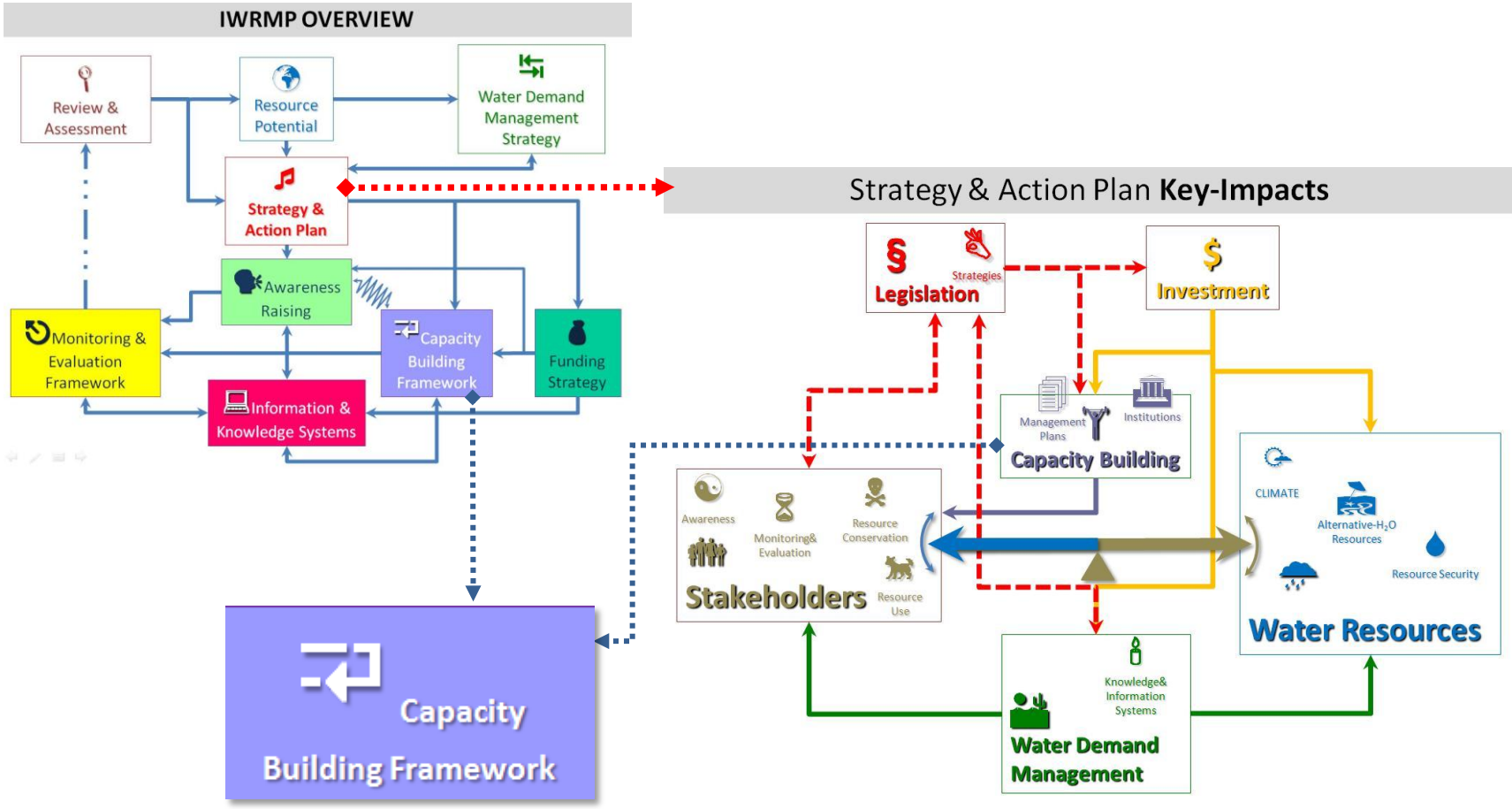

Figure 3.1: the Capacity Building Framework connected in the IWRMP overview and National Water Development Strategy and Action Plan

3.2 TRANSLATING THE STRATEGY AND ACTION PLAN INTO MANAGEABLE ACTION FOR CAPACITY BUILDING AND IWRM INSTALLATION

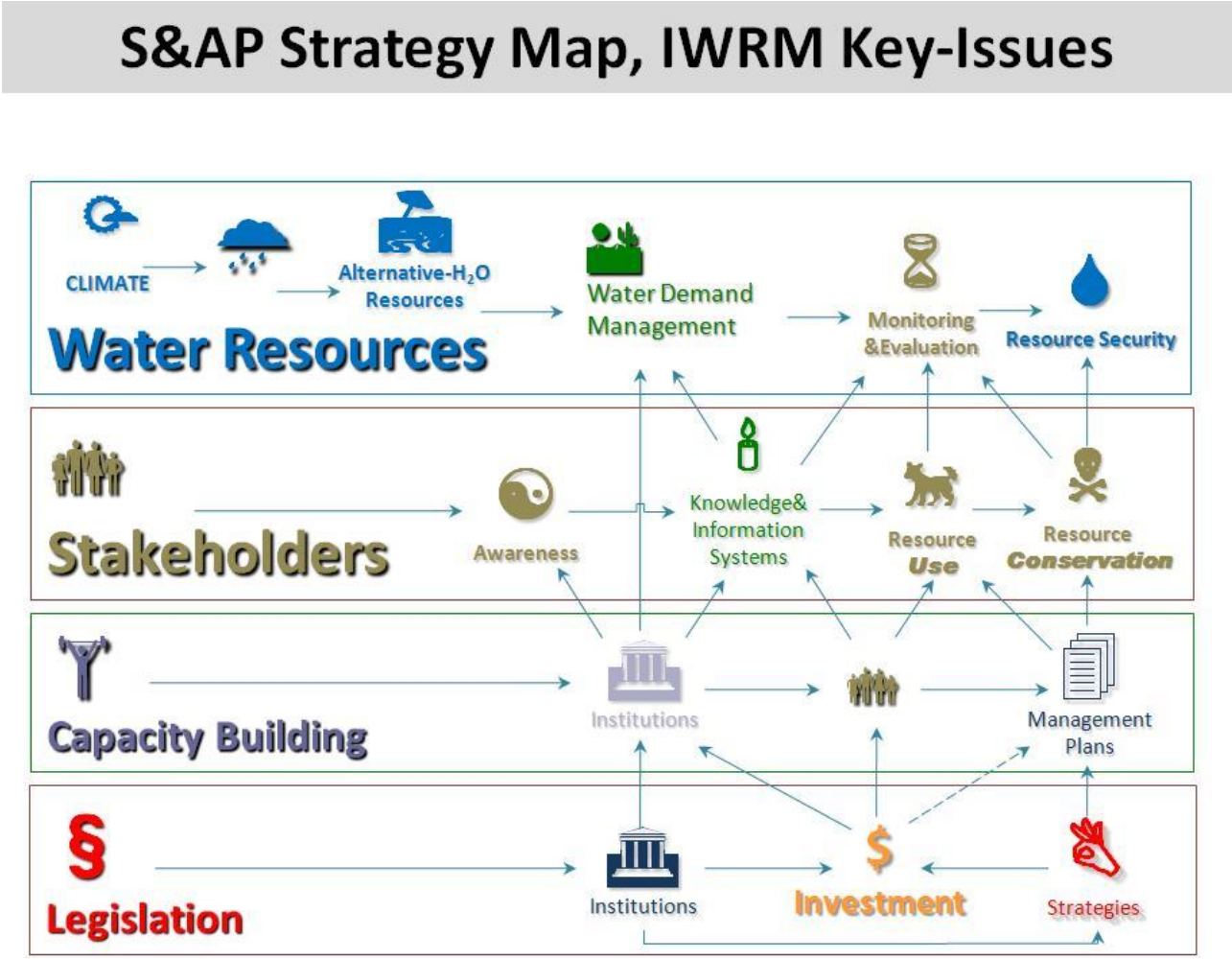

Figure 3.2: The IWRMP Strategy and Action Plan installation process in a start-end arrangement with the biggest leveraging points as the basis

To simplify the start-end arrangement the arrows in Figure 3.2 only show the prime development direction and sequence, they do not show the **feedbacks** which exist between the key-issues.

3.2.1 The financial and administrative perspective

During stakeholder consultation in thirteen regions the four fundamental matters {legislation, strategies, institutions and investment} were identified as strongest levers and accelerators. The leveraging and accelerating effect of these key issues was again confirmed during the National Workshop on 11.08.2010. This array of 'movers' suggests applying what already exists in terms of institutions, strategies etc. I.e. applying the existing legislation (*until the new Water Act is promulgated and enforced*) with all the developed water resources management and sanitation policies and strategies; establishing a small hand full of adapted or new strategies; making use of existing institutions (*inter alia*: DWAF, DWSSC, RCs, LAs, Namwater, UNAM, PON) and providing the initial funding to engage in capacity building. Such funding should ideally be **sourced within the country** in a joint effort between the Government and the Private Sector to limit external dependencies and to foster **mutual engagement** where existing institutions coordinate and manage the finacial resource flows primarily to three identified fields of capacity enhancement[2] (institutions, stakeholder education, management plans). The dashed line from investment to management plans represents an initial necessity for external support to get the management process right; this connection will fade as the newly established institutions and stakeholders gain capacity to establish and maintain such management plans.

3.2.2 The learning and growth perspective

Substantial capacity is available within Namibia which provides an ideal basis for IWRM installation and future successful application. Three fields of capacity building however, were identified namely **organisational development** (*adapting existing and forming new institutions*), **human resources capacity building** with specific focus on IWRM and the broad skills mix needed to master IWRM and **management plans** which follow the interfaces of the hydrological cycle such as the water/land interface, the surface/underground interface, the vegetation/atmosphere interface etc. IWRM puts people in the front line of resource use, knowledge contribution and resource management to achieve resource security. Nature managed this cycle herself for the past several billion years. However, people need Mother Nature as their prime resource provider and must therefore wisely manage any intervention in this cycle, i.e. people must maintain the resource flows and must adapt to natural changes.

3.2.3 The mutual service provision perspective

The ultimate client in IWRM is Mother Nature herself. This client provides all human and natural beings with **all resources** needed to sustainably survive and 'pays' us for maintaining her resources through the wise use of these resources. Existing and new institutions will **enhance** stakeholder awareness. Stakeholders will in turn **engage** in IWRM

[2] Please bear in mind that an IWRMP is **not** an infrastructure development plan.

and substantially **contribute** their own knowledge and experience to the National Information and Knowledge Systems, will be educated and trained towards more **effective** and **efficient** resource use and will be guided through appropriate resource **management plans** to conserve nature's resources. However, not only nature is a client, all stakeholders and water users are clients in this complex system and have to be served equitably and efficiently.

3.2.4 The client perspective

This perspective includes resource flow fluctuations due to climate change, takes alternative water resources into consideration to augment regionally differing resources and establishes WDM as the central **client protection mechanism** for both, nature and people, and closes the management cycle with an appropriate Monitoring and Evaluation System based on agreed performance indicators and targets. The overall goal is resource security, i.e. **balancing water use and water quality with sustainable yield** at all times. This yield differs greatly in the thirteen regions in Namibia with annual rainfall averages between 50mm in the southwest and 600mm in the far northeast with an overall average evaporation loss of 83%. Loss of water due to **evapotranspiration** especially of invader vegetation can be as high as 14% in Namibia, leaving just two percent of the total precipitation for surface water runoff and 1 percent for groundwater recharge. WDM is therefore the central response to increasing and maintaining the usable fraction of the sustainable yield.

3.3 THE CAPACITY BUILDING FRAMEWORK LAYOUT IN FOUR FRAMES

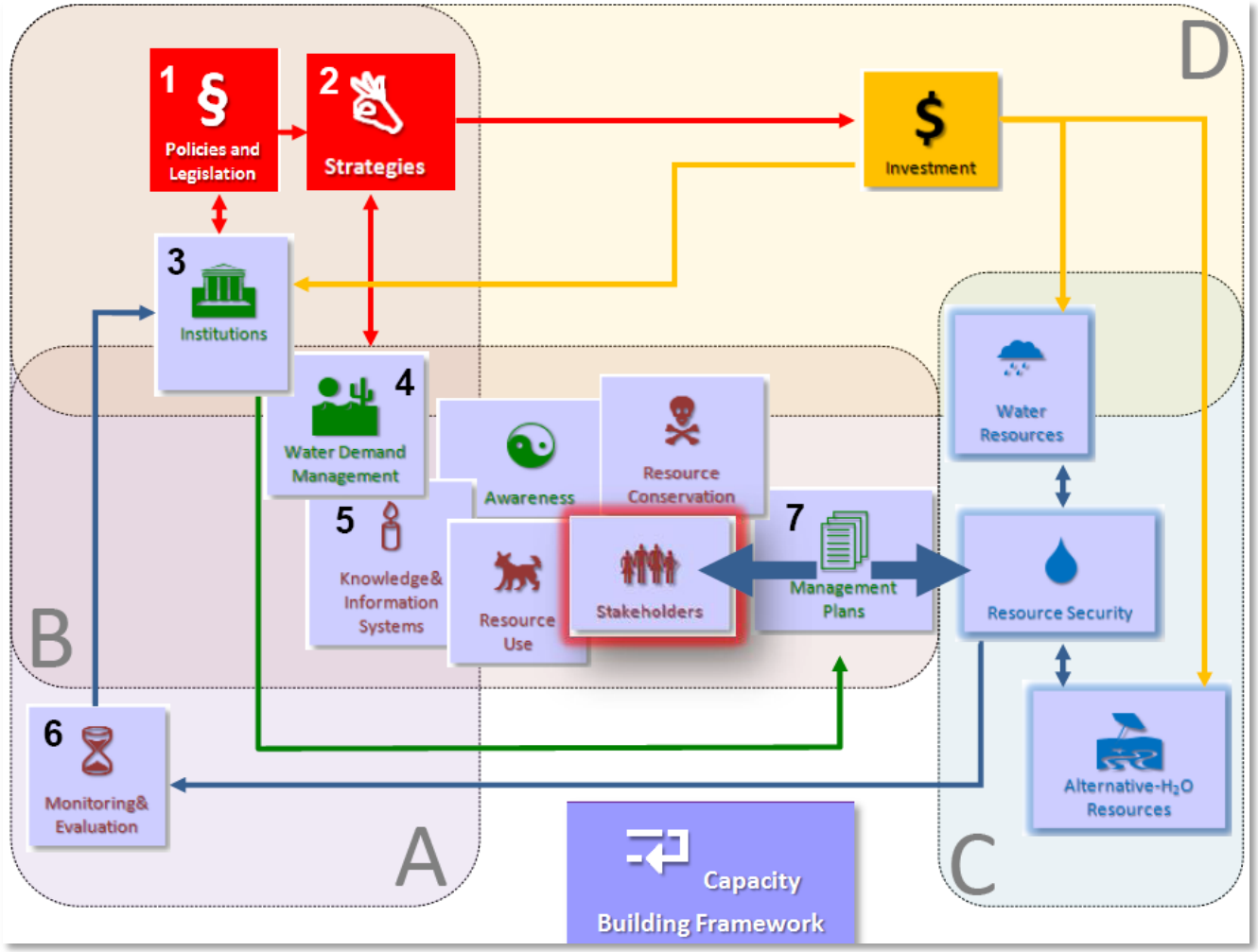

Figure 3.3: The Capacity Building Framework integrating IWRM key issues identified during the IWRMP process and stakeholder consultation in thirteen regions

IWRM capacity building for human resources and organisations is iterative in nature and is focused on **stakeholders** and key institutions if effective and balanced water use and water resource conservation is to be achieved. If **managerial and technical capacity building** is not seen as the central goal, water demand management and integrated water resources management cannot be anchored; i.e. the individual and organisational capacity levels have to balance to control resource security.

Frame "A" in Figure 3.3 represents **organisational capacity** (*regulations, networks, relationships, interactions and well managed processes within a community*). Frame "B" represents **human resources capacity**, individual capability and strengths to manage resource security for sustainability. Frame "C" represents the connection to **natural resources**. The focus is to manage resource security. The theme report *The Assessment of Resources Potential and Development Needs* deals in detail with the natural resource water. Frame "D" represents the **political will** with the strongest levers.

Frame "C" provides feedback to frame "A" which controls frames "B" and "D". Frame "B" ensures frame "C" through sound management while frame "D" coordinates engagement and provides initial funding. With an enhanced effectiveness frame "B" is enabled to provide increasing own financial resources to master resource security.

3.3.1 Explanation to the numbered blocks in Figure 3.3, the other blocks are self explanatory

Block 1: The **WRM Act** and the **Regulations** made in terms of the Act to be finalized and enforced

Block 2: Proposed **strategies** emerging from existing policies which relate to

- ground water protection
- ephemeral river catchment management
- integrated coastal management
- communal land and water use
- water demand management
- pollution control and effluent discharge quality
- effective tariff setting
- water metering and data monitoring
- reduction of bush encroachment
- gender participation and engagement

Block 3: Proposed **institutional strengthening** and establishing of supportive **governance structures** relates to the Water (and Sanitation) Advisory Council [WaSAC]; Performance Support Teams; Water Regulator function [WR]; Water Research Council; National Irrigation Water Efficiency Group, Basin Management Committees; Water Point Committees.

Block 4: relates to the theme report *Water Demand Management Strategy and Guidelines*. A suite of WDM tools is supplied in this report.

Blocks 5 and 6: relate to theme reports *Knowledge and Information Systems* and *Monitoring and Evaluation Systems*. A suite of indicators is supplied in these reports.

Block 7: relates to **managerial effectiveness** that is the **central pre-requisite** to manage for water resource security. Managerial effectiveness relates to both organisations and individuals (please refer to *Annex 5: Organizational and Individual Managerial Effectiveness Capacity* Threshold Assessment Tools, a supportive toolbox to establish the current managerial effectiveness threshold of organisations and individuals and to plan for future capacity increase).

4. DEVELOPING AND MAINTAINING OUR ORGANISATIONAL CAPACITY

We Namibians have agreed to attain the **Millennium Development Goals** (MDGs) and the goals of **Vision 2030**.

As a nation we are **engaged** to attain the following water related goals:

- Eradicate extreme poverty and hunger *(IWRM is a key to poverty eradication)*
- Ensure environmental sustainability *(with respect to mutual partnerships, resource security and people's wellbeing)*
- Achieve universal primary education *(with respect to developing a culture for sustainable WRM)*
- Promote greater gender equity and empower women *(with respect to gender mainstreaming and social stability)*
- Reduce child mortality *(with respect to water quality and sanitation)*
- Improve maternal health *(with respect to water quality and sanitation)*
- Combat HIV/AIDS, malaria and other diseases *(with respect to water quality and sanitation)*
- Develop a global partnership for development *(with respect to trans-boundary water courses)*

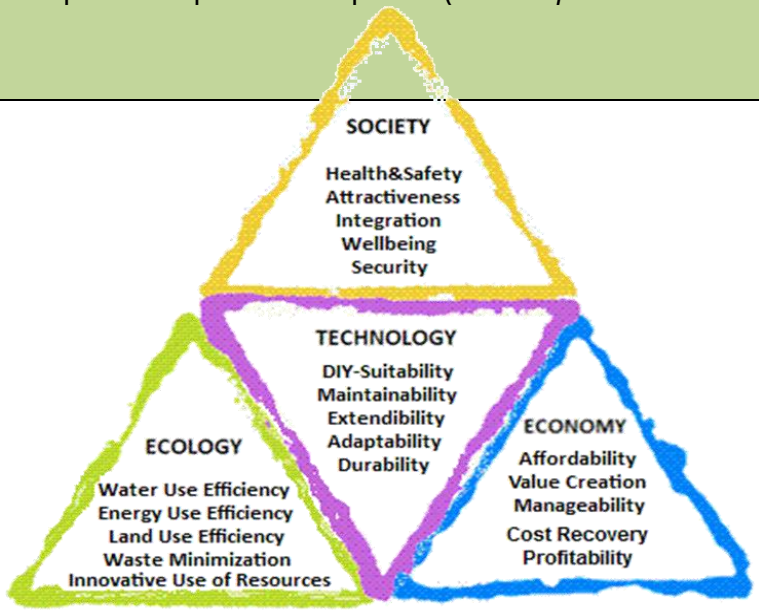

Figure 4.1: Unfolded tetrahedron model with sustainability dimensions and key-attributes

The model of sustainable existence in Figure 4.1**Error! Reference source not found.** applied for this IWRMP Capacity Building Framework resembles a tetrahedron, here unfolded to visualize the interfaces of the three dimensions ecology/society/economy with the fourth dimension technology. The **basic goals of decision taking** and capacity building in all four dimensions to enhance our organisational and human resources capacity are spelled out in each of the four triangles. The tetrahedron model -the most stable structure in nature- was chosen to show that no dimension can exist in isolation.

Too often in the past limited views were applied where individual sustainability attributes were seen in isolation. E.g. if affordability for our rural population was a key-criterion it was seldom balanced with maintainability or innovative use of resources. Likewise affordable technologies are not always adaptable or durable. The aim of capacity building and capacity maintenance is to connect as many attributes from all four dimensions **at the same time**. This is the essence of sustainable planning and decision taking.

In Figure 4.2 the IWRMP recommends the following institutions and water governance entities for establishing or strengthening to reach the IWRM objectives of **sustainable water resources development** and **maintenance**. The water governance structures and their derivation are referenced elsewhere in the set of theme reports submitted under the development of the IWRMP. The prime focus of the proposed institutions and governance structures is to maintain and retain existing capacity and to build new capacity with the ultimate aim of creating wealth. The indicators and time lines are explicit in the *National Water Development Strategy and Action Plan*. All proposed institutions and governance structures from the state and private sector will be involved in mutual capacity building.

Brief description of the function oriented layout for organisational capacity building and connection of governance system (*Figure 4.2*), the numbers in the list below refer to the numbers on the diagram.

1. The Minister and Cabinet build the **identity** of IWRM governance structures and sub-systems and ensure that the IWRM key-objectives are met in the most enabled way.
2. The Water and Sanitation Advisory Council; the Water Regulator function and the Water Research Council are the **innovation planning** and **strategic management**[3] **centres** for IWRM. They are connected to the bigger environment and clusters of partner systems and manage the adaptation of the whole IWRM system. They are the key to notice and manage uncertainties; they also manage aspects of shared water courses under the various commissions.
3. The Department of Water Affairs and Forestry is the central **steering agency** to **manage the operative side** of IWRM implementation and IWRM maintenance in a synergistic way.
4. The central **enablers** and coordinating mechanisms for IWRM are *inter alia* the Performance Support Teams, National Irrigation Water Efficiency Group, the Namibian Higher Education Institutions (Polytechnic of Namibia, University of

[3] Involves adapting the governance system to its environment, proposing the future of this system, establishing the objectives etc.

Namibia *et al*.), the Basin Management Committees and the Water Point Committees, and the national Knowledge and Information Systems and the Basic Education System.

5. The Monitoring and Evaluation Systems serve in an **auditing** role providing critical feedback to the steering agency on the whole process effectiveness.
6. The Key Stakeholders are **service providers** meeting the IWRM key-objectives and the needs of the people while maintaining their financial liquidity.

The proposed governance system in Figure 4.2 fulfils all the essential **management functions** and their respective interconnections and can thus support IWRM system viability; i.e. operative[4] and strategic[5] management is connected in a horizontal approach, the system does not need a vertical hierarchy to work. The central steering agency is connected to the operations on the ground (operations of key stakeholders) via three essential information channels:

1. **Steering** the actions of key stakeholders in a synergistic way to optimise resource flows to meet the agreed objectives
2. **Monitoring and evaluating** the outcomes to improve synergies and to improve resource flow optimisation
3. Installing and maintaining the **key-enablers** and coordination mechanisms needed to achieve the agreed objectives

The central steering agency, however, is also connected to the strategic management centres to send and receive information related to **system adaptation** and the system's internal coping with its enabling environment, i.e. enabling the strategic management centres to optimise the system's **capability**. The dash-dotted line connection represents the meetings with the Ministry to inform about the outcomes and success of the IWRM related operations, i.e. the Ministry is "listening" to key-elements of the strategic / operative management information flow to understand the system performance. All information channels in Figure 4.2 further show a **bi-directional flow** of information to enable shortest possible feedback paths. In this capacity building framework it is recommended **to first establish the necessary management functions** before designing and implementing any hierarchical structure. The final structure of the proposed governance system will then be developed and installed through the OPM[6] through optimising existing governance entities and their respective interconnections and be based on established functions.

[4] Operative management is concerned with the service provision within an enabling environment, i.e. managing synergies and resource flows to meet the agreed objectives (follows the language used in the OPM)
[5] Strategic management is concerned with the formulation of strategy and objectives within an organisation, i.e. determining what type of job needs doing and how to adapt the organisation to meet future challenges imposed through chages in its environment (follows the language used in the OPM)
[6] OPM = Office of the Prime Minister

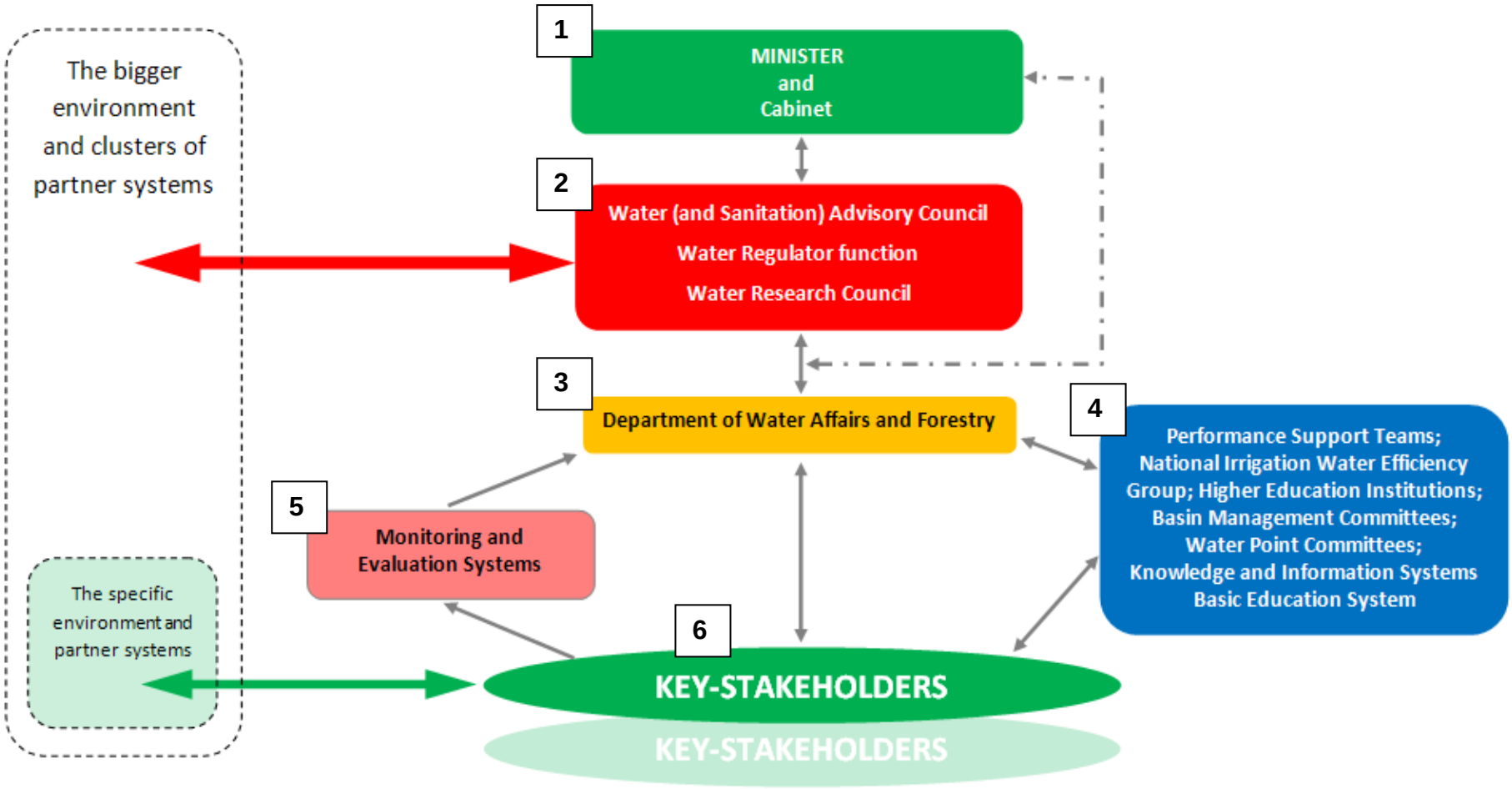

Figure 4.2: Proposed functional layout for organisational capacity building and connection of governance system

4.1 THE PROPOSED GOVERNANCE AND SUPPORT ENTITIES

The Minister and Cabinet should bring the revised **WRM Act,** and Regulations promulgated in terms of the Act, into force. *Please refer to 'Theme 1' under the National Water Development Strategy and Action Plan*.

The Minister should establish the **Water (and Sanitation) Advisory Council** [WaSAC]. *Please refer to 'Theme 1/5' under the National Water Development Strategy and Action Plan*.

This council will be the central advisory body and overall managing agency for IWRM capacity building for all sectors in Namibia to support state-of-the-art water supply and demand management and rural/urban/industrial waste water management. The council will initiate an institutional capacity assessment and will advise the Minister on how the Department of Water Affairs and Forestry (DWAF), as well as other role players should operate a water and sanitation capacity building and outreach programme with two key-objectives: to create and maintain water and sanitation related awareness for sustainable resource use and to advise on the most appropriate good practice for planning, installation, management, operation and maintenance of water and sanitation infrastructure.

The WaSAC will be responsible for prioritising and reviewing all plans, including long-term plans, and proposed interventions that will ultimately impact on the national water resources including shared river basins, the sustainability and security of supply. This includes assessments of proposals related to the construction of water and sanitation infrastructure which is considered to be a national asset and will advise the Minister to put in place a set of quality standards and guidelines, strategies and regulations to guarantee the environmental soundness of installations and water resource security. Staff members sufficient in number to provide administrative, technical and clerical support to the Water and Sanitation Advisory Council will be provided by DWAF. The WaSAC should integrate exisiting capacity in the country also from the private sector. Three potential key-indicators for the Water and Sanitation Advisory Council are:

TYPE	INDICATOR	TARGET
Process Indicator	The WaSAC is established and fully operational	Comprehensive annual reports from the WaSAC exist by 2012
Outcome Indicator	Proof of long-term strategic planning for water and sanitation infrastructure exists	Sustainability and security of supply by 2020
Impact Indicator	Proof of RCs, LAs, service providers, stakeholders that have appropriate capacity to manage water and sanitation infrastructure exists	Optimised service provision at affordable costs by 2015

The Minister should establish **Performance Support Teams** [PSTs]. *Please refer to 'Theme 1/5' under the National Water Development Strategy and Action Plan*.

During the Regional Workshops and the Focused Group Discussions in all regions consulting with stakeholders on the IWRM Plan for Namibia, **technical and managerial support** for service providers was highlighted as a key concern. In response, the concept of

having **mobile** Performance Support Teams (PSTs) to assist Local Authorities in particular was developed. This approach would involve a team of experts that may comprise a mix of government employees, private sector personnel, consultants and NGO staff, depending on the support required, and who would work together to support a particular Local Authority or any service provider as required.

The support provided would include first an assessment by one or more experts to determine the extent of the challenges facing the Local Authority or service provider and what the composition of the expert team required should be to provide the type of support needed. The appointed team of experts would than do an intensive assessment of all the components of water supply or sanitation activities. These would range, for example, from financial management, billing and cost recovery, tariffs, tariff advisory committees and credit control to technical aspects such as determining non-revenue water, night flow measurements, pipe and water meter maintenance and replacement programmes, budgets and implementation. These assessments would take place in the company of the local staff who are responsible for these activities and who would need their capacity to be built to enable them to perform their duties better in the future. After the joint assessment the Local Authority staff responsible for water services, with support from the PST, would draw up an operational management plan with Objectives, Actions, Resources Required, Responsible Agents, Performance Indicators, Target Dates, Milestones and Outcomes and Budgets.

Ongoing support would take the form of handling of queries through e-mails or faxes and if required bi-monthly visits by a team member(s) to liaise with the responsible Local Authority staff to follow up on the progress with the implementation of the management plan and compliance with performance indicators. The frequency of visits would be reduced to monthly, quarterly or annual visits as progress was made, up to 5 years. Such an approach would ensure capacity enhancement amongst the Local Authorities together with enhanced service delivery and customer satisfaction resulting in improved payment for services.

In cases where service providers do not comply with the performance indicators the Water Regulator may advise such service providers to involve a PST. The revised Water Resources Management Act makes provision that the Minister may provide technical support to service providers that cannot fulfil their obligations as required in the licence.

This method of **hands-on support** for capacity building would serve to enhance capacity of the Local Authorities and Regional Councils, improve service provision for residents and save money for the government and its agencies. This approach was **recommended** by stakeholders and preferred when compared to having financial bail-outs for Local Authorities from government or when compared to having NamWater take over the collection of revenue for water services without significantly improving service delivery. It is clear that local capacity building is more appropriate and should be improved through a **supportive extension service**. The three key-indicators for the Performance Support Teams are:

TYPE	INDICATOR	TARGET
Process Indicator	Proof of support staff for PSTs exists and PSTs can be sent out with less than 7 days notice	Appropriate support pools and budgets from DWAF exist by 2012
Outcome Indicator	Proof of strategic and operative planning and management of service providers exists	Viability of service provider by 2015
Impact Indicator	Proof of RCs, LAs, service providers, stakeholders that have appropriate capacity to manage water and sanitation infrastructure and related economics exists	Bail out = 0, Capacity is optimised, liquidity is maintained by 2015

The Minister should establish the **Water Regulator** function [WR]**.** *Please refer to 'Theme 1/5' under the National Water Development Strategy and Action Plan*.

This Water Regulator will evaluate and control equitable tariffs for water and sanitation services and assess the performance of service providers through performance indicators and to evaluate their service plans to improve service coverage.

The Water Regulator should harmonize (incl. WSASP):

- the expectations of the consumers and policy makers without compromising the financial sustainability of the service providers;
- the increase in tariffs by service providers, to assess the performance of service providers through performance indicators;
- the providers' service plans to evaluate coverage of the provision of services.

Other functions may include consultation with water users (mainly through the DWAF secretariat), tariff policy reviews if required, evaluation of 5 yearly technical audits of infrastructure of service providers through the PSTs to ensure security of supply and continued service delivery and any other relevant tasks requested by the Minister.

It will be mandatory for service providers such as NamWater, Local Authorities and Regional Councils who supply water to end-users to establish tariff advisory committees to give input in structuring of end use tariffs. This must be covered in the Regulations controlling service providers. It is also important that the regulation must make provision to advertise their proposed tariffs increases in a newspaper at least 1 month before submission to the Water Regulator to give the public time to submit their comments/input to the DWAF secretariat to prepare it for the Water Regulator.

The members of the Water Regulator will be paid in accordance with the level of expertise and time involved to evaluate and approve annual tariffs, performance (financial, technical and customer satisfaction) of service providers and coverage of services provided to the public. Staff members sufficient in number to provide administrative, technical and clerical support to the Water Regulator will be provided by DWAF. The three key-indicators for the Water Regulator function are:

TYPE	INDICATOR	TARGET
Process Indicator	The WR is fully operational and adequately staffed	Annual tariff policy reviews by 2013
Outcome Indicator	Proof of regular tariff adaptation exists	Stakeholder willingness to pay >90%
Impact Indicator	Increased quaility and coverage of service provision	Service providers maintain liquidity while offering best services by 2015

The Minister should establish a **Water Research Council** [WRC] to actively promote water research and to provide appropriate access to research information for all stakeholders. *Please refer to 'Sub-Theme 4.1' under the National Water Development Strategy and Action Plan*.

The WRC will cooperate with all Namibian research centres including, but not limited to the Namibia Institute for Sustainable Development/ Desert Research Foundation of Namibia/ Namibia Nature Foundation, Gobabeb Training and Research Centre, Polytechnic of Namibia, University of Namibia, Habitat Research and Development Centre and other government and private sector research initiatives. The WRC will encourage and foster national, regional and international networking between research entities (e.g. cooperating with the Regional Science Service Centre (RSSC)) and will be coordinating the feeding of our national knowledge and information systems with state of the art knowledge and will provide management support to maintain them. The WRC could be financed through a levy on metered water (e.g. N$ 0.05/m^3 to start with). The three key-indicators for the Water Research Council are:

TYPE	INDICATOR	TARGET
Process Indicator	The WRC is connected to national and international research centres and provides knowledge and information to stakeholders	National and international cooperation for water resources management by 2013
Outcome Indicator	Improved innovation performance of national knowldege and research centres	Water resources security in the country by 2020
Impact Indicator	Enhancing and anchoring local technical capacity	Innovative water use across all sectors by 2020

The Minister should establish a **National Irrigation Water Efficiency Group** [NIWEG] complimented by local famer interest groups where local knowledge and expertise in irrigation farming is accessible to all farmers but especially to emerging irrigation farmers. The NIWEG will collect information, supply information and arrange for training courses in coordination with the local farmers interest groups, maintaining a national information basis that can be accessed by all farmers or interest groups. *Please refer to 'Theme 4.5' under the National Water Development Strategy and Action Plan*.

The NIWEG and local groups will focus on supporting farmers with knowledge and innovations regarding increased crop production (more crop/drop) **crop/water/ fertilizer/pesticide requirements**, crop **matching** with soil conditions, **irrigation**

technologies, water productivity, **water use efficiency**, irrigation **water metering**, training of irrigation farmers in soil/water/fertilizer/pesticide management and scheduling, as well as evapo-transpiration management. The NIWEG and local interest groups could also be linked to the Water and Sanitation Advisory Council like the Performance Support Teams. The three key-indicators for the National Irrigation Water Efficiency Group are:

TYPE	INDICATOR	TARGET
Process Indicator	The NIWEG exists and sends out mobile support teams	Continuous irrigation farming support by 2013
Outcome Indicator	Widely improved capacity for irrigation farmers exists especially for emerging irrigation farmers	Optimal use of water resources for food production by 2015
Impact Indicator	Widespread proof of irrigation water use efficiency and increased crop production exists	Optimal use of water resources for food production by 2015

The **Basin Management Committees** (BMCs) and **Water Point Committees** (WPCs) should be strengthened to serve, *inter alia*, as platforms for local awareness raising, participation in capacity building and engagement with stakeholders on all levels. *Please refer to 'Theme 1' under the National Water Development Strategy and Action Plan*.

The organisational layout plan in *Figure 4.2* above shows a suitable connection of the proposed governance structures to enable these structures to **effectively contribute** to IWRM and to maintain **IWRM system viability**.

Integrated Water Resources Management (IWRM) is for all stakeholders in the water sector, i.e. for all water service providers and related management and governance entities and all water users in Namibia.

4.2 IWRM ORGANISATIONAL CAPACITY BUILDING BASED ON EXISTING POLICIES

During the IWRMP process and stakeholder consultations it was elaborated that the **existing policy landscape is supportive** to the revised WRM Act. The IWRMP proposes that the revised WRM Act should be brought into force **and** to establish the following set of enabling strategies to meet the goals of IWRM and the available policies. The strategies and their derivation are referenced elsewhere in the set of theme reports submitted under the development of the IWRMP. The indicators and time lines are explicit in the *National Water Development Strategy and Action Plan*. The strategies are connected to the governance structures. *Please refer to 'Sub-Theme 2.1' under the National Water Development Strategy and Action Plan*.

4.2.1 A groundwater protection strategy and management plan

This strategy and management plan will cover ground water use in general and water resource security and quality conservation in particular. The strategy will support the work of the Water and Sanitation Advisory Council, the Irrigation Water Efficiency Group, the Basin Management Committees and the Water Point Committees. Key information related to this

strategy will come from the work of the Water Research Council and connected research and monitoring entities as well as from providers. The strategy provides vital management guidance for all water users and also for the selection of appropriate sanitation technologies.

4.2.2 An ephemeral and perennial river catchment management strategy

This strategy will cover control of bush encroachment[7], water harvesting, storage and abstraction in shallow groundwater systems and the creation of surface water bodies including down-stream water quality and resource security. The strategy will support the work of the Water and Sanitation Advisory Council, the Irrigation Water Efficiency Group, the Basin Management Committees and the Water Point Committees. The strategy will give direction (advise) concerning good practices regarding alluvial and perennial water abstraction and the establishment of dams. The strategy will also provide guidance for all small scale water users (*e.g. river bank irrigation*) and for the selection of appropriate effluent discharge technologies. The strategy is linked to the strategy for effluent discharge quality and to the strategy for groundwater protection.

4.2.3 A clear communal land and water use strategy

This strategy will cover water use on communal land and water quality conservation, including rainwater harvesting where appropriate. The strategy will support the work of the Water and Sanitation Advisory Council, the Irrigation Water Efficiency Group, the Basin Management Committees and the Water Point Committees. The strategy will directly support the WSASP 2008 and the subsequently developed National Sanitation Strategy 2009 and will advise on best practices regarding livestock management in communal areas as well as rainwater harvesting. The strategy also provides guidance for all small scale water users (*e.g. back-yard irrigation gardening*) and for the selection of appropriate effluent discharge technologies for households and small rural industries.

4.2.4 A national water demand management strategy

This strategy will focus on involving measures that improve water use efficiency by reducing water use or altering patterns of water use after abstraction. Please refer to the detailed theme report *Formulation of a Water Demand Management Strategy*. The strategy will be central to IWRM, and will have a direct supporting influence on all the other proposed strategies, will support the work of the Water and Sanitation Advisory Council, the Irrigation Water Efficiency Group, the Basin Management Committees and the Water Point Committees, and will enhance the implementation of the WSASP 2008 policy and the Namibia National Sanitation Strategy of 2009 covering 2010/11 – 2014/15.

[7] To enhance both surface run-off and groundwater recharge

4.2.5 A national pollution control and effluent discharge strategy and appropriate regulations

This strategy targets all water users and focuses on water quality conservation and water resources security. The regulations will support the Part XIII regulating “Water Pollution Control" in the Act and will be a central instrument for the work of the Water and Sanitation Advisory Council, the Irrigation Water Efficiency Group, the Basin Management Committees and the Water Point Committees. The strategy **includes** guidelines and regulations on effluent discharge quality, and will also address the 'polluter pays' principle.

4.2.6 An effective strategy on tariff setting

This strategy will focus on equitable and socially fair tariffs; water conservation will be oriented along a cost recovery basis to attain revenue stability and financial liquidity of providers. The strategy will be based on affordability and will provide guidance for subsidies.

4.2.7 An effective strategy on water metering and data monitoring

This strategy will focus on water use, waste minimization and non revenue water, data analysis, monitoring and evaluation systems, information provision, leakage management, follow up and follow through of leakage rehabilitation projects, administration and financial management.

4.2.8 An effective strategy on the reduction of bush encroachment to enhance groundwater recharge and surface run-off

Bush encroachment is influenced by poor land and farm management practices such as overgrazing and the subsequent proliferation of bush encroachment, the introduction of alien vegetation and the prevention of veld fires which control the growth of bush. The strategy focuses on preventing land degradation, enhancing groundwater recharge and surface run-off and improving the carrying capacity of the vegetation through de-bushing and grazing management.

4.2.9 An effective strategy on gender participation and engagement in IWRM/WDM

This strategy will focus on providing resources to educate men, women and youth in water management issues. The National Water Policy and subsequent Water Act are based on Integrated Water Resources Management (IWRM) principles. IWRM approach calls for the involvement of women at all levels in the provision, management and safeguarding of water. IWRM/WDM information should be tailor made to all audiences that is; men, women and youth and should be communicated in media that is reachable to all such as radio, TV, posters, pamphlets, meetings and workshops.

4.2.10 An effective strategy for integrated coastal management

This strategy should be established as dynamic, interdisciplinary and iterative process to promote sustainable management of our coastal zones. This strategy will cover all from information collection, planning, decision taking, responsibility allocation to management and monitoring of implementation of sustainable coastal development.

4.2.11 Strategic Planning and Management Support

The IWRMP process further proposes the following **strategic planning-** and **management support mechanisms** to be established and installed to meet the objectives of IWRM. The indicators and time lines are explicit in the *National Water Development Strategy and Action Plan*. *Please refer to 'Sub-Theme 2.1/4.1' under the National Water Development Strategy and Action Plan*.

- Installation of **feedback mechanisms** and appropriate **performance indicators** through all relevant institutions and agencies for all relevant processes. This includes appropriate **knowledge and information systems** and an appropriate **monitoring and evaluation system**. The development of both an appropriate Knowledge and Information System and an appropriate Monitoring and Evaluation System is an integral part of the IWRMP; their systemic connection was visualised before in the proposed layout for organisational and human resources capacity building and connection of governance system.
- **DWAF engagement programme** for efficient and effective cooperation and service provision to be developed (DWAF, NamWater, Regional and Local authorities, line ministries such as: MET, MRLGHRD, MWT, MoE, MHA, and MoF, CSOs and elected and appointed leaders)
- To provide training for **managerial effectiveness** and **decision taking** on organisational level and enhancing management capacity (*see box below*).
- DWAF to establish a **stakeholder resource pool** for capacity maintenance and capacity building support with regards to **Water Demand Management** and **IWRM**.
- Introduction and maintenance of **operational manuals** and **financial management plans** (irrigation, water demand management, rural and urban water use and sanitation, livestock, mining, tourism)**.**
- IWRM/WDM is to be included in **basic and higher education and training curricula** for education and training as well as **applied research**.

...about **decision making/taking in organisations**; a support tool for decision taking

"The reluctance of an organisation to make changes that involve a risk results in a future that happens to that organisation, over which it has little control. The willingness to make changes that involve a risk enables an organisation to have a major role in creating its future."

Following Russel L. Ackoff there are only two types of errors:

1. Errors of commission: doing something that should not have been done.
2. Errors of omission: not doing something that should have been done.

Errors of omission, i.e. lost opportunities, are generally more critical than errors of commission. Organisations fail or decline more frequently because of what they did not do than because of what they did.

How can an organisation's capacity be adapted so that it is as concerned about errors of omission as errors of commission? How can it assure learning and building capacity from both types of error?

Ackoff proposes the following systematic support process to query decisions and to keep track of them.

- Preparing a record of every decision of any significance, ones that involve doing something or (of particular importance) ones that involve not doing something. This record should include the following information: The **justification** for the decision including its expected **effects** and the time by which they are **expected**. The **assumptions** on which the expectations are based. The information, knowledge, and understanding that went into the decision. Who made the decision, how it was made and when.
- The implementation of the decision should be **monitored** to determine whether the expectations are being met and the assumptions on which they are based remain valid.
- When a **deviation** is found in either the assumptions or expectations, it should be diagnosed, the cause determined and corrective action prescribed and taken.
- The corrective action is itself the result of a decision. A **record** of this decision should be made and treated as the original decision. In this way the process will not only yield learning but also learning how to self-build capacity.
- A record of the **entire process** (all four previous steps) should be made and stored for easy access by those who may later be confronted by the need to take a similar type of decision.

This process can and should be conducted at every level of an organisation at which critical decisions are made.

5. DEVELOPING AND MAINTAINING OUR HUMAN RESOURCES CAPACITY

In the light of the worldwide recession and a soon expected second wave of further economic meltdown (*US/UK banks and insurances poker with bailout money and attract further toxic asset*s) the IWRMP Joint Venture strongly recommends to maintain and retain where appropriate all available organisational and human resources capacity.

During the process of researching and compiling the theme reports, the following technical and managerial training modules and training manuals for developing and maintaining people's skills for **continuous professional development** were proposed to meet the goals of IWRM and to enhance our organisational capacity. An overview of technical capacity building ***de novo*** and for continuous professional development is provided in *Annex 3: Organizational and Human Resource Technical Capacity Building Layout for IWRM.* (*Please refer to 'Sub-Theme 2.2/2.3' under the National Water Development Strategy and Action Plan*.)

5.1 TECHNICAL MODULES RELATED TO PLUMBING AND WATER CONDITIONING AND TREATMENT

These modules -managed through the *Water and Sanitation Advisory Council* and *Performance Support Teams*- focus on water meter replacement, leak detection and repair, plumbing and **water reticulation infrastructure maintenance** in general. Other modules should cover water quality monitoring, water conditioning and treatment. A good potential for employment creation in rural and urban areas is expected from such capacity building modules relating to **maintenance management** and keeping the water and waste water infrastructure in conditions to serve the client at all times. Our national Vocational Training Centres and Namibian industry are key providers for plumbing related training and maintenance capacity. Commercial laboratories and the higher education institutions Polytechnic of Namibia and University of Namibia can provide capacity building services for water quality monitoring and water conditioning. Proposed modules -refresher and continuous professional development- should be offered bi-annually and range from WDM technical management information for technical managers in LA's; reticulation management and maintenance; detecting illegal connections, meter management and replacement & testing; selection including pre-paid meters & correct installation; development of replacement programmes; control of water quality at source and in reticulation systems; night flow measurement; how to determine the breakdown portions of non-revenue water; technical performance indicators and collection of information as a basis for approval of tariffs through the *Water Regulator function* to other modules still to be identified.

Key-indicators for successful implementation of the proposed technical modules include *inter alia* {non-revenue water<10%; normalised night flow<5%; pipe bursts per kilometre<0.15; meter replacement as percentage of total=12%}

Namibian Examples of successful infrastructure maintenance:

Implementation of Water Demand Management with improved maintenance of infrastructure and capital replacement can contribute to much needed development of skills and the creation of more employment. Most of the capital replacement schemes such as replacement of water pipelines in urban areas are labour intensive due to the presence of other services on sidewalks which may be damaged. During an investigation in Arandis in 2006 it was determined that the non-revenue water was extremely high in excess of 50%. In a project implemented during 2008/2009 which included the replacement of a main pipeline and pressure reduction device non-revenue water was reduced to approximately 15%. The bulk water supply decreased with 24% from 2006 to 2009 while sales increased with approximately 29%. The net effect of reduced bulk supply cost and increased sales amounts to N$ 1.24 million based on 2010 tariffs. In the case of Gibeon where pipelines were replaced and system leakages were fixed the reduction in bulk supply from 2002 (379438m^3) to 2007 (123.507m^3) was 255 931m^3 (67.5% reduction) with a money value of N$ 1.45 million based on 2010 NamWater tariffs. *(Ben v.d.Merwe, 2010)*

5.2 SANITATION RELATED MODULES FOCUSED ON CONSTRUCTION AND MAINTENANCE OF APPROPRIATE SANITATION FACILITIES

This includes training of rural people to build their own environmentally sound, affordable and maintainable sanitation facilities. Modules developed for rural and urban sanitation technologies must be made **freely available** to the public. The proposed *Water and Sanitation Advisory Council* should manage module development by the responsible institutions, coordinate capacity building and should ensure environmental and economic soundness of installations. Proposed modules should be offered bi-annually and range from technical management information for technical managers in LA's; sanitation options; sewage treatment; how to avoid maintenance intensive vacuum sewer systems through installation of more affordable and maintainable technology options; general sewer maintenance to other modules still to be identified.

5.3 IRRIGATION MANAGEMENT MODULES FOR IRRIGATION FARMING SUPPORT

The development and implementation of these modules is a function of the *National Irrigation Water Efficiency Group* with support from the Department of Agriculture, Directorate of Extension and Engineering Services and experienced members of the private sector. These modules focus on complex increased crop production (*more crop per drop*), proper scheduling, crop/water/fertilizer/pesticide requirements, crop matching with soil conditions, irrigation technology choice, water productivity, water use efficiency, irrigation water metering, training of farmers in soil/water/fertilizer/ pesticide management and scheduling, and evapo-transpiration management.

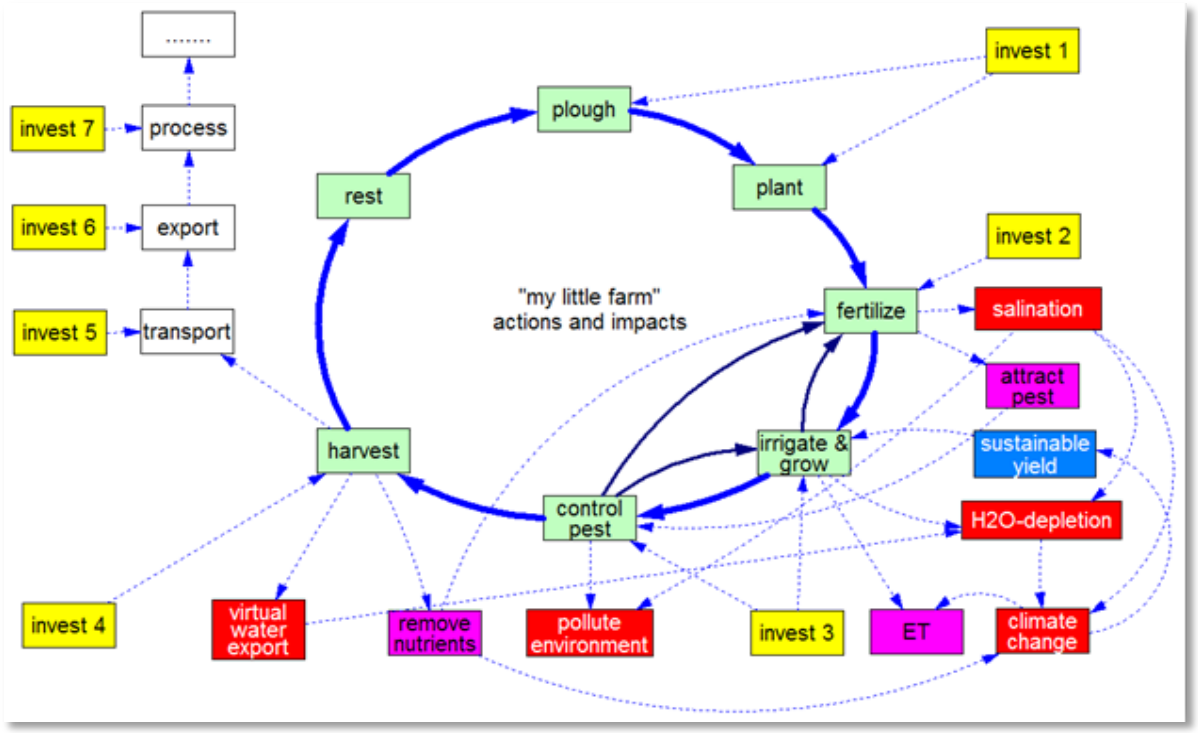

Figure 5.1: Basic irrigation farming cycle with connections to effects due to irrigation / fertilizer use / pest control

The irrigation farming system diagram in **Figure 5.1** shows complex interconnections which have to be managed in an irrigation farming environment. All four dimensions (ecology/economy/society/technology) will have to be connected to enable environmentally sound and economically viable irrigation farming. Clearly visible are the four investment blocks until transporting the produce from site. The fine-dotted lines represent the less obvious connections and impacts that, however, determine system success and sustainability over an extended period of time.

5.4 INTEGRATED RESOURCE PLANNING AND MANAGEMENT [IRPM] MODULES

Please refer to 'Sub-Theme 4.2' under the National Water Development Strategy and Action Plan.

The IRPM-modules relate to determining a balanced mix of demand-side and supply-side planning and management for all resources we handle, which is expected to provide long-term, reliable service to utility customers at the lowest reasonable cost and which optimises benefits, pollution prevention and is reflected in positive economic indicators. Integrated resource planning for **all resources** in the country aims at sustainable resource flows and system viability. This also includes integrated coastal management.

Rural and urban clients demand a balanced set of sustainability attributes to use a technology and to pay for its use. These attributes (*confirmed in several Botswana research programmes 1991-1996, and from Polytechnic of Namibia research, 2001-2006*) are **basic** and cover the most elementary planning/design and management steps to introduce and maintain a technology.

Societal sustainability attributes relate to health and safety, attractiveness for people, integration into their cultural environment, improving peoples' wellbeing and quality of life and their individual and group security.

Economical sustainability attributes relate to affordability of technologies and services, the creation of value for both, provider and client, manageability of technologies with specific focus on financial viability, recovery of costs incurred and profitability, again for both provider and client.

Technological sustainability attributes most demanded by people are do-it-yourself suitability and maintainability of installations especially in rural areas, extendibility of services/processes/technologies without redefining their architecture, adaptability to changing social, economical and environmental conditions, and durability of materials and processes.

Other essential modules proposed for integrated resource planning and management relate to management information for financial managers in LA's; cost allocation; proper accounting for LA's; tariff setting; credit control; water balances & money losses resulting from too high non-revenue water; financial performance indicators and application for approval of tariffs to the Water Regulator.

Key sustainability attributes however are of **environmental nature** and relate to resource flow stabilisation, resource use efficiency in general as well as water/energy/land use efficiency and waste minimisation in particular. Innovative use of resources relates to their multiple or cascaded uses, symbiotic partnerships, feedback planning and management and observing best practices from nature itself.

To enable our people to maintain their own and their organisations' independent existence (*the definition of viability*) a strong focus should be put on basic and advanced **managerial effectiveness training modules** including appropriate training manuals for capacity building and capacity maintenance. The chapter on *broad skills mix* addresses two managerial effectiveness capacity threshold assessment tools which can be found in *Annex 5: Organizational and Individual Managerial Effectiveness Capacity Threshold Assessment Tools;* these two tools enable organisations to start the managerial effectiveness capacity maintenance and building process internally without any support from outside.

In 2005 the Polytechnic of Namibia, Department of Civil Engineering, developed an online library to support managerial effectiveness capacity building. This library provides additional information and tools and is accessible on the Internet under (http://www.polytechnic.edu.na/academics/schools/engine_infotech/civil/generic_skills_library/)[8].

Client focused service provision capacity must be maintained and built, related to water use efficiency, water demand management, integrated water resources management, financial management, monitoring and integration of performance indicators and managerial effectiveness in general.

[8] Last accessed in August 2010

Business administration and **financial management** capacity must be maintained and built, related to accounting and bill collection systems to reduce the level of non-revenue water and to recover costs for water infrastructure, treatment and reticulation as well as addressing budgeting for operation and maintenance.

Key-indicators for successful implementation of the proposed management modules include *inter alia* {monthly recovery of accounts>95%; average age of debt<3months; income versus expenditure is around +10% to enable infrastructure maintenance and extension for a growing population; informative billing=100%; customer care=100%}

Please refer to Annex 1 where the capacity building needs identified in the theme reports are distilled and to Annex 2 which summarizes the capacity building needs identified during **extensive stakeholder consultations in thirteen regions**. Annex 1 and 2 already provide good insight into the broad skills mix needed to master IWRM and to support the proposed organisations and governance structures. This includes further the capacity building needs identified in the IWRM plan Activity reports II-IV covering information and knowledge, monitoring and evaluation and financial resources management.

The next section deals with this **broad skills mix** which was distilled from the theme reports and integrated in the National Water Development Strategy and Action Plan which again was derived from **consultations with stakeholders** in thirteen regions in Namibia.

5.5 BROAD SKILLS MIX NEEDED AND AGGREGATED SKILLS LEVEL REVIEW FOR HUMAN RESOURCES CAPACITY

5.5.1 Brief background to the Capacity Building Framework design process and the results achieved during consultation

IWRM is not a simple series of sequential processes. IWRM is a **highly complex and interconnected system** with numerous mutual impacts between critical issues with most of these impacts influencing the system **at the same time**. The broad skills mix needed to master such an interconnected system ideally relates to the complexity of interconnections.

The Joint Venture / Steering Committee knowledge and experience regarding the interconnection and strength of interconnection of critical IWRM issues was therefore captured on 30.07.09 during a steering committee meeting. This was done under workshop conditions when workshopping the *National Water Development Strategy and Action Plan* and was subsequently modelled with two system dynamics software packages[9].

This workshop was also understood as a further opportunity to connect the design of the Capacity Building Framework to the *National Water Development Strategy and Action Plan*.

The modelling and analysis was done to understand **mutual influences** and **cross impacts** between IWRM key issues essential for capacity building. Further influences were captured during **stakeholder consultations in the thirteen regions** and the model was updated accordingly.

Results of this modelling showed that when modelling the start-up conditions:

- "Legislation", i.e. the finalisation and enforcement of the act was understood as the best initial leveraging point in the system.
- "Policies", "Management Plans" and "Investment" showed the strongest accelerating effect in the start-up conditions to master IWRM, i.e. when these elements were properly implemented the system was believed to have enough momentum to continue to exist.
- "Institutions" and "Water Demand Management" were understood as essentially self-regulating elements for IWRM.

Figure 5.2 below shows the causes|uses trees before integration and after consultation and integration.

[9] (1) Prof. F. Vester Sensitivity Modelling Software. Background information to the software package can be obtained through (http://www.frederic-vester.de/eng/sensitivity-model/) and his book "The Art of Interconnected Thinking". (2) Vensim PLE Plus from Ventana Systems, USA. Both software packages are highly recommended to analyse and visualize system behaviour on different levels.

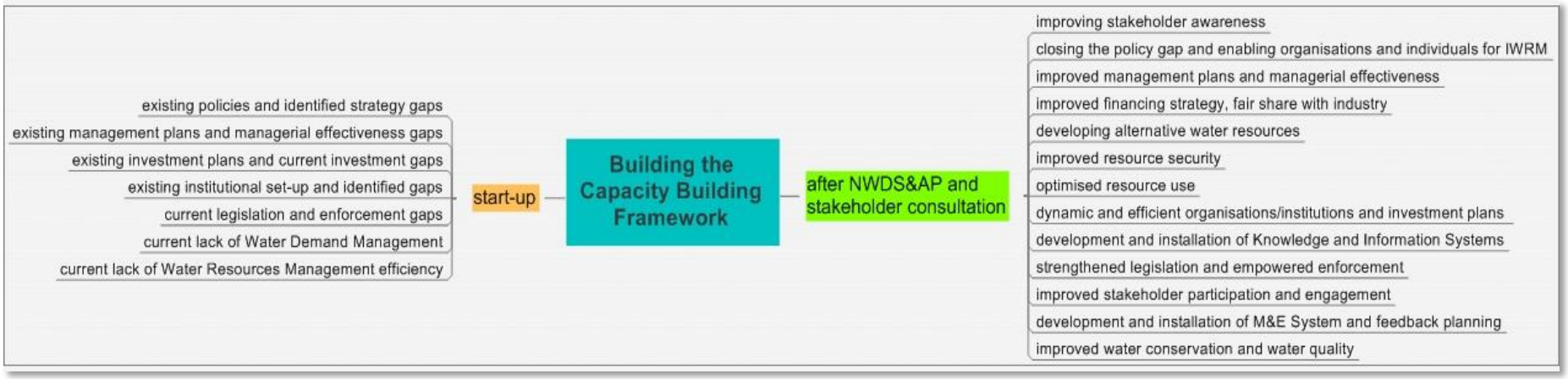

Figure 5.2: The Capacity Building Framework causes and uses tree (before and after capturing people's knowledge and integration)

After capturing **people's knowledge** and consultation, i.e. workshopping through the *National Water Development Strategy and Action Plan* in thirteen regions, the aggregated goals proposed in the Strategy and Action Plan were modelled. The captured interconnections and their respective strengths for the **goal conditions** showed that:

- "Capacity Building" itself together with "Awareness" and "Legislation" emerged as the optimal leveraging points; i.e. the necessity for both increased awareness and capacity was a critical result of stakeholder input.
- "Stakeholders" themselves influencing the array {policies, investment, resource security, resource conservation and resource use} together with "Management Plans" emerged with the strongest booster effect due to a further increased connectivity in the system.
- "Resource Availability", "Resource Use" and "Resource Security" were the heavily influenced variables; i.e. they emerged as indicators for IWRM system success.
- "Monitoring and Evaluation Systems", "Knowledge and Information Systems", "Institutions", "Water Demand Management" and "Alternative Water Resources" were understood as essential self-regulating elements for IWRM.

5.5.2 Connecting Capacity Building to Organisations[10]

In the four major theme reports of the IWRMP process **four generic capacity levels** were identified. The **system level** addresses key requirements related to policies and the legal framework, i.e. the conditions formulated through the global system. The **organisational level** addresses managerial effectiveness with a specific focus on decision taking and responsibility allocation in organisations. For human resources capacity maintenance and building of new capacity, the **individual level** was identified with key requirements relating to a broad knowledge and skills mix as elaborated further down in this report. The **technical level** was identified with key requirements ranging from integrated resource planning and demand management to maintenance management with a specific integrated resources management focus on the water sector. *Please refer to 'Sub-Theme 4.5/4.6' under the National Water Development Strategy and Action Plan*.

[10] The term "organisation" means the same as institution or department or section.

Figure 5.3: The four generic capacity levels found in any organisation

These capacity levels are **generic** and can be **found in any performing organisation**. With regards to IWRM these levels will have to be maintained and built up where gaps were identified. These gaps were closed in the theme report *National Water Development Strategy and Action Plan*.

Central to organisational and individual success is **managerial effectiveness**.

"Doing the right thing right" is the essence of managerial effectiveness (Peter F. Drucker) and always includes the matter specific knowledge and skills. However, managerial effectiveness is an international 'language' and means the same all over the world in any kind of performing organisation or enterprise.

Two hands-on application tools were therefore developed to support organisations and individuals to maintain existing capacity and to build additional capacity with specific focus on **managerial effectiveness**. *Annex 5: Organisational and Individual Managerial Effectiveness Capacity Threshold Assessment Tools* contains two tools which are termed "**managerial effectiveness capacity threshold assessment**". The tools provide for organisational and individual assessment of managerial effectiveness capacity thresholds. The tools are formulated in **positive-goal mode** enabling an organisation or individual to assess the current state, a column makes provision for a current date, and to **plan ahead** to maintain existing capacity and to built additional capacity where required. If the tools are used to determine the current managerial effectiveness, i.e. in assessment mode, the result will be a threshold following the well established *capacity threshold concept*[11]. The tools, however, also provide the desired capacity level for performing organisations and thus enable the planners for capacity maintenance and building to set capacity targets, i.e. increasing the threshold of managerial effectiveness to an appropriate level.

[11] (please refer to www.africanwater.org/threshld.htm *accessed in April 2010 or http://books.google.com.na/books?id=K9KzeTsBotkC&pg=PA301&lpg=PA301&dq=capacity+threshold+concept&source=bl&ots=ZyWuNVZ-hv&sig=fVB6ulsuUkZw1haY6VqL7sl1kt4&hl=en&ei=gXQPTMLJCZ6Q4gaP0qSuDA&sa=X&oi=book_result&ct=result&resnum=5&ved=0CCgQ6AEwBA* for further reading*), accessed in June 2010*

This way of setting capacity targets and to maintain existing capacity is also termed *strategic maintenance* of an organisation. Strategic maintenance relates to knowing the functional capacity at all times and all levels, maintaining or improving it to adapt the organisation to changing conditions and environments. The focus of strategic maintenance is the organisation's **viability**.

The scientific basis for the organisational and individual managerial effectiveness capacity threshold assessment is derived from management cybernetics through the works of Stafford Beer, Peter F. Drucker, Ross Ashby and Fredmund Malik. The tools thus follow key-elements of the research from Stafford Beer and Ross Ashby, the Fredmund Malik effective top management and managerial effectiveness research and teaching during the past four decades at the world renowned St. Gallen University of Management and the renowned McKinsey capacity assessment grid. These also form the basis for actions in the Office of the Prime Minister with respect to Government institutions.

5.6 ANCHORING CAPACITY BUILDING IN THE NATIONAL WATER DEVELOPMENT STRATEGY AND ACTION PLAN *(DERIVING THE BROAD SKILLS MIX)*

Please refer also to 'Theme 3' under the National Water Development Strategy and Action Plan.

To obtain the required skills spectrum, the theme reports were distilled -refer to Annex 1- and tested against the capacity requirements identified in the *National Water Development Strategy and Action Plan*. The *National Water Development Strategy and Action Plan* was introduced and discussed at workshops that were held for thirteen regions in Namibia and further capacity building and capacity maintenance needs were identified and integrated into the said Plan; refer to Annex 2 for this information.

The result is shown in Figure 5.4: *The frequency of use and spectrum of key-required skills for IWRM (design / installation / management / operation / maintenance* below in a bar graph and visualizes critical skills needed to master the agreed objectives of IWRM. The "red" skills are needed most frequently for all objectives while the "blue" skills are only needed for certain objectives. The objectives/skills table in the Annex 4 shows the details. The colour "red" indicates the critical skills which are needed to meet more than 80% of all objectives and **at all times**.

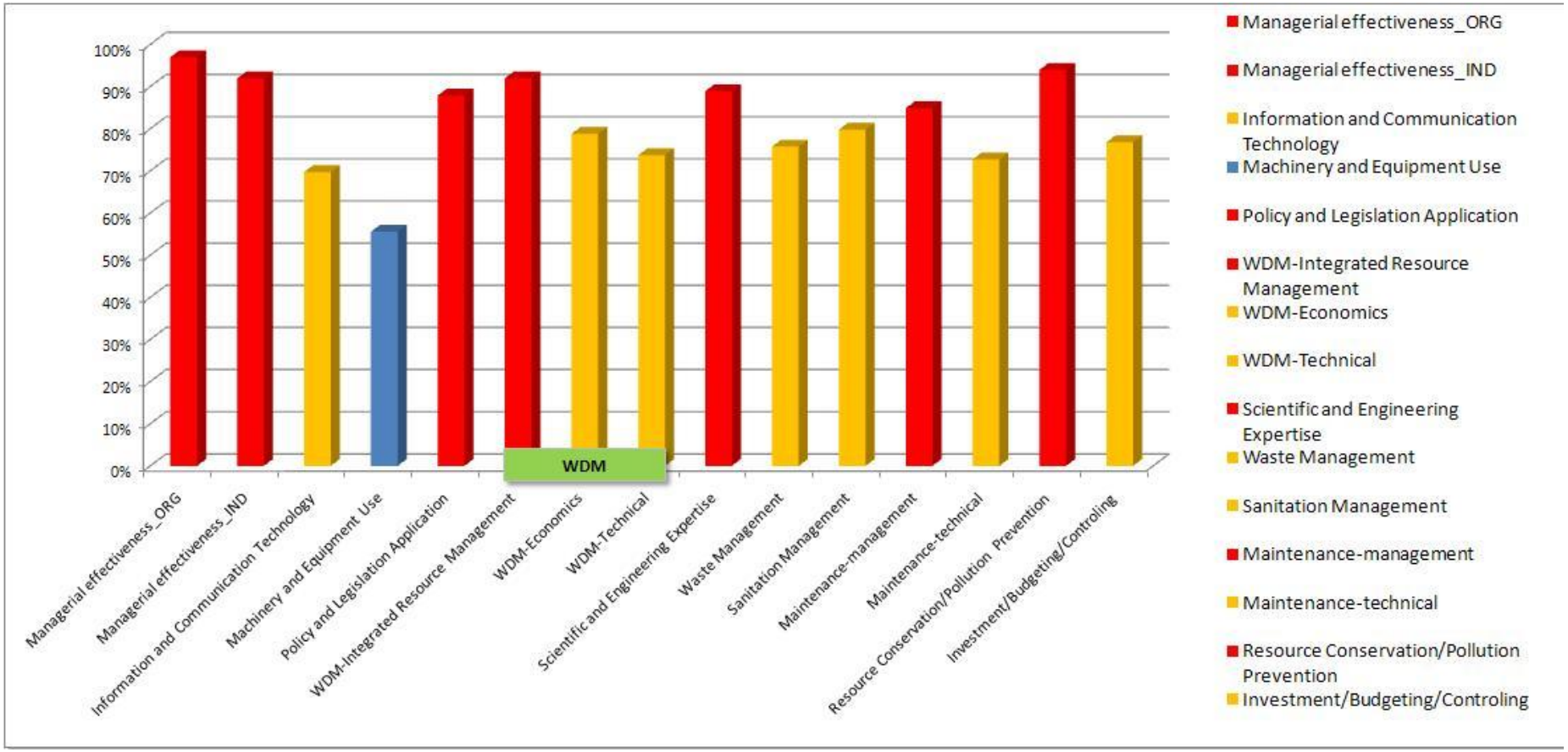

Figure 5.4: The frequency of use and spectrum of key-required skills for IWRM (design / installation / management / operation / maintenance

To meet the objectives of the *National Water Development Strategy and Action Plan* key required skills were identified during the IWRMP process and during **stakeholder consultation** in thirteen regions and grouped and put into the respective column headers in the objectives/skills table in Annex 4. Each objective was then assessed in terms of the key-required skills. The assessment was done with three levels of skills application and relates to the respective number in the cells.

This assessment follows the curriculum development strategy used at the Polytechnic of Namibia, Department of Civil Engineering in the years 2003/05, to establish e.g. the study programmes for B-Tech Water Engineering and the SADC WaterNet IWRM Modular Master Programme.

A '3' in a cell represents a skill most often needed, a '2' represents a skill normally needed, and a '1' represents a skill occasionally needed to meet a specific objective. From this table the "key required skills spectrum bar graph" was derived to provide an overview of the broad skills mix needed and the frequency of use of a skill to meet the objectives of IWRM.

From the key required skills spectrum in Figure 5.4 it can be noted that

- **organisational and individual managerial effectiveness**,
- a sound understanding and knowledge of **policy application**,
- Water Demand Management and **integrated resource management** combined with **engineering** and **science** knowledge related to water infrastructure and resource conservation and pollution prevention as well as
- **maintenance management** and **resource conservation skills**

are key requirements for successful implementation and maintenance of IWRM.

Two identified key skills related to **managerial effectiveness** for organisations and individuals were elaborated before. Supportive tools can be found in Annex 5.

The general technical skills needed to master IWRM and the particular technical maintenance skills as well as mechanical equipment operation skills are grouped in *Annex 3: Organisational and Human Resource Technical Capacity Building Layout for IWRM* and are best trained for in industry in collaboration with the Namibian Vocational Training Centres.

For formal education and training regarding the key required skills spectrum for IWRM design/installation/operation/maintenance, *Annex 6: The Polytechnic of Namibia study programmes relevant to IWRM* was prepared as an example to provide fast access to human resources capacity building and capacity maintenance in Namibia. Annex 8: *Research Capacity Building and Support* shows the research capacity building support locally available, here again was the Polytechnic of Namibia chosen as an example. The Polytechnic of Namibia is well known to the people of Namibia as the prime technical educator and capacity builder. The Polytechnic currently offers twenty-eight IWRM relevant formal study programmes. Please refer to Annex 7 which assesses the current **skills development capacity** at the Polytechnic of Namibia to understand **inter-institutional support needs**, i.e. building additional capacity for capacity builders.

The broad skills mix, the aggregated skills levels and the experts/specialists involved in IWRM performance, capacity maintenance and capacity building are outlined in the table below (Figure 5.5: *The expert/specialist skills spectrum table; focus is: covering as many key-required skills with an optimal selection of experts*). This table shows the level of proficiency in skills use demanded from experts/specialists to master the IWRM objectives. For example an engineer engaged with IWRM not only needs to be proficient in designing the right process or infrastructure, this engineer must also bring proficiency along an array of additional skills such as integrated resources planning, policy application, maintenance management, financial controlling etc.

5.7 MAINTENANCE AND DEVELOPMENT OF COOPERATION CAPACITY

A broad skills mix calls for **balanced interdisciplinary cooperation** between experts. Not only specialist skills with specialists working in isolation are needed but also **generalist skills** emerging from well managed and competent teams which are carefully designed and managed and their capacity is well maintained.

The cross consistency table[12] in Figure 5.6: *The specialist cooperation cross-consistency table showing the importance of cooperation on three levels for IWRM* provides an overview of important interconnections for **optimised cooperation** between the different specialist disciplines and is derived from the *broad skills mix* previously addressed.

A “3” in this table indicates a connection with **highest importance** regarding mutual cooperation which is absolutely critical and which must be established and maintained **at all times throughout all levels**; the “2” indicates high importance connections which must be established and regularly maintained, the “1” indicates an important connection, however, not directly critical.

Although the artisans seem to have the overall lowest impact in terms of optimising cooperation between the various disciplines -refer to Figure 12-, they will be the biggest in numbers and perform a key role in installing and maintaining water and sanitation related infrastructure and facilities. The artisans are a **direct interface** to the clients and IWRM related specialists, i.e. their existence and capacity is critical to the successful implementation of IWRM.

Any improvement regarding installation and proper **maintenance** will foster IWRM to the benefit of all Namibians be it in terms of sustainable resource management and resource security, employment creation or increase of people’s quality of life. The table however also shows clearly that none of the trained disciplines/specialists can perform in isolation.

[12] The impacts of mutual cooperation are the same both ways. An evaluation depth of four digits is sufficient and does not increase the possible number of states of a sytem beyond handlability.

Expert Spectrum to master IWRM objectives for national water security connected to **key-required skills** [1=basic; 2=advanced; 3=competent]	**Managerial Effectiveness on work place (incl. M&E)**		ICT	Machinery & Equipment	Policy & Legislation Application	**Water Demand Management**			Scientific and Engineering Expertise	Waste Management	Sanitation Management	**Maintenance Management** (process, infrastructure)		Resource Conservation, Pollution Prevention	Investment, Budgeting, Controlling
	organizational	individual	Software			IRP	Financial	Technical				planning	technical		
Engineers (civil, mechanical, electrical, industrial, chemical)	3	3	3	1	3	3	2	3	3	3	3	3	3	3	3
Engineering Technicians (civil, mechanical, electrical, industrial)	3	3	3	2	2	3	2	3	2	2	2	3	3	3	2
Hydrologist	3	3	2	1	3	3	2	2	3	2	2	3	1	3	2
Geohydrologist	3	3	3	1	2	3	2	1	3	2	2	2	1	3	2
Water scientists	3	3	2	2	3	2	2	1	3	3	3	2	1	3	3
Ecologist	3	3	2	1	3	3	2	1	3	3	3	2	1	3	2
Water Laboratory & Hydrology Technicians	3	3	3	3	2	1	1	2	2	2	2	2	2	2	2
Artisans (building, plumbing, electrical, mechanical, etc.)	3	3	1	3	2	1	2	3	1	2	1	2	3	2	2
Social Scientists and other scientists (MD, Biol.)	3	3	1	1	3	3	1	1	3	2	3	3	1	3	2
Accountants	3	3	3	1	3	2	3	1	1	1	1	1	1	2	3
Human Resource Managers	3	3	2	1	3	2	1	1	2	2	1	2	1	2	2
Economists/Planners/ Controllers	3	3	2	1	2	3	3	2	1	2	1	3	1	2	3
Legal experts	3	3	1	1	3	1	2	1	3	1	1	2	1	2	2
General administrative staff	3	3	3	1	2	2	2	1	1	2	1	2	1	2	2

Figure 5.5: The expert/specialist skills spectrum table; focus is: covering as many key-required skills with an optimal selection of experts

Cross-consistency table for overview of optimised expert cooperation [who cooperates with whom?]	Engineers (civil, mechanical, electrical, industrial, chemical)	Engineering Technicians (civil, mechanical, electrical, industrial)	Hydrologist	Geohydrologist	Water scientists	Ecologist	Water Laboratory Technicians	Artisans (building, plumbing, electrical, mechanical, etc.)	Social Scientists and other	Accountants	Human Resource Managers	Economists/Planners/ Controllers	Legal experts	General administrative staff
Engineers (civil, mechanical, electrical, industrial, chemical)	3	3	3	3	2	3	1	2	2	3	2	2	3	2
Engineering Technicians (civil, mechanical, electrical, industrial)	3	3	2	2	2	2	2	3	1	3	2	2	1	2
Hydrologist	3	2	3	3	3	3	3		2	2	2	2	2	2
Geohydrologist	3	2	3	3	3	3	3		1	2	2	2	2	2
Water scientists	2	2	3	3	3	3	3		2	2	2	1	2	2
Ecologist	3	2	3	3	3	3	3		3	2	2	3	3	2
Water Laboratory & Hydrology Technicians	1	2	3	3	3	3	3	1	1	2	1	2	2	2
Artisans (building, plumbing, electrical, mechanical, etc.)	2	3					1	3		2	1	2	2	1
Social Scientists and other scientists (MD, Biol.)	2	1	2	1	2	3	1		3	2	2	3	3	2
Accountants	3	3	2	2	2	2	2	2	2	3	3	3	2	2
Human Resource Managers	2	2	2	2	2	2	1	1	2	3	3	2	3	2
Economists/Planners/Controllers	2	2	2	2	1	3	2	2	3	3	2	3	2	1
Legal experts	3	1	2	2	2	3	2	2	3	2	3	2	3	2
General administrative staff	2	2	2	2	2	2	1	1	2	2	2	1	2	1

Figure 5.6: The specialist cooperation cross-consistency table showing the importance of cooperation on three levels for IWRM

5.8 ANCHORING HUMAN RESOURCES CAPACITY IN NAMIBIA

Integrated Water Resources Management (IWRM) is for all stakeholders in the water sector, i.e. for all water service providers and related management and governance entities and all water users in Namibia. National human resource capacity must therefore be **maintained**, **retained** and **anchored**. *Please refer also to 'Theme 3' under the National Water Development Strategy and Action Plan*.

The IWRMP process proposes to develop, re-activate and use the following **outreach and capacity maintenance mechanisms** to reach Namibian stakeholders in urban and rural areas on all levels. Many of these outreach mechanisms may well be funded by national and international donor agencies.

5.8.1 Booklets and flyers about water issues, water resources conservation and pollution prevention

DRFN, MET, Gobabeb Training and Research Centre, and DWAF *et al*. have compiled a number of water and natural resource conservation booklets and flyers in the past. A comprehensive list of publications in this regard was given in paragraph 10.2.5 in the theme report "Review and Assessment of the Existing Situation" It is proposed to **intensify** the development of training and awareness creation materials and to intensively network with schools and communities, especially in rural areas. This material should ideally be reflected in the national Science and Technology Curriculum for Namibian schools.

5.8.2 Radio and TV-spots for all Namibian stakeholders and a '*water conservation for kids'* programme on the national TV

Radio and TV spots could ideally be produced together with the Polytechnic of Namibia, School of Communication and Legal Studies, Department of Media Technology. This department is fully equipped to produce such news spots. Special focus should be put on a **water conservation programme for kids**.

5.8.3 Science and technology curriculum upgrade and support for grade 1-12

In a focused effort the Namibian higher education institutions (University of Namibia and Polytechnic of Namibia) should in cooperation with the Namibian Institute for Education Development (NIED), the Ministry of Education and key research organisations like DRFN, Gobabeb Training and Research Centre, NNF and MET, DWAF et al. integrate IWRM relevant modules in the National Science and Technology Curriculum.

Model schools should be established in the thirteen regions where **cooperative learning** and **project based learning** is an integral part of the basic education curriculum. Mathematics and Science must be fostered through an innovative teaching and learning approach which encourages learners to go beyond the normal curricula.

5.8.4 The Polytechnic of Namibia, Department of Civil Engineering Online Libraries for IWRM made known to stakeholders, actively used and fostered

During the years 2001-2006, the Polytechnic of Namibia, School of Engineering, Department of Civil Engineering developed a substantial electronic **online library for IWRM** and water resources conservation. This online library is available on the Internet; the URL is (http://www.polytechnic.edu.na/academics/schools/engine_infotech/civil/libraries/waterengineeringdigitallibrary2002/index.html).

In 2004 a **SADC-Researchers IWRM Online Library** was developed to enable students and faculty to network with SADC and international researchers; the URL is (http://www.polytechnic.edu.na/academics/schools/engine_infotech/civil/Symposium2004-web/library/sadciwrmresearchers_library_2004.htm).

Both libraries need updating and further developing. The five key-objectives of the libraries are:

1. to enable all SADC-IWRM researchers to be informed on current and past research activities related to IWRM in SADC and the SADC WaterNet partners,
2. to find suitable networking partners (*addresses mostly included*) for research projects related to IWRM,
3. to avoid unnoticed duplication of IWRM research efforts and waste of financial resources (*potential risk of reduced donor support*),
4. to invite international IWRM researchers to participate (*regional capacity building*),
5. to interlink south/north, north/south and south/south IWRM research activities for the benefit of all SADC stakeholders.

5.8.5 Science competitions related to water, sanitation and resource conservation

MET, DWAF, DRFN and NISD should in cooperation with the Namibian higher education institutions establish and foster an annual science competition with focus on water, sanitation and resource conservation in general. The annual Science Fair conducted at the Polytechnic of Namibia is a good example in this regard. However, such science and technology fairs should be established for both, basic and higher education and should be supported in all major centres of the country and rural schools should receive logistics support to participate.

Water resources conservation including sanitation and water resources security should become a **focal point** of science and technology fairs where learners of all levels are encouraged to develop innovative solutions ranging from water saving and pollution prevention to improved and optimised crop production in irrigation farming.

5.8.6 Career Path Programmes for water professionals must be established and maintained

The Department of Water Affairs and Forestry in conjunction with the proposed institutions Water and Sanitation Advisory Council, Water Research Council, Water Regulator function and the Performance Support Teams should retain existing human resources capacity

through establishing appropriate career path programmes. An integral part of such career path programmes should be mentoring, on the job training and continuous professional development on all ranks.

5.8.7 Continuous Professional Development for Engineers in the Water Sector

The Association of Consulting Engineers of Namibia (ACEN) and the Engineering Council of Namibia (ECN) should establish a **cooperative support programme** for young engineers to enable them to provide innovative services to stakeholders on all levels. The nation's higher education institutions UNAM and Polytechnic of Namibia [PON] should be included and actively used to not only build basic capacity but also to share research information and to train engineers and technicians already in their profession. The 'test engineer function' could be introduced and could provide a leveraging effect to prepare young engineers for their responsibilities and to share knowledge, skills and attitudes between the engineering generations. A test engineer will make sure that the designs meet the desired quality and safety standards. This would enable young engineers who trained abroad on all five continents to provide a meaningful contribution to the water sector in Namibia and beyond this sector for all industrial development.

5.8.8 Water audits at schools and in rural and urban homes and basic water infrastructure maintenance for grade 8-12

In cooperation with the Polytechnic of Namibia and MET, DWAF and NamWater, engineering in-service-training students should be engaged in basic maintenance management for water and sanitation infrastructure, and should enable rural grade 8-12 students to conduct water audits and do basic water and sanitation related maintenance themselves.

5.8.9 Networking between schools and Higher Education institutions, research organisations and industry

Gobabeb Training and Research Centre and the Desert Research Foundation of Namibia are lead agencies in networking with schools and higher education institutions. This model should be strengthened and broadened to engage other research organisations and industry. Industry should serve as a hub for rural and urban development. This would not only increase rural capacity but would also benefit the rural population in terms of income generation. Special focus should be to enable schools to network with other schools in the country. The previously outlined science competitions could be supportive here, so could be the *water conservation for kids* initiative where kids educate fellow kids eventually.

5.8.10 Grade 1-12 students to be connected up with the Polytechnic IWRM online water libraries for water basics

The Polytechnic of Namibia, Department of Civil Engineering Online Libraries for IWRM also have a mini library for grade 1-12 student support in water basics. This should be communicated to the Namibian schools that have access to the **internet** and they should

receive technical ICT support in this regard from the Polytechnic of Namibia, Department of Civil Engineering.

5.8.11 Compiling bi-annual newsletters in governance structures and make them freely available

The existing and newly proposed governance structures should use a news letter facility to inform stakeholders across the country about IWRM and to introduce policies, regulations etc. The newsletters should be available in printed format for rural areas and online for regional access.

5.9 FINANCIAL RESOURCE IMPLICATIONS FOR HUMAN RESOURCES CAPACITY MAINTENANCE AND BUILDING

IWRM is understood as the key-responsibility for all stakeholders and all water users in Namibia. The education, training and capacity of the people who must be able to manage and coordinate the activities that are required to make IWRM successful must therefore be **related to all four dimensions of sustainable development**, i.e. the environmental, social, economic and technical dimension. Outline estimates for financial resources planning for Government/LAs/RCs and service providers and industry are made to maintain and develop further the human resources capacity required to meet this key responsibility. These estimates refer to development of Namibian capacity ***de novo***. To initiate addressing the requirements for human resources capacity, it is suggested that appropriate national and international professional expertise be integrated into the system with a clear progression plan for the national human resources.

This estimate assumes that appropriate awareness is raised concerning the importance of the water sector and the opportunities for employment it offers. It also assumes that DWAF, NamWater and other relevant institutions develop a **career path programme** to ensure that trained candidates are adequately integrated into appropriately rewarded professional development pathways and thus retained for a long time.

5.9.1 Critical human resources in numbers and estimated costs

The following assumptions for human resources capacity building/maintenance **de novo** and estimated costs were made:

1. A fluctuation rate for human resources of **50%** was assumed; i.e. 25% may drop out due to health reasons or alternative employment, 25% may drop out due to alternative income sources. This means that for every expert eventually retained two will have to be trained.
2. A cost escalation of constant **7.5%** per annum was assumed, *Table 5.1: The assumed cost escalation up to 2030* below shows the index development.
3. Government, Local Authorities and Regional Councils will **engage** with the private sector on sharing the costs for human resources capacity building and maintenance

of existing capacity. An overall fair share of **30%** for the state and **70%** for the private sector was assumed.

Cost escalation at 7.5% per annum is calculated into these amounts as per Table 5.1 below. *Table 5.2: Table for the estimated costs for de novo human resources capacity building for the next 20 years with outline sharing strategy* provides the details for estimated numbers of specialists / disciplines, estimated costs and the sharing strategy between the State and the private sector.

Table 5.1: The assumed cost escalation up to 2030

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
100%	108%	116%	124%	134%	144%	154%	166%	178%	192%	206%	222%	238%	256%	275%	296%	318%	342%	368%	395%	425%

5.9.2 The human resources in numbers

Engineers

With regards to human resources it has been estimated that to meet Vision 2030 during the next twenty years an absolute minimum of **ten competent and committed engineers** per annum in the fields of civil/mechanical/electrical/ industrial/chemical will be needed to sustainably meet the IWRM objectives. This number does not include any industrial development in Namibia, it just relates to the water sector. For engineering education and training of ten engineers per annum, this would amount to an estimated **N$ 285,000,000** over the next 20 years or on average N$ 14,000,000 per annum for the next 20 years.

Engineering Technicians

For every trained engineer it was estimated that three Engineering Technicians must complement the technical planning and management cadre. For engineering technician education and training of thirty technicians per annum in similar disciplines as the engineers, this would amount to an estimated **N$ 257,000,000** over the next 20 years or on average N$ 13,000,000 per annum for the next 20 years.

Hydrologists

To meet the IWRM objectives it was estimated that three Hydrologists p.a. are needed. For education and training of three hydrologists per annum, this would amount to an estimated **N$ 107,000,000** over the next 20 years or on average N$ 5,500,000 per annum for the next 20 years.

Geohydrologists

To meet the IWRM objectives it was estimated that three Geohydrologists p.a. are needed. For education and training of three geohydrologists per annum, this would amount to an

estimated **N$ 107,000,000** over the next 20 years or on average N$ 5,500,000 per annum for the next 20 years.

Water Scientists and Limnologists

To meet the IWRM objectives it was estimated that four water scientists and limnologists (*a key requirement in terms of the new WRM Act*) p.a. are needed. For education and training of four water scientists and limnologists per annum, this would amount to an estimated **N$ 143,000,000** over the next 20 years or on average N$ 7,000,000 per annum for the next 20 years.

Ecologists and Biologists

To meet the IWRM objectives it was estimated that two ecologists and biologists (*a key* requirement *in terms of the new WRM Act*) p.a. are needed. For education and training of two ecologists and biologists per annum, this would amount to around **N$ 71,000,000** over the next 20 years or on average N$ 3,500,000 per annum for the next 20 years.

Water Laboratory & Hydrology Technicians

To meet the IWRM objectives it was estimated that eight water laboratory and hydrology technicians p.a. are needed, on average three for Government/LAs/RCs and five for the private sector. Experience in other countries has shown that fluctuation is highest amongst this discipline, i.e. the fluctuation rate may be close to 75%. For education and training of eight water laboratory and hydrology technicians per annum, this would amount to an estimated **N$ 137,000,000** over the next 20 years or on average N$ 7,000,000 per annum for the next 20 years.

Artisans

To meet the IWRM objectives it was estimated that 160 artisans (*building, plumbing, electrical, mechanical, etc*.) p.a. are needed. For education and training of 160 artisans in engineering related fields per annum, this would amount to an estimated **N$ 1,370,000,000** over the next 20 years or on average N$ 68,500,000 per annum for the next 20 years.

Social Scientists and related Scientists

To meet the IWRM objectives it was estimated that six social scientists and related scientists p.a. are needed. For education and training of six social scientists and related scientists per annum, this would amount to an estimated **N$ 228,000,000** over the next 20 years or on average N$ 11,400,000 per annum for the next 20 years.

Accountants

To meet the IWRM objectives it was estimated that 15 accountants p.a. are needed. For education and training of 15 accountants per annum, this would amount to an estimated **N$ 257,000,000** over the next 20 years or on average N$ 13,000,000 per annum for the next 20 years.

Human Resource Managers

To meet the IWRM objectives it was estimated that ten human resource managers p.a. are needed. For education and training of ten human resource managers per annum, this would amount to an estimated **N$ 114,000,000** over the next 20 years or on average N$ 5,700,000 per annum for the next 20 years.

Economists/Planners/Controllers

To meet the IWRM objectives it was estimated that five economists/planners/ controllers p.a. are needed. For education and training of five economists/planners/ controllers per annum, this would amount to an estimated **N$ 114,000,000** over the next 20 years or on average N$ 5,700,000 per annum for the next 20 years.

Legal Experts

To meet the IWRM objectives it was estimated that three legal experts p.a. are needed. For education and training of three legal specialists per annum, this would amount to an estimated **N$ 107,000,000** over the next 20 years or on average N$ 5,300,000 per annum for the next 20 years.

General Administrative and IT capable Financial Staff

To meet the IWRM objectives it was estimated that 40 diversely qualified general administrative and IT capable financial staff p.a. are needed. For education and training of 40 diversely qualified general administrative and IT capable financial staff per annum, this would amount to an estimated **N$ 304,000,000** over the next 20 years or on average N$ 15,200,000 per annum for the next 20 years.

5.9.3 Financing human resource capacity building

The Table 5.2 overleaf provides an overview of the IWRM relevant human resources capacity building as estimated for the next 20 years including a 7.5% cost escalation and a fluctuation rate of 50%.

For the complete strategy to finance the IWRMP please refer to the theme report *Strategy for Funding the Implementation of the IWRM Plan*.

Table 5.2 also provides an overview of cost development and sharing for human resources capacity maintenance and building *de novo* and shows an outline financing strategy of overall 30%/70% which is assumed to be a fair sharing between the State and the private sector. The total amount based on 2010 figures and the above mentioned assumptions for de novo capacity maintenance and capacity building is estimated N$ 3,600,000,000 for the next 20 years to establish and maintain IWRM processes and structures and to achieve water resources security. Based on the above assumptions, the table further shows the probable numbers of experts/specialists working in Namibia by 2030.

The responsibility for educating engineering, scientific, technical and administrative staff weighs heavily on the custodian of the IWRMP, the DWAF, but it is also the responsibility of all institutional stakeholders in the Water Sector **including the private sector**.

The number of people that needs to be educated in each job category identified and the costs involved seem high (refer to Table 5.2 first column and to the last column). However, it is expected that only a small percentage of the people will eventually find a career in the public sector while many will find jobs in the private sector, or will find job opportunities outside Namibia or in other sectors not directly related to water. This is another reason why the public sector should make more use of the services of private sector consulting companies because the people that have been educated and are available to work in the country, can then be employed and / or shared between employers to meet the overall objectives of the IWRMP in an integrated manner.

Expert/Specialist Spectrum to master IWRM objectives for national water security	estimated costs for human resources capacity building					financing strategy outline				
	No# experts p.a.	duration of first degree or total time for training [years]	current rate p.a. [N$]	cost p.a. at current 2010 rate per expert category [N$]	20-year costs including cost escalation [N$]	Government	service providers and industry	**Government share in financing**	**service providers and industry share in financing**	Estimated number of IWRM related experts working in Namibia [by 2030]
Engineers (civil, mechanical, electrical, industrial, chemical)	10	4	$150,000	$6,000,000	**$285,000,000**	40%	60%	$114,000,000	$171,000,000	100
Engineering Technicians (civil, mechanical, electrical, industrial)	30	3	$60,000	$5,400,000	**$257,000,000**	40%	60%	$102,800,000	$154,200,000	300
Hydrologist	3	5	$150,000	$2,250,000	**$107,000,000**	50%	50%	$53,500,000	$53,500,000	30
Geohydrologist	3	5	$150,000	$2,250,000	**$107,000,000**	50%	50%	$53,500,000	$53,500,000	30
Water scientists and Limnologists	4	5	$150,000	$3,000,000	**$143,000,000**	25%	75%	$35,750,000	$107,250,000	40
Ecologist	2	5	$150,000	$1,500,000	**$71,000,000**	50%	50%	$35,500,000	$35,500,000	20
Water Laboratory & Hydrology Technicians	8	3	$120,000	$2,880,000	**$137,000,000**	30%	70%	$41,100,000	$95,900,000	80
Artisans (building, plumbing, electrical, mechanical, etc.)	160	3	$60,000	$28,800,000	**$1,370,000,000**	20%	80%	$274,000,000	$1,096,000,000	1600
Social Scientists and other scientists (MD, Biol.)	6	4	$200,000	$4,800,000	**$228,000,000**	30%	70%	$68,400,000	$159,600,000	60
Accountants	15	3	$120,000	$5,400,000	**$257,000,000**	30%	70%	$77,100,000	$179,900,000	150
Human Resource Managers	10	3	$80,000	$2,400,000	**$114,000,000**	20%	80%	$22,800,000	$91,200,000	100
Economists/Planners/Controllers	5	4	$120,000	$2,400,000	**$114,000,000**	20%	80%	$22,800,000	$91,200,000	50
Legal experts	3	5	$150,000	$2,250,000	**$107,000,000**	20%	80%	$21,400,000	$85,600,000	30
General administrative staff	40	2	$80,000	$6,400,000	**$304,000,000**	50%	50%	$152,000,000	$152,000,000	400
20-years total				$75,730,000	**$3,600,000,000**	30%	70%	$1,074,650,000	$2,526,350,000	
average per annum (20-y)					**$180,000,000**	30%	70%	**$54,000,000**	**$126,000,000**	

Table 5.2: Table for the estimated costs for *de novo* human resources capacity building for the next 20 years with outline sharing strategy

6. RECOMMENDATIONS

The following recommendations are made to emphasize that Integrated Water Resources Management (IWRM) is a key responsibility for **all stakeholders** in the water sector, i.e. for **all** water service providers and related management and governance entities and **all** water users in Namibia.

1. The IWRMP recommends that **capacity building and institutional development** are the key elements for implementation of Integrated Water Resources Management (IWRM) in Namibia.
2. The IWRMP recommends that the key objective of IWRM capacity building to be understood as **informed and improved decision-taking**, and the **responsible implementation** of these decisions.
3. The IWRMP recommends that the **National Water Development Strategy and Action Plan to be adopted** at highest level. This strategy and action plan reflects on what needs doing and how things are best connected and which components to be prioritised.
4. The IWRMP recommends that IWRM capacity building to be focused on all stakeholders to ensure **effective and balanced water use** and water resource conservation for **water resource security**.
5. The IWRMP recommends that **managerial** and **technical capacity building** be seen as the pivotal goal ensuring that water demand management and integrated water resources management are central.
6. The IWRMP recommends bringing into force, strengthening or establishing the following institutions and **water governance structures** to reach the IWRM objectives of sustainable water resources development and maintenance:
    a) the revised WRM Act and Regulations,
    b) the Water (and Sanitation) Advisory Council (WaSAC),
    c) Performance Support Teams (PSTs),
    d) the Water Regulator (WR),
    e) a Water Research Council (WRC),
    f) a National Irrigation Water Efficiency Group (NIWEG),
    g) Basin Management Committees (BMCs) and
    h) Water Point Committees (WPCs).
7. The IWRMP recommends engaging all stakeholders and the following **set of enabling strategies** to meet the goals of IWRM and the available policies:
    a) a groundwater protection strategy and management plan,
    b) an ephemeral river catchment management strategy,
    c) a clear communal land and water use strategy,

d) a national water demand management strategy,

e) a national pollution control and effluent discharge strategy and appropriate regulations,

f) an effective strategy on tariff setting,

g) an effective strategy on water metering and information management,

h) an effective strategy on the reduction of bush encroachment to enhance groundwater recharge and surface run-off,

i) a strategy on gender participation and engagement on all levels in IWRM/WDM,

j) a strategy for integrated coastal management,

k) a suite of strategic planning and management support mechanisms.

8. The IWRMP recommends the development of a series of **technical and managerial training modules**, including training manuals for developing and maintaining people's skills to meet the goals of IWRM and to enhance our organisational capacity.

9. The IWRMP recommends that Integrated Water Resources Management [IWRM] be understood as a **highly complex** and **interconnected system** with numerous mutual and simultaneous impacts between the critical water and management issues that were spelled out in the different theme reports.

10. The IWRMP recommends the initial assessment, subsequent development and maintenance of the four elementary capacity levels in all water governance structures across all levels

    a) The **system level** that addresses key requirements related to policies and the legal framework.

    b) The **organisational level** which addresses managerial effectiveness with a specific focus on decision taking and responsibility allocation.

    c) The **individual level** for human resources capacity maintenance and building which addresses key requirements relating to a broad knowledge and skills mix.

    d) The **technical level** which addresses the required capacity ranging from integrated water resource planning and demand management to maintenance management.

11. The IWRMP recommends the **key required skills spectrum** and broad skills mix elaborated in this report. These are, *inter alia,* organisational and individual managerial effectiveness, a sound understanding and knowledge of policy application, Water Demand Management and integrated resource management combined with engineering and science knowledge related to water infrastructure and resource conservation and pollution prevention as well as budgeting and controlling skills. These skills are key requirements for successful implementation and maintenance of IWRM.

12. The IWRMP recommends making active use of **Polytechnic of Namibia** IWRM relevant formal study programmes. Twenty-eight programmes were identified as relevant to IWRM.

13. The IWRMP recommends making active use of existing Polytechnic of Namibia **research capacity building** and support through:

a) the Renewable Energy and Energy Efficiency Institute,

b) the Centre for Applied Research and Technology,

c) the Civil Engineering Laboratories for Materials Testing,

d) the Water Engineering Laboratory for Hydraulics,

e) a Mobile Water Quality Laboratory,

f) Mechanical Engineering laboratories,

g) Civil/ Mechanical/ Electrical Engineering Computer laboratories,

h) the Polytechnic Resource Centre and Library.

14. The IWRMP recommends **IWRM outreach and anchoring** as an important element of capacity building. The IWRMP further recommends development, re-activation and proactive use of the multiple, existing awareness raising materials to reach Namibian stakeholders in urban and rural areas.

15. The IWRMP recommends that **financial resources** be provided to maintain and develop further the human resources capacity for Government/ Local Authorities/ Regional Councils and other service providers as well as industry. Financial estimates are provided for development of Namibian capacity ***de novo***.

16. The IWRMP recommends that DWAF, NamWater and other relevant institutions develop a **career path programme** to ensure that trained candidates are adequately integrated into appropriately rewarded professional development pathways and thus retained for a long time.

17. The IWRMP recommends that a fluctuation rate for human resources of minimum **50%** be assumed meaning that for every expert eventually retained two will have to be trained.

18. The IWRMP recommends the following number of people to be trained per annum, for government and the private sector, over the coming 20 years (until 2030). IWRM relevant human resources capacity building is estimated for the next 20 years, including a 7.5% cost escalation and a fluctuation rate of 50%, to be approximately N$ 55,000,000- for government and N$ 125,000,000 for the private sector, **per annum.**

    a) 10 competent and committed engineers,

    b) 30 engineering technicians,

    c) 3 hydrologists,

    d) 3 geohydrologists,

    e) 4 water scientists and limnologists,

    f) 2 ecologists and biologists,

    g) 8 water laboratory and hydrology technicians,

    h) 160 artisans (*building, plumbing, electrical, mechanical, etc*.),

    i) 6 social scientists and related scientists,

    j) 15 accountants,

k) 5 human resource managers,

l) 5 economists/ planners/ controllers,

m) 3 legal specialists,

n) 40 diversely qualified general administrative, IT capable and financial staff.

19. The IWRMP recommends that Government, Local Authorities and Regional Councils and the private sector should **engage on sharing the costs for human resources capacity building** and maintenance of existing capacity. A proportion of 30% for the state and 70% for the private sector was estimated.

20. The IWRMP recommends that the private sector should be actively used for **mentoring** and **capacity building** and **capacity maintenance**.

7. ANNEXES

Annex 1: Distilling capacity building needs from the four background Theme Reports

Annex 2: The stakeholder expressed needs for capacity building

Annex 3: Organisational and human resource technical capacity building layout for IWRM

Annex 4: Key required skills for meeting the IWRM objectives

Annex 5: Organisational and Individual Managerial Effectiveness Capacity Threshold Assessment Tools

Annex 6: The Polytechnic of Namibia study programmes relevant to IWRM (as example)

Annex 7: Assessment of current skills development capacity at the Polytechnic of Namibia [PON] (as example)

Annex 8: Research Capacity Building and Support

7.1 ANNEX 1: DISTILLING CAPACITY BUILDING NEEDS FROM THE FOUR BACKGROUND THEME REPORTS

During the theme report: "Review and Assessment of Existing Situation" the following capacity related challenges to the full implementation of IWRM were identified:

- Infrastructure maintenance (inadequate or non-existent infrastructure),
- limited technological and human capabilities (for hydrological and ecological assessments),
- incompatible database management (isolated databases, incompatible formats),
- responsibility for data collection and evaluation (who does what, when, how?),
- the lack of continuous monitoring and updating of databases,
- inadequate waste water management and pollution control,
- the need for better water demand management and the implementation of processes to treat raw water, or to reclaim, reuse and recycle used water,
- the need for service delivery, coordination, regulation,
- inadequate mechanisms for addressing gender issues, and
- the enforcement of the WRM Act and sound WRM strategies and practices.

Several new strategies were identified and proposed to be put in place if the goals towards sustainable resource use must be attained. These include:

- a groundwater protection strategy;
- an ephemeral and perennial river catchment strategy;
- a clear communal land and water use strategy;
- a national water demand management strategy and
- a pollution control strategy.

During the "Assessment of Resource Potential and Development Needs" the following capacity support mechanisms were identified for the full implementation of IWRM and water resources security:

- **Risk management** in general (to enhance the capacity of disaster risk management)
- **Building new and retaining existing operation and maintenance capacity** (for all supply, sanitation and conjunctive water use technologies)
- **Management of ground water resources** (This is a key-challenge for the government, parastatals and the private sector, and must be addressed at the highest possible governance level)
- Maintenance of infrastructure and **maintenance management in rural areas** (there is a big concern with rural water supply schemes where beneficiaries are responsible for

proper maintenance. Either maintenance may not be done properly or schemes may not even be functional at all.)

During compilation of the "Formulation of Water Demand Management Strategy" the following institutional **capacity requirements** and WDM related **strategies** were proposed for the full implementation of IWRM:

- Organisational development to engage relevant stakeholders (Water User/Irrigation Efficiency Groups; Mentoring Programmes; Farmers Cooperatives to support emerging farmers)
- Strategy development and implementation (effluent regulations and standards, equitable end-use water tariffs, subsidy/cross- subsidy principles, national sewer and effluent tariff policies, finalise the revisions of the Water Resource Management Act and the Regulations in terms of the Act, Strategic Environmental Management Plans, Water Use and Management Plans for the different sectors)
- A specific strategy on **tariff setting** (equitable and socially fair, cost recovery basis, revenue stability and liquidity for provider, affordability and subsidies)
- A specific policy on **water metering** and **data monitoring** (including data analysis, monitoring and evaluation systems, information provision, follow up and follow through of rehabilitation projects, administration and financial management)

The following basic and advanced **technical training modules** including appropriate training manuals for capacity building and capacity maintenance were identified:

- **Plumbing** (water meter replacement, leak detection and repair, plumbing infrastructure maintenance in general, also for employment creation in rural and urban areas)
- **Irrigation management** (crop/water/fertilizer requirements, crop matching with soil conditions, irrigation technology choice, water productivity, water use efficiency, irrigation water metering, training of farmers in soil/water/fertilizer management and scheduling, evapotranspiration management)
- **Integrated resource planning** (process for determining the appropriate mix of demand-side and supply-side resources, which are expected to provide long-term, reliable service to utility customers at the lowest reasonable cost and which maximises benefits, pollution prevention, economic indicators)

The following basic and advanced **managerial training modules** including appropriate training manuals for capacity building and capacity maintenance were identified:

- **Client focused service provision** (water use efficiency, water demand management, integrated water resources management, financial management, monitoring and integration of performance indicators)
- **Business administration** and **financial management** (accounting and bill collection systems are required to reduce the level of non-revenue water and to recover costs.)

During the "Preparation of the National Water Development Strategy and Action Plan" and **subsequent stakeholder input** from thirteen regions, the following institutional capacity requirements and WDM related policies and support mechanisms were added and consolidated for the full implementation of IWRM.

The *National Water Development Strategy and Action Plan* provides the IWRM **objectives**, **strategies** to attain the objectives, a set of **key actions** to meet the objectives, and **aggregated indicators** to measure the attainment of objectives.

Proposed development of institutions and/or strengthened water governance structures:

- The **Water and Sanitation Advisory Council** will advise the Minister through the DWAF with respect to water supply and demand management including rural/ urban/ industrial waste water management
- The Minister should establish the **Water Regulator** function to evaluate and control tariffs for water and sanitation services and improve water and sanitation service delivery
- **Performance Support Teams (PSTs)**, responsible for technical inspections and capacity building support
- The **Water Research Council** to actively promote water research to provide for all stakeholders appropriate access to research information
- **Irrigation Water Efficiency Groups** to support experienced and emerging farmers on water use efficiency and irrigation management
- **Basin Management Committees** (BMCs) and **Water Point Committees** (WPCs) to serve, *inter alia*, as platforms for local awareness raising, participation in capacity building and engagement

Proposed strategies and guidelines:

- **Strategy on the reduction of bush encroachment** to enhance groundwater recharge potential and surface carrying capacity
- **Strategy on gender participation and engagement** in IWRM/WDM at all levels
- **Guidelines for appropriate and internationally accepted effluent discharge quality** to be established

Proposed strategic support mechanisms:

- Installation of **feedback mechanisms** and appropriate **performance indicators** through all **relevant** institutions and agencies
- **DWAF** engagement programme for efficient and effective cooperation (DWAF, NamWater, Regional and Local authorities, MET, MLR, MWT, MoF, MRLGHRD and CSOs and elected and appointed leaders)
- **Training** for **managerial effectiveness** and management capacity in general to be provided
- **DWAF** to establish a **stakeholder resource pool** for capacity building support

- **Introduction** and maintenance of **management strategies, operational manuals** and **financial management plans** (irrigation, water demand, sanitation, livestock, mining, tourism)
- IWRM/WDM to be included in **basic and higher education and training curricula**

Proposed technical support mechanisms:

- Develop and implement process **maintenance**, operation and replacement management programs and **technical performance indicators** for all water related infrastructure
- Develop action plans to **reduce high production losses** and **unaccounted for water**
- Introduce, adapt and implement **water recycling and reuse** of treated wastewater technologies for irrigation and sanitation
- Introduce, implement and maintain a national up-to-date data base with **rest water levels**, abstraction volumes and water quality parameters accessible to providers and users

During the "Formulation of Information and Knowledge Systems" the following institutional capacity building requirements were added and consolidated for the full implementation of IWRM.

It is proposed to enhance the building of a national WRM knowledge repository through:

- improving capacity to gather, capture, analyse and manage required data
- in
- creasing reliability of equipment for data collection and capture
- reporting on abstraction from permit holders to DWAF
- providing centrally managed access to WRM information
- establishing standards for data exchange between databases and a clear standard on how to store data

7.2 ANNEX 2: THE STAKEHOLDER EXPRESSED NEEDS FOR CAPACITY BUILDING

This Annex summarizes challenges from the three background theme reports integrated into the *National Water Development Strategy and Action Plan* as well as input received from **stakeholder consultations from thirteen regions**, translates these into capacity building measures and serves as an overview for expressed capacity building needs.

Which water governance structures were identified, proposed and discussed for establishing or strengthening?

- The **Water and Sanitation Advisory Council** [WaSAC] (with respect to water supply and demand management including rural/urban/industrial waste water management)
- **Performance Support Teams** [PSTs] (with respect to technical inspections and capacity building support)
- The **Water Regulator** function [WR] (with respect to evaluating and controlling tariffs for water and sanitation services and improving water and sanitation service delivery)
- The Water **Research Council** [WRC] (with respect to actively promoting research and providing appropriate access to research information for all stakeholders)
- Irrigation **Water Efficiency Groups** [IWEGs] (with respect to water use efficiency and irrigation management support)
- **Basin Management Committees** [BMCs] and **Water Point Committees** [WPCs] to serve, inter alia, as platforms for local awareness raising, participation in capacity building and engagement

Which new strategies were identified, proposed and discussed to meet the goals of IWRM?

- A **groundwater protection strategy** (with respect to water use and quality conservation)
- An **ephemeral river catchment strategy** (with respect to water storage and abstraction)
- A clear **communal land and water strategy** (with respect to land and water use and conservation)
- A national **water demand management strategy** (with respect to foster WDM and enable IWRM)
- A pollution **control strategy and effluent discharge quality** (with respect to water quality conservation)
- Intergating the WSASP proposed strategy on **tariff setting** (with respect to equitable and socially fair, cost recovery basis, revenue stability and liquidity for provider, affordability and subsidies)
- A **specific strategy on water metering** and data monitoring (with respect to data analysis, monitoring and evaluation systems, information provision, follow up and follow through of rehabilitation projects, administration and financial management)
- A Strategy on the **reduction of bush encroachment** (with respect enhanced groundwater recharge potential and land surface carrying capacity)

- A Strategy on **gender participation and engagement** in IWRM/WDM on all levels
- Strategy and guidelines for **integrated coastal management**

Which strategic planning and management support mechanisms were identified, proposed and discussed to meet the goals of IWRM?

- Installation of **feedback mechanisms** and appropriate **performance indicators through** all relevant institutions and agencies. This includes appropriate **knowledge and information systems** and an appropriate **monitoring and evaluation system**.
- **DWAF engagement programme** for efficient and effective cooperation (DWAF, **NamWater**, Regional and Local authorities, MET, MLR, MWT, MoF and MRLGHRD and elected and appointed leaders)
- Training for **managerial effectiveness** and management capacity in general to be **provided**
- DWAF to establish a **stakeholder resource pool** for capacity building and capacity maintenance support
- **Introduction** and maintenance of **management strategies, operational manuals** and **financial management plans** (irrigation, water demand, sanitation, livestock, mining, tourism)
- IWRM/WDM to be included in **basic and higher education and training curricula**

Which technical and managerial training modules including training manuals for developing and maintaining people's skills were identified, proposed and discussed to meet the goals of IWRM?

- **Plumbing related modules** focused on water meter replacement, leak detection and repair, plumbing infrastructure maintenance in general *(this may also serve for employment creation in rural and urban areas)*
- Sanitation **related modules** focused on construction and maintenance of appropriate sanitation facilities *(these modules should be made freely available to the public)*
- Irrigation **management modules** concerned with crop/water/fertilizer requirements, crop matching with soil conditions, irrigation technology choice, water productivity, water use efficiency, irrigation water metering, training of farmers in soil/water/fertilizer management and scheduling, and evapotranspiration management. *(these modules should be made freely available to the public)*
- Integrated **resource planning** modules to focus on determining the appropriate mix of demand-side and supply- side resources, which are expected to provide long-term, reliable service to utility customers at the lowest reasonable cost and which optimises benefits, pollution prevention, and economic indicators. *(these modules should be made freely available to the public)*

The following basic and advanced **managerial training modules** including appropriate training manuals for capacity building and capacity maintenance were identified, proposed and discussed:

- **Client focused service provision** related to water use efficiency, water demand management, integrated water resources management, financial management, monitoring and integration of performance indicators
- Business **administration and financial management** related to accounting and bill collection systems to reduce the level of non-revenue water and to recover costs

7.3 ANNEX 3: ORGANISATIONAL AND HUMAN RESOURCE TECHNICAL CAPACITY BUILDING LAYOUT FOR IWRM

Organizational | Individual Level: **IWRM** Technical Capacity Building (*enabling to do a specific IWRM job*)	
IWRM/CBF Key-Function	**Hands-on** Management and Organizational Support
Function 1	**Technical workplace support** (Local Capacity Builders: private sector, NGOs)
Function 2	**Policy and Legislation application training** (Local Capacity Builders: private sector, NGOs, PON, UNAM)
Function 3	**Water Demand Management** (Local Capacity Builders: private sector, PON)
Function 4	**Scientific and Engineering Expertise** (Local Capacity Builders: private sector, PON, UNAM)
Function 5	**Waste Management** (Local Capacity Builders: private sector, Polytechnic of Namibia)
Function 6	**Sanitation Management** (Local Capacity Builders: private sector, NGOs, HRDC)
Function 7	**Maintenance Management** (Local Capacity Builders: private sector)
Function 8	**Hands-on Maintenance of Infrastructure** (Local Capacity Builders: private sector, VTCs, PON(DTVET))
Function 9	**Water Resource Conservation/Pollution Prevention** (Local Capacity Builders: private sector, NGOs, PON
Function 10	**Investment in Water Services and Infrastructure** (Local Capacity Builders: private sector, PON)

What needs establishing

FCT/No#	Function/ element	What needs to be established for people to use it and to successfully manage their work place
Technical workplace support (*technical every-day matters connected to institutional field of activity*)		
1.1		Information and Communication Technology (ICT) training, software handling, document archiving and retrieval, data capturing and processing (Partners in Namibia: Polytechnic of Namibia through its CED, Schools, Departments; members of the Namibian industry)
1.2		Machinery and equipment handling for specific job fields (Partners in Namibia: Industry)

Policy and Legislation application training (*setting goals for water use, law enforcement, budgeting applications, water user dialogues, regional/international cooperation*)	
2.1	Analytical skills to assess the most appropriate legislative framework to achieve regulatory goals and objectives. (UNAM, South African Universities, Mentorship programmes with local legal firms)
2.2	Economic analysis of impact of legislative framework. (UNAM, Mentorship programmes with regional and international tertiary institutions , Donor agencies e.g. DFID, GTZ, USAID)
2.3	Legal drafting. (UNAM, South African Universities, Mentorship programmes with local legal firms)
2.4	Law enforcement. (PON (Police Science),UNAM, Legal Assistance Centre, mentoring programmes, foreign water law enforcement agencies)
Water Demand Management (*technical hands-on training*)	
3.1	Integrated Resource Planning {Water, Energy, Finances, Land, HR} through short courses, booster programmes, on-site support, coaching (Partners in Namibia: Industry, PON, UNAM, NGOs)
3.2	Application of economic and financial principles to control supply and use efficiency through on the job coaching, on-site support, short courses, booster programmes (Partners in Namibia: Industry, PON, UNAM, NGOs)
3.3	Water recycling, reclamation and re-use technologies suitable for Namibian conditions including water conditioning ((Partners in Namibia: Industry, PON, UNAM, NGOs)
3.4	Technical matters of water supply and use efficiency (leakage management, water metering, retrofitting of water saving plumbing fixtures, permaculture gardening, xeriscaping} (Partners in Namibia: Industry, PON, VTCs, NGOs)
3.5	Crop Irrigation Planning and Irrigation Management (Partners in Namibia: Industry, PON, UNAM, Neudam Agricultural College, NGOs)

Scientific and Engineering Expertise (*technical planning, installation, monitoring and evaluation*)	
4.1	Hydrology and Geohydrology and Land Management; water resources assessment (Partners in Namibia: PON-ILMI, UNAM, RSA and international Universities, Mentorship programmes from industry)
4.2	Ecology and environmental monitoring; demand management, land management, reclamation and re-use of treated wastewater (Partners in Namibia:PON, UNAM, RSA Universities, Mentorship programmes from industry)
4.3	Social sciences and social marketing, stakeholder engagement and poverty reduction; social change instruments (Partners in Namibia:PON-MIB, UNAM, RSA Universities, Mentorship programmes from industry)
4.4	Hydraulic engineering and civil engineering, hands-on water and sanitation infrastructure planning, planning and implementing conjunctive water use, ground- and surface water development (Partners in Namibia:PON, UNAM, RSA Universities, Mentorship programmes from industry)
4.5	Environmental engineering and pollution control; cross-sectoral integration of the natural/human system, drought management, enhanced disaster risk management (Partners in Namibia:NISD/NNF/DRFN, PON, UNAM, RSA Universities, Mentorship programmes from industry)
4.6	Economics and financial management, and mobilizing financial resources, economic instruments (Partners in Namibia:PON, UNAM, RSA Universities, Mentorship programmes from industry)
4.7	Public administration and cross-sectoral integration of the natural/human system; regulatory instruments (Partners in Namibia:PON, UNAM, RSA Universities, Mentorship programmes from industry)
4.8	Political sciences and law, implementing feedback loops, international processes (Partners in Namibia:PON-MIB, UNAM, RSA Universities)
4.9	Modelling and analysis of data, and developing and maintaining databases, information management instruments (Partners in Namibia: NISD/NNF/DRFN, PON, UNAM, RSA Universities, Mentorship programmes from industry)
4.10	Conflict resolution, negotiation skills, transboundary cooperation and planning, networking with stakeholders, stakeholder education (Partners in Namibia: NISD/NNF/DRFN, UNAM, RSA Universities, Mentorship programmes from industry)
4.11	Inhouse/in-field capacity building, engineering skills training, mobilising participatory management, stakeholder mobilization (Partners

	in Namibia:NISD/NNF/DRFN, PON, UNAM, RSA Universities, Mentorship programmes from industry)
4.12	Defining direction and planning the strategy, encouraging and managing innovation (Partners in Namibia:NISD/NNF/DRFN, RSA Universities, Mentorship programmes from industry)
Waste Management	
5.1	Formulating/revising solid waste management plans (Partners in Namibia:NISD/NNF/DRFN, PON, RSA Universities, Mentorship programmes from industry)
5.2	Educating stakeholders in solid waste management best practices (Partners in Namibia:NISD/NNF/DRFN, Mentorship programmes from industry)
5.3	Managing solid waste collection/disposal/ recycling (Partners in Namibia: Mentorship programmes from industry)
Sanitation Management	
6.1	Planning, managing, monitoring and evaluating sanitation targets for rural and peri-urban communities (Partners in Namibia:NISD/NNF/DRFN, HRDC, PON, Mentorship programmes from industry)
6.2	Developing and implementing sanitation programmes for rural and peri-urban areas (Partners in Namibia:NISD/NNF/DRFN, HRDC, PON, Mentorship programmes from industry)
6.3	Training rural and peri-urban communities in best sanitation practices, and facility maintenance (Partners in Namibia:NISD/NNF/DRFN, HRDC, PON, Mentorship programmes from industry)
Maintenance Management	
7.1	Developing and implementing WRM/WDM process maintenance management programs and technical performance indicators (Partners in Namibia: PON, Mentorship programmes from industry)
7.2	Developing, installing and monitoring of permanent infrastructure maintenance programs of rural and urban domestic supply (Partners in Namibia: PON, Mentorship programmes from industry)
7.3	Training staff, rural and peri-urban communities in maintenance management (Partners in Namibia: PON, Mentorship programmes from industry)

Hands-on Maintenance of Infrastructure	
8.1	Doing regular maintenance work on technical infrastructure (water and sanitation) (Partners in Namibia: VTCs, Mentorship programmes from industry)
8.2	Establishing preventative maintenance programmes and schemes for rural/peri-urban and urban communities (Partners in Namibia: VTCs, Mentorship programmes from industry)
Water Resource Conservation and Pollution Prevention	
9.1	Establishing and managing appropriate monitoring and evaluation systems for water quality and water resource security (Partners in Namibia:NISD/NNF/DRFN, PON, Mentorship programmes from industry)
9.2	Water quality monitoring and enforcement of quality standards and guidelines, pollution prevention capacity building (Partners in Namibia:NISD/NNF/DRFN, PON, Mentorship programmes from industry)
9.3	Basic education support, outreach to train rural and peri-urban communities, water conservation programmes (Partners in Namibia:NISD/NNF/DRFN)
Investment in Water Services and Infrastructure	
10.1	Developing, managing and maintaining long-term investment plans for water and sanitation infrastructure, harmonizing plans with legislation and policies (Partners in Namibia: PON, Mentorship programmes from industry)
10.2	Budgeting and controlling infrastructure investment (Partners in Namibia: PON, Mentorship programmes from industry)

7.4 ANNEX 4: KEY-REQUIRED SKILLS FOR MEETING THE IWRM OBJECTIVES

The table below serves as a guide to skills development and capacity building as well as capacity maintenance, and summarizes the broad skills mix and capacity diversity needed to master IWRM and the identified key-objectives. The objectives of IWRM are the same objectives as elaborated in the *National Water Development Strategy and Action Plan*. To meet these objectives key-required skills were identified during the IWRMP-process and during stakeholder consultation and grouped and put into the respective column headers. Each objective was then assessed in terms of the key-required skills to meet this specific objective. The assessment was done with three levels of skills application and relates to the respective numbers in the cells. This assessment follows the curriculum development strategy used at the Polytechnic of Namibia, Department of Civil Engineering in the year 2004 to establish the study programmes for B-Tech Water Engineering and the SADC WaterNet IWRM Modular Master Programme. A ‘3’ represents a skill most often needed, a ‘2’ represents a skill normally needed, a ‘1’ represents a skill occasionally needed to meet a specific objective. From this table the “key-required skills spectrum bar graph” was derived through the accumulated frequency of use to provide an overview of the broad skills mix needed and the uses of each skill to meet the objectives of IWRM.

Key-**required skills and capacity diversity** for IWRM

design/installation/operation/maintenance

(3=most often needed; 2=normally needed; 1=occasionally needed)

Abbreviations used: org=organisational; ind=individual; IRP=integrated resource planning; ECON=economics; TECH=technical/hands-on

Ref to S&AP	Objective	Managerial Effectiveness on work place		Information and Communication Technology	Machinery and Equipment Use	Policy and Legislation Application	**Water Demand Management**			Scientific and Engineering Expertise	Waste Management	Sanitation Management	**Maintenance Management**		Resource Conservation, Pollution Prevention	Investment, Budgeting, Controlling
		org.	ind.				IRP	ECON	TECH				planning	technical		
Theme 1	(a) An enabling policy and legislative framework is established and enforced	**3**	**3**	**1**		**3**	**3**	**2**		**3**	**2**	**2**	**2**		**3**	**2**
Theme 1	(b) Water and Sanitation governance structures are established and functional, e.g. *inter alia*, - the Water and Sanitation Advisory Council - the Water Regulator - Basin Management Committees	**3**	**3**	**2**		**3**	**3**	**2**	**2**	**3**	**2**	**3**	**3**	**2**	**3**	**3**

Ref to S&AP	Objective	Managerial Effectiveness on work place		Information and Communication Technology	Machinery and Equipment Use	Policy and Legislation Application	**Water Demand Management**			Scientific and Engineering Expertise	Waste Management	Sanitation Management	**Maintenance Management**		Resource Conservation, Pollution Prevention	Investment, Budgeting, Controlling
		org.	ind.				IRP	ECON	TECH				planning	technical		
Theme 2	(a) Institutional support programs established to strengthen management and governance structures	**3**	**3**	**2**		**3**	**3**	**2**	**2**	**3**	**2**	**2**	**3**	**2**	**3**	**3**
Theme 2	(b) IWRM integrated and implemented within the context of and in collaboration with decentralisation	**3**	**3**	**2**	**2**	**3**	**3**	**3**	**2**	**3**	**2**	**2**	**3**	**2**	**3**	**3**
Theme 2	(c) BMCs are formalised and functional	**3**	**3**	**2**	**1**	**3**	**3**	**2**	**2**	**2**	**2**	**2**	**3**	**2**	**3**	**2**
Theme 2	(d) Basic, vocational and higher education institutions have included IWRM into their curricula and extracurricular education programs	**3**	**3**	**3**	**2**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**
Sub 2.1	(a) Management capacity of stakeholders in the water sector is enhanced	**3**	**3**	**3**	**2**	**3**	**3**	**3**	**2**	**3**	**3**	**3**	**3**	**2**	**3**	**3**

Ref to S&AP	Objective	Managerial Effectiveness on work place		Information and Communication Technology	Machinery and Equipment Use	Policy and Legislation Application	**Water Demand Management**			Scientific and Engineering Expertise	Waste Management	Sanitation Management	**Maintenance Management**		Resource Conservation, Pollution Prevention	Investment, Budgeting, Controlling
		org.	ind.				IRP	ECON	TECH				planning	technical		
Sub 2.1	(b) DWAF management capacity for licensing and compliance control is in place and improved	**3**	**3**	**3**	**1**	**3**	**3**	**3**	**2**	**3**	**3**	**3**	**2**	**2**	**3**	**2**
Sub 2.2	(a) Capacity for effective and efficient infrastructure operation and maintenance is in place	**3**	**3**	**3**	**3**	**2**	**2**	**2**	**3**	**2**	**3**	**3**	**3**	**3**	**3**	**2**
Sub 2.2	(b) Technical capacity for integrated land management (e.g. bush encroachment, prevention of erosion and livestock management,) sanitation and irrigation is developed	**3**	**3**	**2**	**2**	**2**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**
Sub 2.3	(a) Adequate capacity for efficient financial management in place	**3**	**3**	**3**		**3**	**2**	**3**	**2**	**2**	**2**	**2**	**3**	**2**	**2**	**3**

Ref to S&AP	Objective	Managerial Effectiveness on work place		Information and Communication Technology	Machinery and Equipment Use	Policy and Legislation Application	**Water Demand Management**			Scientific and Engineering Expertise	Waste Management	Sanitation Management	**Maintenance Management**		Resource Conservation, Pollution Prevention	Investment, Budgeting, Controlling
		org.	ind.				IRP	ECON	TECH				planning	technical		
Theme 3	(a) All stakeholders are committed and actively participating in IWRM	**3**	**3**	**2**		**2**	**3**	**3**	**2**	**3**	**2**	**2**	**2**	**2**	**3**	**2**
Theme 3	(b) Women and youth are equitably involved at all levels in IWRM	**3**	**2**	**1**	**1**	**3**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**3**	**2**
Theme 4	(a) IWRM provides the framework for land use/management plans and orientation for sustainable resource development	**3**	**3**	**2**	**1**	**2**	**3**	**2**	**2**	**2**	**3**	**3**	**2**	**2**	**3**	**2**
Sub 4.1	(a) All necessary data for IWRM are available, accessible, translated to information and knowledge and appropriately managed	**3**	**3**	**3**	**2**	**2**	**2**	**2**	**2**	**3**	**2**	**2**	**2**	**2**	**2**	**2**
Sub 4.1	(b) Knowledge acquisition programs are established and results are accessible to all stakeholders	**3**	**3**	**3**		**3**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**1**	**3**	**3**

Ref to S&AP	Objective	Managerial Effectiveness on work place		Information and Communication Technology	Machinery and Equipment Use	Policy and Legislation Application	**Water Demand Management**			Scientific and Engineering Expertise	Waste Management	Sanitation Management	**Maintenance Management**		Resource Conservation, Pollution Prevention	Investment, Budgeting, Controlling
		org.	ind.				IRP	ECON	TECH				planning	technical		
Sub 4.2	(a) Effective groundwater monitoring and control is fully established	**3**	**2**	**3**	**3**	**3**	**3**	**2**	**3**	**3**	**2**	**2**	**3**	**2**	**3**	**2**
Sub 4.2	(b) Groundwater resources sustainability and security is improved	**3**	**3**	**1**	**1**	**2**	**2**	**2**	**2**	**3**	**3**	**3**	**3**	**2**	**3**	**2**
Sub 4.2	(c) Effective (perennial and ephemeral) surface water monitoring and control is fully established	**3**	**3**	**2**	**2**	**3**	**3**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**
Sub 4.3	(a) Water resources are managed with full consideration of climate variability and climate change	**3**	**2**	**2**	**2**	**2**	**3**	**3**	**2**	**3**	**2**	**2**	**3**	**2**	**2**	**2**
Sub 4.4	(a) Access to quality water supply for all users is ensured	**3**	**3**	**2**	**3**	**2**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**2**
Sub 4.4	(b) Water supply is affordable and economically viable	**2**	**2**	**2**	**2**	**3**	**3**	**3**	**2**	**2**	**2**	**2**	**2**	**2**	**3**	**2**

Ref to S&AP	Objective	Managerial Effectiveness on work place		Information and Communication Technology	Machinery and Equipment Use	Policy and Legislation Application	**Water Demand Management**			Scientific and Engineering Expertise	Waste Management	Sanitation Management	**Maintenance Management**		Resource Conservation, Pollution Prevention	Investment, Budgeting, Controlling
		org.	ind.				IRP	ECON	TECH				planning	technical		
Sub 4.4	(c) Water resources from perennial rivers are equitably and sustainably allocated	**3**	**3**	**2**	**2**	**3**	**3**	**2**	**2**	**3**	**2**	**2**	**2**	**2**	**3**	**3**
Sub 4.4	(d) Water supply infrastructure is adequately maintained, replaced, upgraded and extended	**3**	**3**	**2**	**3**	**2**	**2**	**2**	**3**	**3**	**2**	**2**	**2**	**3**	**3**	**2**
Sub 4.5	(a) Water use efficiency is increased through WDM	**3**	**2**	**1**	**2**	**3**	**2**	**2**	**2**	**2**	**2**	**2**	**3**	**3**	**3**	**2**
Sub 4.5	(b) WDM master plans for urban and rural areas, the irrigation sector, industry, mining and tourism are developed and implemented	**3**	**3**	**3**	**2**	**3**	**3**	**2**	**2**	**3**	**2**	**2**	**3**	**3**	**3**	**2**
Sub 4.5	(c) Irrigation management plans for improved efficiency are established and implemented	**3**	**3**	**2**	**3**	**2**	**3**	**2**	**3**	**3**	**2**	**2**	**3**	**3**	**3**	**2**

Ref to S&AP	Objective	Managerial Effectiveness on work place		Information and Communication Technology	Machinery and Equipment Use	Policy and Legislation Application	**Water Demand Management**			Scientific and Engineering Expertise	Waste Management	Sanitation Management	**Maintenance Management**		Resource Conservation, Pollution Prevention	Investment, Budgeting, Controlling
		org.	ind.				IRP	ECON	TECH				planning	technical		
Sub 4.5	(d) Innovative conjunctive water use and use of unconventional water sources is enhanced	**3**	**3**	**2**	**3**	**3**	**3**	**2**	**3**	**3**	**2**	**3**	**2**	**2**	**3**	**2**
Sub 4.6	(a) Water resources are adequately protected	**2**	**2**	**2**	**2**	**3**	**3**	**2**	**2**	**3**	**3**	**3**	**2**	**2**	**3**	**2**
Sub 4.6	(b) Sanitation systems improved and management plans established and implemented	**2**	**2**		**3**	**2**	**3**	**2**	**3**	**3**	**2**	**3**	**3**	**3**	**3**	**2**
Sub 4.6	(c) Adequate solid and liquid waste management practices are established and enforced	**3**	**2**	**2**	**2**	**3**	**3**	**2**	**2**	**3**	**3**	**3**	**2**	**2**	**3**	**2**
Sub 4.6	(d) Wastewater and solid waste infrastructure is adequately maintained, replaced, upgraded and extended	**3**	**3**	**1**	**3**	**2**	**3**	**3**	**3**	**3**	**2**	**3**	**3**	**3**	**3**	**2**

Ref to S&AP	Objective	Managerial Effectiveness on work place		Information and Communication Technology	Machinery and Equipment Use	Policy and Legislation Application	**Water Demand Management**			Scientific and Engineering Expertise	Waste Management	Sanitation Management	**Maintenance Management**		Resource Conservation, Pollution Prevention	Investment, Budgeting, Controlling
		org.	ind.				IRP	ECON	TECH				planning	technical		
Theme 5	(a) Sustainable investment for IWRM is secured	**3**	**3**	**3**		**3**	**3**	**3**	**1**	**1**	**1**	**1**	**2**	**1**	**1**	**3**

7.5 ANNEX 5: ORGANISATIONAL AND INDIVIDUAL MANAGERIAL EFFECTIVENESS CAPACITY THRESHOLD ASSESSMENT TOOLS

The tools are termed "**managerial effectiveness capacity threshold assessment**" and provide for organisational (*orange*) and individual (*blue*) assessment of managerial effectiveness thresholds. The tools are formulated in **positive-goal mode** enabling an organisation or individual to assess the current state, a column makes provision for a current date, and to **plan ahead** to maintain existing capacity and to built additional capacity where required. If the tools are used to determine the current managerial effectiveness, i.e. in assessment mode, the result will be a threshold following the well established *capacity threshold concept*[13].

The tools, however, also provide the desired capacity level for performing organisations and thus enable the planners for capacity maintenance and building to set capacity targets, i.e. increasing the threshold to an appropriate level. This is also termed *strategic maintenance* of an organisation. Strategic maintenances relates to knowing the functional capacity at all times and all levels, maintaining or improving it to adapt the organisation to changing conditions and environments. The focus of strategic maintenance is the organisation's viability.

The scientific basis for the organisational and individual managerial effectiveness capacity threshold assessment is derived from management cybernetics through the works of Stafford Beer, Peter F. Drucker, Ross Ashby and Fredmund Malik. The tools follow thus key-elements of the *Viable System Model* from Stafford Beer, the Fredmund Malik effective top management and managerial effectiveness research and teaching during the past four decades at the world renowned St. Gallen University of Management and the also renowned McKinsey capacity assessment grid.

[13] (please refer to www.africanwater.org/threshld.htm *or http://books.google.com.na/books?id=K9KzeTsBotkC&pg=PA301&lpg=PA301&dq=capacity+threshold+concept&source=bl&ots=ZyWuNVZ-hv&sig=fVB6ulsuUkZw1haY6VqL7sl1kt4&hl=en&ei=gXQPTMLJCZ6Q4gaP0qSuDA&sa=X&oi=book_result&ct=result&resnum=5&ved=0CCgQ6AEwBA* for further reading*)*

Organizational Level: Managerial Capacity Threshold Assessment (*enabling the organization*)

Core-functions …based on S.Beer viable system model, F.Malik effective top management, assessment partly following the McKinsey capacity assessment grid and the eco-systemix Namibia "enabling environment programme"

What needs assessing

Function 1 **Normative management** (*i.e. defining and managing the aspirations/structure/culture of the organization*)

Function 2 **Strategic management** (*i.e. identifying the best strategy and strategic planning and maintenance to advance the organization*)

Function 3 **Steering and operative management** (*i.e. enabling the organisation to perform*)

Function 4 **Regulatory management** and **coordination and monitoring** (*i.e. feedback and anchoring/protecting the organization's values*)

Function 5 **Production and existence** (*i.e. what has to be in place to meet the purpose of the organization: human resources and infrastructure*)

REM: during self-assessment, please put in the date of assessment to keep track of capacity maintenance and building results. Where are you now? Where do you want to be in 1 / 2 / 5 years?

FCT/ No#	Function/element	1: Clear **need for increased capacity**	**Date**	2: **Basic level** of capacity in place	**Date**	3: **Moderate level** of capacity in place	**Date**	4: **High level** of capacity in place	**Date**
Normative management (*defining and managing the organization's aspirations/structure/culture*)									
1.1	**Mission** (purpose of the organization) --*why do we exist?*--	No written mission or limited expression of the organization's reason for existence; lacks clarity or specificity; either held by very few in organization or rarely referred to		Some expression of organization's reason for existence that reflects its values and purpose, but may lack clarity; held by only a few; lacks broad agreement or rarely referred to		Clear expression of organization's reason for existence which reflects its values and purpose; held by many within organization and often referred to		Clear expression of organization's reason for existence which describes an enduring reality that reflects its values and purpose; broadly held within organization and frequently referred to	

FCT/ No#	Function/element	1: Clear **need for increased capacity**	**Date**	2: **Basic level** of capacity in place	**Date**	3: **Moderate level** of capacity in place	**Date**	4: **High level** of capacity in place	**Date**
1.2	**Vision** – clarity and boldness *--where do we want to be in 5 or 20 years?--*	Little shared understanding of what organization aspires to become or achieve beyond the stated mission; no clear vision articulated		Somewhat clear or specific understanding of what organization aspires to become or achieve; lacks specificity or clarity; held by only a few; or "on the wall," but rarely used to direct actions or set priorities; Vision exists but falls short of reflecting an inspiring view of the future and of being demanding yet achievable		Clear and specific understanding of what organization aspires to become or achieve; held by many within the organization and often used to direct actions and set priorities; Vision is distinctive along only one of following two attributes: reflects an inspiring view of future; demanding yet achievable		Clear, specific, and compelling understanding of what organization aspires to become or achieve; broadly held within organization and consistently used to direct actions and set priorities; Vision reflects an inspiring view of future and is demanding but achievable	
1.3	Overarching **objectives** and goals *--what must we do to meet our purpose?--*	Mission (if it exists) not explicitly translated into small set of concrete objectives, though there may be general (but inconsistent and imprecise) knowledge within organization of overarching objectives and what it aims to achieve		Mission translated into a concrete set of objectives; objectives lack at least two of following four attributes: clarity, boldness, associated metrics, or time frame or measuring attainment; objectives known by only a few, or only occasionally used to direct actions or set priorities		Mission translated into small set of concrete objectives, but objectives lack at most two of following four attributes: clarity, boldness, associated metrics, or time frame for measuring attainment; objectives are known by many within organization and often used by them to direct actions and set priorities		Vision translated into clear, bold set of (up to three) objectives that organization aims to achieve, specified by concrete to measure success for each criterion, and by well-defined time frames for attaining objectives; objectives are broadly known within organization and consistently used to direct actions and set priorities	

FCT/ No#	Function/element	1: Clear **need for increased capacity**	**Date**	2: **Basic level** of capacity in place	**Date**	3: **Moderate level** of capacity in place	**Date**	4: **High level** of capacity in place	**Date**
1.4	Board composition and **governance** *--who is best in charge to govern the organization?--*	Membership with limited diversity of fields of practice and expertise; drawn from a narrow spectrum of constituencies (from among non-profit, academia, corporate, government, etc.); little or no relevant experience; low commitment to organization's success, vision and mission; meetings infrequent and/or poor attendance; Provide little direction, support, and accountability to leadership; board not fully informed about 'material' and their major organizational matters; largely "feel-good" support		Some diversity in fields of practice; membership represents a few different constituencies (from among non-profit, academia, corporate, government, etc.); moderate commitment to organization's success, vision and mission; regular, purposeful meetings are well-planned and attendance is good overall; Provide occasional direction, support and accountability to leadership; informed about all 'material' matters in a timely manner and responses/decisions actively solicited		Good diversity in fields of practice and expertise; membership represents most constituencies (non-profit, academia, corporate, government, etc.); good commitment to organization's success, vision and mission, and behaviour to suit; regular, purposeful meetings are well-planned and attendance is consistently good, occasional subcommittee meetings; Provide direction, support and accountability to programmatic leadership; fully informed of all major matters, input and responses actively sought and valued; full participant in major decisions		Membership with broad variety of fields of practice and expertise, and drawn from the full spectrum of constituencies (non-profit, academia, corporate, government, etc.); includes functional and programme content-related expertise, as well as high-profile names; high willingness and proven track record of investing in learning about the organization and addressing its issues; outstanding commitment to the organization's success, mission and vision; meet in person regularly, good attendance, frequent meetings of focused subcommittees; Provide strong direction, support, and accountability to programmatic leadership and engaged as a strategic resource; communication between board and leadership reflects mutual respect, appreciation for roles and responsibilities, shared commitment and valuing of collective wisdom	

FCT/ No#	Function/element	1: Clear **need for increased capacity**	**Date**	2: **Basic level** of capacity in place	**Date**	3: **Moderate level** of capacity in place	**Date**	4: **High level** of capacity in place	**Date**
1.5	Objectives/**performance targets** *--potentiality, what we ought to be getting right--*	Targets are nonexistent or few; targets are vague, or confusing, or either too easy or impossible to achieve; not clearly linked to aspirations and strategy, and may change from year to year; targets largely unknown or ignored by staff; the organization's potentiality is unknown		Realistic targets exist in some key areas, and are mostly aligned with aspirations and strategy; may lack aggressiveness, or be short-term, lack milestones, or mostly focused on "inputs" (things to do right), or often renegotiated; staff may or may not know and adopt targets; the organization's potentiality is known to a few decision makers		Quantified, aggressive targets in most areas; linked to aspirations and strategy; mainly focused on "outputs/outcomes" (results of doing things right) with some "inputs"; typically multiyear targets, though may lack milestones; targets are known and adopted by most staff who usually use them to broadly guide work; the organization's potentiality is known to most staff and occasionally used for performance management		Limited set of quantified, genuinely demanding performance targets in all areas; targets are tightly linked to aspirations and strategy, output/outcome-focused (i.e., results of doing things right, as opposed to inputs, things to do right), have annual milestones, and are long-term nature; staff consistently adopts targets and works diligently to achieve them; the organization's potentiality is actively used for performance management by the majority of staff	
1.6	**Organizational design** -- *recursion levels of organisation--*	Organizational entities (e.g., headquarters, regional and local offices) are not "designed," and roles, responsibilities of entities are neither formalized nor clear; contribution to organizational purpose is unclear, positions are occupied however, they essentially do not contribute to the organization's success; absence of organization/function chart		Some organizational entities are clearly defined, others are not; most roles and responsibilities of organizational entities are formalized but may not reflect organizational realities; some positions contribute to the organization's success; organization/function chart is incomplete and may be outdated		Organizational entities are clearly defined; all roles and responsibilities of organizational entities are formalized but do not necessarily reflect organizational realities; the majority of positions contribute to the organization's success; organization/function chart is complete but may be outdated		Roles and responsibilities of all organizational entities (e.g., headquarters, regional and local entities) are formalized, clear and complement each other; all positions measurably contribute to the organization's success; organization/function chart is complete and reflects current reality; a clear set of nested recursion levels of organization is evident; these levels are connected through the core functions and have access to the organizational regulatory	

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								centre	
1.7	**Interfunctional coordination** *--system and function oriented management--*	Different programmes and organizational units function in silos with vertical hierarchies; little or dysfunctional coordination between them; no recursion levels of organization can be made out; micro-management and politics is the order of the day ("do this-do that"); redundancy and process reliability is non existent		Interactions between different programmes and organizational units are generally good, though coordination issues do exist; some pooling of resources in semi-autonomous units exists; occasional process reliability is observed		All programmes and units function together effectively with sharing of information and resources; few coordination issues; core functions are occasionally connected through effectively placed positions; process reliability is understood as strategy to maintain viability		Constant and seamless integration between different programmes and organizational units with few coordination issues; relationships are dictated by organizational needs (rather than hierarchy or politics); a clear set of lower recursion levels of organization exist; core functions are generally connected through effectively placed positions; process reliability is generally good and connected to the core functions	
1.8	Individual **job design** -- *responsibility/ accountability for organizational success--*	Lack of positions created to address a number of key roles (e.g. Extension officers, HR, learning and measurement); unclear roles and responsibilities with many overlaps; poor accountability; job descriptions do not exist or are not followed and updated		Positions exist for most key roles, with a few still missing; most key positions are well-defined and have job descriptions; some unclear accountabilities or overlap in roles and responsibilities; job descriptions tend to be static		All key roles have associated positions; most individuals have well defined roles with clear activities and reporting relationships and minimal overlaps; job descriptions are continuously being redefined to allow for organizational development and individuals' growth within their jobs		All roles have associated dedicated positions; all individuals have clearly defined core roles which must be achieved and an area of discretion where they can show initiative and try to make a difference; core roles are defined in terms of end-products and services rather than activities; individuals have the ability to define their own activities and are empowered to continuously re-examine their jobs; individuals fully contribute	

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								to the organization's success	
1.9	Performance as **shared value** --*the normative ground rules*--	Employees are hired, rewarded and promoted for executing a set of tasks/duties or for no clear reason, rather than for their impact; decisions are mostly made on "gut feeling"; performance related ground rules are not in place or not referred to		Performance contribution is occasionally used and may be one of many criteria for hiring, rewarding and promoting employees; performance data is used to make decisions; some performance related ground rules are in place but very occasionally not referred to		Employee contribution to social, financial and organizational impact is typically considered as a pre-eminent criterion in making hiring, rewards and promotion decisions; important decisions about the organization are embedded in comprehensive performance thinking; performance related ground rules are in place and referred to		All employees are systematically hired, rewarded and promoted for their collective contribution to social, financial and organizational impact; day-to- day processes and decision making are embedded in comprehensive performance thinking; performance related ground rules are in place and known to all individuals and are referred to; performance is constantly referred to and evident in the organization's market position and attractiveness for good people	
1.10	Other shared beliefs and **values** --*social/economic/ environmental responsibility*--	No common set of elementary beliefs and values exists within the organization; social/economic/environment al responsibility is not understood		Common set of elementary beliefs exists in some groups within the organization, but is not shared broadly; values may be only partially aligned with organizational purpose or only rarely harnessed to produce impact		Common set of elementary beliefs held by many people within the organization; helps provide members a sense of identity; values are aligned with organizational purpose and occasionally harnessed to produce impact		Common set of elementary beliefs and values (e.g. social/economic/ environmental responsibility, full accountability etc.) exists and is widely shared within the organization; provides members sense of identity and clear direction for behaviour; values embodied by leader but nevertheless timeless and stable across leadership	

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								changes; values clearly support overall purpose of the organization and are consistently harnessed to produce impact	
1.11	**Shared references** and practices --*connection to regulatory centre*--	No major common set of practices and references exists within the organization (such as policies, codes, standards, rules, regulations, practices, indicators, manuals etc.)		Common set of references and practices exists in some groups within the organization, but are not shared broadly; may be only partially aligned with organizational purpose or only rarely harnessed to produce impact		Common set of references and practices exists, and are adopted by many people within the organization; references and practices are aligned with organizational purpose and occasionally harnessed to drive towards impact		Common set of references and practices exist within the organization such as policies, codes, standards, rules, regulations, practices, indicators, manuals etc.; other references may include: traditions, rituals, unwritten rules, stories, heroes or role models, symbols, language, dress; references are truly shared and adopted by all members of the organization; actively designed and used to clearly support overall purpose of the organization and to drive performance; people take pride in their common set of references	

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Strategic management (*identifying the best strategy and strategic planning and maintenance to advance the organization*)									
2.1	Overall strategy	Strategy is either nonexistent, unclear, or incoherent (largely set of scattered initiatives); strategy has no influence over day-today behaviour		Strategy exists but is either not clearly linked to mission, vision, and overarching goals, or lacks coherence, or is not easily actionable; strategy is not broadly known and has limited influence over day-to-day behaviour		Coherent strategy has been developed and is linked to mission and vision but is not fully ready to be acted upon; strategy is mostly known and day-to-day behaviour is partly driven by it		Organization has clear, coherent medium- to long-term strategy that is both actionable and linked to overall mission, vision, and overarching objectives; strategy is broadly known and consistently helps drive day-to-day behaviour at all levels of organization	
2.2	**Strategic planning** -- *capability, what we could be getting right with existing resources and capacity--*	Limited ability and tendency to develop strategic plan, either internally or via external assistance; if strategic plan exists, it is not used; the organizations capability is unknown; it does not make a difference if good people leave		Some ability and tendency to develop high-level strategic plan either internally or via external assistance; strategic plan roughly directs management decisions; the organizations capability is partly known; occasionally it makes a difference if good people leave		Ability and tendency to develop and refine concrete, realistic strategic plan; some internal expertise in strategic planning or access to relevant external assistance; occasional application of "constraint focused management"; strategic planning carried out on a near-regular basis; strategic plan used to guide management decisions; the organizations capability is known to the majority of decision makers; good people are retained		Ability to develop and refine concrete, realistic and detailed strategic plan; critical mass of internal expertise in strategic planning, or efficient use of external, sustainable, highly qualified resources; strategic planning exercise carried out regularly; strategic plan based on "constraint focused management" is used extensively to guide management decisions; the organizations capability is well known to the decision makers and to most staff; capability is actively used to measure and control organizational success; good people are well looked after; staff retention is high	

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2.3	**Programme relevance and integration**	Core programmes and services vaguely defined and lack clear alignment with mission and goals; programmes seem scattered and largely unrelated to each other		Most programmes and services well defined and can be solidly linked with mission and goals; programme offerings may be somewhat scattered and not fully integrated into clear strategy		Core programmes and services well defined and aligned with mission and goals; programme offerings fit together well as part of clear strategy		All programmes and services well defined and fully aligned with mission and goals; programme offering are clearly linked to one another and to overall strategy; synergies across programmes are captured	
2.4	Programme growth and **replication** -- *understanding the limits of growth*--	No assessment of possibility of scaling up existing programmes; limited ability to scale up or replicate existing programmes; limited ability to understand the limits of own growth		Limited assessment of possibility of scaling up existing programmes and, even when judged appropriate, little or limited action taken; some ability either to scale up or replicate existing programmes; some ability to understand the limits of own growth		Occasional assessment of possibility of scaling up existing programmes and when judged appropriate, action occasionally taken; able to scale up or replicate existing programmes; ability to understand the limits of own growth		Frequent assessment of possibility of scaling up existing programmes and when judged appropriate, action always taken; efficiently and effectively able to grow existing programmes to meet needs of potential service recipients in local area or other geographies; well established ability to understand the limits of own growth	
2.5	**Research potential --** *adaptation of services/ products/processes*--	Staff in the organization are uncomfortable with complexity and uncertainty and does whatever possible to reduce or avoid it; relies mainly on intuition rather than strategic analysis; products/services/processes are not dynamically adapted, they are left static and preferably unchanged		Staff in the organization are able to cope with some complexity and uncertainty; able to analyse strategies but does not yet generate strategies; products/services/processe s are occasionally adapted		Staff in the organization quickly assimilates complex information and able to distil it to core issues; welcomes uncertainty and is comfortable dealing with the unknown; develops robust strategies; products/services/processe s are adapted as need arises		Staff in the organization has keen and exceptional ability to synthesize complexity; makes informed decisions in uncertain situations; develops strategic alternatives and identifies associated rewards, risks, and actions to lower risks; products/services/processe s are proactively and wisely adapted	

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2.6	**New** programme development -- *innovation and innovative performance*--	No assessment of gaps in ability of current programmes to meet recipient needs; limited ability to create new programmes; new programmes created largely in response to funding availability (resource availability commands)		Limited assessment of gaps in ability of existing programme to meet recipient needs, with little or limited action taken; some ability to modify existing programmes and create new programmes; organizational performance is occasionally seen as driver for change management		Occasional assessment of gaps in ability of existing programme to meet recipient needs, with some adjustments made; demonstrated ability to modify and fine-tune existing programmes and create new programmes; organizational performance is seen as driver for change management		Continual assessment of gaps in ability of existing programmes to meet recipient needs and adjustment always made; ability and tendency efficiently and effectively to create new, truly innovative programmes to the needs of potential service recipients in local area or other geographies; continuous pipeline of new ideas; organizational performance is constantly monitored and all staff see it as driver for change management	
2.7	**Funding model** and investment strategies	Organization highly dependent on a few funders, largely of same type (e.g., government or foundations or private individuals); Generally weak fund-raising skills and lack of expertise (either internal or access to external expertise); occasional investment, opportunity driven, in minor assets		Organization has access to multiple types of funding (e.g., government, foundations, corporations, private individuals) with only a few funders in each type, or has many funders within only one or two types of funders; Main fundraising needs covered by some combination of internal skills and expertise and access to some external fund-raising expertise; more focused investment as need arises		Solid basis of funders in most types of funding source (e.g., government, foundations, corporations, private individuals); some activities to hedge against market instabilities; organization has developed some sustainable revenue generating activity; Regular fundraising needs adequately covered by well developed internal fund-raising skills, occasional access to some external fundraising expertise; investment strategy is generally objectives driven		Highly diversified funding across multiple source types; organization insulated from potential market instabilities (e.g., fully developed endowment) and/or has developed sustainable revenue generating activities; highly developed internal fundraising skills and expertise in all funding source types to cover all regular needs; access to external expertise for additional extraordinary needs; wise investment strategy fully objectives	

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								driven	
2.8	**Monitoring of landscape** --*what happens around us? how must we respond?*--	Minimal knowledge and understanding of other players and alternative models in programme area		Basic knowledge of players and alternative models in program area but limited ability to adapt behaviour based on acquired understanding		Solid knowledge of players and alternative models in program area; good ability to adapt behaviour based on acquired understanding, but only occasionally carried out		Extensive knowledge of players and alternative models in program area; refined ability and systematic tendency to adapt behaviour based on understanding	

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Steering and operative management (*enabling the organisation to perform*)									
3.1	**Performance measurement** -- *monitoring and evaluation of actuality, what we are getting right*--	Very limited measurement and tracking of performance; all or most evaluation based on anecdotal evidence; organization collects some data on program activities and outputs (e.g., number of clients served) but has no resource impact measurement (measurement of economic outcomes, e.g., debt collection efficiency); the organization's actuality is in general unknown		Performance partially measured and progress partially tracked; organization regularly collects solid data on program activities and outputs (e.g., number of clients served) but lacks data-driven, externally validated resource impact measurement (measurement of economic outcomes, e.g., debt collection efficiency); the organization's actuality is partly known		Performance measured and progress tracked in multiple ways, several times a year, considering social, financial, environmental and organizational impact of program and activities; multiplicity of performance indicators; economic impact measured, but control group, longitudinal (i.e., long-term) or third-party nature of evaluation is missing; the organization's actuality is generally known and partly used for productivity and performance management		Well-developed comprehensive, integrated system (e.g., balanced scorecard) used for measuring organization's performance and progress on continual basis, including social, financial, environmental and organizational impact of program and activities; small number of clear, measurable, and meaningful and well interconnected key performance indicators; economical impact measured based on longitudinal studies with control groups, and performed or supervised by third-party experts; the organization's actuality is well known and constantly used for productivity and performance management	

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3.2	Performance **analysis** and programme **adjustments** -- *feedback planning*--	Few external performance comparisons made; internal performance data rarely used to improve program and organization; poor or no feedback planning in place		Some efforts made to benchmark activities and outcomes against outside world; internal performance data used occasionally to improve organization; very basic feedback planning in place, only a few staff make use of it		Effective internal and external benchmarking occurs but driven largely by top management and/or confined to selected areas; learning distributed throughout organization, and often used to make adjustments and improvements; feedback planning is in place and often used by staff		Comprehensive internal and external benchmarking part of the culture and used by staff in target-setting and daily operations; high awareness of how all activities rate against internal and external best-in-class benchmarks; systematic practice of making adjustments and improvements on basis of benchmarking; feedback planning is an integral part of the organization's steering function and effectively used by the majority of staff	
3.3	**Risk management**	There is no basic risk management strategy in place		Some basic risk management is applied, critical risks are not fully identified, mostly technical risks are attended to		A risk management strategy is in place, critical risks are identified, both technical and non-technical, necessary mitigation action is taken by a few staff		A well developed risk management strategy is in place, critical risks are identified, both technical and non-technical, necessary mitigation action is taken, risk management is an integral part of the organization's steering function	

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3.4	Resources **planning/budgeting/ controlling** *--natural, human, financial, info, time--*	No formal systems to capture and document internal knowledge; ad-hoc HR planning and budgeting; basic financial planning and budgeting techniques; basic cash-flow controlling; income deposited and acknowledged, bills paid, supporting documentation collected/retained; time is not seen as a resource; natural resource budgeting is hardly known; LCA is largely unknown or not practiced		KM-Systems exist in a few areas but either not user-friendly or not comprehensive enough to have an impact, systems known by only a few people, or only occasionally used; HR planning and budgeting generally applied; Financial activities transparent, clearly and consistently recorded and documented, include appropriate checks and balances, and tracked to approved budget; time is understood as a resource and deadlines are generally kept; natural resource budgeting is occasionally applied; LCA is occasionally applied		Well-designed, user-friendly KM-systems in some areas; not fully comprehensive; systems are known by many people within the organization and often used; HR planning is an integral part of the organization's resource planning; Formal internal controls governing all financial operations, fully tracked, supported and reported, annually audited fund flows well managed, attention is paid to cash flow management; time is understood as a resource and deadlines are mostly kept; natural resource budgeting is mostly applied and connected to resource planning in general; LCA is generally applied		Well-designed, user-friendly, comprehensive systems to capture, document, and disseminate knowledge internally in all relevant areas; all staff is aware of systems, knowledgeable in their use, and make frequent use of them; HR planning is fully integrated in the organization's resource planning; robust systems and controls in place governing all financial operations and their integration with budgeting, decision making, and organizational objectives/strategic goals; cash flow actively managed; deadlines are always kept; natural resource budgeting is always applied and connected to resource planning; LCA is an integral element of resource planning	

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3.5	**Operational planning** *--who-does-what-when-how and follow-up--*	Organization runs operations purely on day-to-day basis with no short- or longer-term planning activities; no experience in operational planning; poor internal follow-up; poor performance management in place		Some ability and tendency to develop high-level operational plan either internally or via external assistance; operational plan loosely or not linked to strategic planning activities and used roughly to guide operations; some internal follow-up and performance management in place		Ability and tendency to develop and refine concrete, realistic operational plan; some internal expertise in operational planning or access to relevant external assistance; operational planning carried out on a near regular basis; operational plan linked to strategic planning activities and used to guide operations; generally followed-up and connected to performance management		Organization develops and refines concrete, realistic, and detailed operational plan; has critical mass of internal expertise in operational planning, or efficiently uses external, sustainable, highly qualified resources; operational planning exercise carried out regularly; operational plan tightly linked to strategic planning activities and systematically used to direct operations; OP is always followed up and is fully integrated in performance management	
3.6	**Human resources planning** *--integration of capacity, responsibility, accountability--*	Organization uncovers and/or addresses HR needs only when too large to ignore; lack of HR planning activities and expertise (either internal or accessible external); no experience in HR planning; responsibility/ accountability pathways not determined; HR capacity largely unknown for meeting the purpose of the organization		Some ability and tendency to develop high-level HR plan either internally or via external assistance; HR plan loosely or not linked to strategic planning activities and roughly guides HR activities; responsibility/ accountability pathways generally determined; HR capacity for meeting the purpose of the organization known to some staff		Ability and tendency to develop and refine concrete, realistic HR plan; some internal expertise in HR planning or access to relevant external assistance; HR planning carried out on near-regular basis; HR plan linked to strategic planning activities and used to guide HR activities; responsibility/ accountability pathways mostly determined; HR capacity known to majority of staff; HR planning is focused on meeting the purpose of the organization		Organization is able to develop and refine concrete, realistic, and detailed HR plan; has critical mass of internal expertise in HR planning (via trained, dedicated HR manager), or efficiently uses external, sustainable, highly qualified resources; HR planning exercise carried out regularly; HR plan tightly linked to strategic planning activities and systematically used to direct HR activities; responsibility/ accountability pathways mostly determined; HR	

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								capacity fully known to all staff; HR planning is always focused on meeting the purpose of the organization	
3.7	**Fund-raising** -- *national/international donors, Government*--	Generally weak fund-raising skills and lack of expertise (either internal or access to external expertise)		Main fundraising needs covered by some combination of internal skills and expertise, and access to some external fund-raising expertise		Regular fundraising needs adequately covered by well developed internal fund-raising skills, occasional access to some external fundraising expertise		Highly developed internal fundraising skills and expertise in all funding source types to cover all regular needs; access to external expertise for additional extraordinary needs	
3.8	**Revenue generation** and **effective debt collection** --*through own production*--	No internal revenue generation activities; concepts such as cause related marketing, fee-for-services etc. are neither explored nor pursued; effective debt collection is not in place		Some internal revenue generation activities, however financial net contribution is marginal; revenue-generation activities distract from programmatic work and often tie up senior management team; occasional effective debt collection		Some proven internal revenue generation activities and skills; these activities provide substantial (additional) funds for program delivery, but partially distract from programmatic work and require significant senior management attention; debt collection is generally effective		Significant internal revenue generation; experienced and skilled in areas such as cause related marketing, fee-for-services etc.; revenue generating activities fully support purpose of the organization, but don't distract from focus on creating other (e.g. social) impact; debt collection is mostly effective	
3.9	Partnership and **alliances** development and nurturing	Limited use of partnerships and alliances with other public sector, non-profit, or for profit entities		Early stages of building relationships and collaborating with other for profit, non-profit, or other public sector entities		Effectively built and leveraged some key relationships with few types of relevant parties (for profit, public, and non-profit sector entities); some relations may be precarious or not fully "win-win"		Built, leveraged, and maintained strong, high-impact, relationships with variety of relevant parties (local, state entities as well as for-profit, non-profit, and community agencies); relationships deeply anchored in stable, long-term, mutually beneficial	

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								collaboration	
3.10	Local **community presence** and **engagement**	Organization's presence either not recognized or generally not regarded as positive; few members of local community engage (e.g., BMC, WPC, NGO/NPO staff)		Organization's presence somewhat recognized, and generally regarded as positive within the community; some members of larger community constructively engaged with organization		Organization reasonably well known within community, and perceived as open and responsive to community needs; members of larger community are constructively involved in organization		Organization widely known within larger community, and perceived as actively engaged with and extremely responsive to it; many members of the larger community actively and constructively involved in organization	
3.11	**Public relations** and **marketing**	Organization makes no or limited use of PR/marketing; general lack of PR/marketing skills and expertise (either internal or accessible external expertise)		Organization takes opportunities to engage in PR/marketing as they arise; some PR/marketing skills and experience within staff or via external assistance		Organization considers PR/ marketing to be useful, and actively seeks opportunities to engage in these activities; critical mass of internal expertise and experience in PR/marketing or access to relevant external assistance		Organization fully aware of power of PR/marketing activities, and continually and actively engages in them; broad pool of PR/marketing expertise and experience within organization or efficient use made of external, sustainable, highly qualified resources	
3.12	**Influencing of policy-making**	Organization does not have ability or is unaware of possibilities for influencing policy-making; never called in on substantive policy discussions		Organization is aware of its possibilities in influencing policy-making; some readiness and skill to participate in policy discussion, but rarely invited to substantive policy discussions		Organization is fully aware of its possibilities in influencing policy-making and is one of several organizations active in policy-discussions on national and regional level		Organization pro-actively and reactively influences policy making, in a highly effective manner, on national and regional levels; always ready for and often called on to participate in substantive policy discussion and at times initiates discussions	

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3.13	Management of **legal** and **liability matters**	Organization does not anticipate legal issues, but finds help and addresses issues individually when they arise; property insurance includes liability component		Legal support resources identified, readily available, and employed on "as needed" basis; major liability exposures managed and insured (including property liability and workers compensation)		Legal support regularly available and consulted in planning; routine legal risk management and occasional review of insurance		Well-developed, effective, and efficient internal legal infrastructure for day-to-day legal work; additional access to general and specialized external expertise to cover peaks and extraordinary cases; continuous legal risk management and regular adjustment of insurance	
3.14	**Organizational processes use and development** (in general)	Limited set of processes (e.g., decision making, planning, reviews) for ensuring effective functioning of the organization; use of processes is variable, or processes are seen as ad-hoc requirements ("paperwork exercises"); no monitoring or assessment of processes		Basic set of processes in core areas for ensuring efficient functioning of organization; processes known, used, and truly accepted by only portion of staff; limited monitoring and assessment of processes, with few improvements made in consequence		Solid, well designed set of processes in place in core areas to ensure smooth, effective functioning of organization; processes known and accepted by many, often used and contribute to increased impact; occasional monitoring and assessment of processes, with some improvements made		Robust, lean, and well-designed set of processes (e.g., decision making, planning, reviews) in place in all areas to ensure effective and efficient functioning of organization; processes are widely known, used and accepted, and are key to ensuring full impact of organization; continual monitoring and assessment of processes, and systematic improvement made	

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Regulatory management and **coordination and monitoring** (*feedback and anchoring/protecting the organization's values*)									
4.1	**Planning systems** -- *the how-to of success*--	Planning happens on an ad hoc basis only and is not supported by systematically collected data; an organizational knowledge repository is fragmented and scattered or non existent		Planning done regularly and uses some systematically collected data; data and systems are scattered and not anchored in the organization's knowledge repository		Regular planning complemented by ad hoc planning when needed; some data collected and used systematically to support planning effort and improve it; data and systems are partly anchored in the organization's knowledge repository		Regular planning complemented by ad hoc planning when needed; clear, formal systems for data collection in all relevant areas; data used systematically to support planning effort and improve it; data and systems are fully anchored in the organization's knowledge repository	
4.2	**Monitoring and evaluation systems** -- *unfiltered information and feedback for the operative management*--	Objective specific data sources and indicators(input, process, output, outcome, impact) are unspecific or unknown or defined on an ad hoc basis, they are not anchored in the organization's central knowledge repository; M&E is done occasionally to make key staff "feel good"		Objective specific data sources and indicators(input, process, output, outcome, impact) are partly known by a few staff but not fully available to the key staff, there is little continuity in programme monitoring, only fragments of M&E process are referred to in the organization's knowledge repository; M&E outputs are partly filtered to not overstress key staff		Objective specific data sources and indicators(input, process, output, outcome, impact) are known to the key staff, programme monitoring is generally done and process of M&E is well described in the organization's knowledge repository and often referred to; M&E is generally used to support performance management		Objective specific data sources and indicators(input, process, output, outcome, impact) are known to the key staff and accessible to all staff, programme monitoring is widely done and process of M&E is well described and anchored in the organization's knowledge repository and often referred to; M&E is an integral part of performance management	

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4.3	**Quality assurance system**	organization's commitment to delivering a quality product/service is sporadic or non existent; quality control tasks are hardly known; documenting quality through project closeout is hardly done or not done at all;		The organization's commitment to delivering a quality product/service is occasionally evident; quality is occasionally monitored and controlled throughout the delivery process; staff occasionally documents the deliverables as they are met; the document templates are scattered and seldom referred to; input inspection, process checks, output inspection are occasionally carried out; quality control tasks and scheduling are not anchored in the organization's knowledge repository and thus not available to all staff		The organization's commitment to delivering a objective oriented quality product/service is evident and generally ensures that the level of quality is monitored and controlled throughout the delivery process; staff documents the deliverables as they are met and supports efficient project closeout; the document templates are available to all staff and often referred to; input inspection, process checks, output inspection are generally carried out; some quality control tasks and scheduling are anchored in the organization's knowledge repository; staff ensures that most contractual quality standards and inspections are met		The organization's commitment to delivering a objective relevant quality product/service is evident and ensures that the level of quality is monitored and controlled throughout the delivery process; staff documents the deliverables as they are met and supports efficient project closeout; the document templates are available to all staff and constantly referred to; templates are reviewed regularly and adapted to meet objective relevance; input inspection, process checks, output inspection are regularly carried out; all quality control tasks and scheduling are anchored in the organization's knowledge repository; staff ensures that all contractual quality standards and inspections are met; documenting quality through project closeout is an integral part of the organization's performance management	

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4.4	**Decision taking framework --***incl. responsibility/ accountability*--	Decisions made largely on an ad hoc basis by one person and/or whomever is accessible; highly informal; no clear responsibility/accountability pathways; responsibilities are hardly ever explicit and often "pushed" between staff		Appropriate decision makers known; decision making process fairly well established and process is generally followed, but often breaks down and becomes informal; responsibility/ accountability pathways are generally known and explicit and seldom "pushed" between staff		Clear, largely formal lines/systems for decision taking but decisions are not always appropriately implemented or followed; dissemination of decisions generally good but could be improved; responsibility/ accountability pathways are well known and explicit		Clear, formal lines/systems for decision taking that involve as broad participation as practical and appropriate along with dissemination/ interpretation of decision; responsibility/ accountability pathways are well known and explicit and mostly followed	
4.5	**Knowledge management** and knowledge **repository**	No formal systems to capture and document internal knowledge; no or highly scattered knowledge repository in place		Systems exist in a few areas but either not user-friendly or not comprehensive enough to have an impact; systems known by only a few people, or only occasionally used; a scattered knowledge repository exists		Well-designed, user-friendly systems in some areas; not fully comprehensive; systems are known by many people within the organization and often used; the systems are accessible in the organization's knowledge repository		Well-designed, user-friendly, comprehensive systems to capture, document, and disseminate knowledge internally in all relevant areas; all staff is aware of these systems, knowledgeable in their use, and make frequent use of them; the systems are accessible to all staff through the organization's knowledge repository; this repository is an integral part of the organization and is maintained regularly	

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4.6	**Regulatory framework** *--policies, codes, standards, rules, regulations, practices, indicators, manuals etc.*--	Policies, codes, standards, rules regulations, practices, manuals etc. loosely exist or are defined on an ad hoc basis; they are volatile assets		Policies, codes, standards, rules regulations, practices, manuals etc. exist but are used only by a few staff, they are not centrally accessible		Policies, codes, standards, rules regulations, practices, manuals etc. exist and are generally used by staff; only a few staff update and maintain these assets; the regulatory framework is centrally accessible		Objective oriented policies, codes, standards, rules regulations, practices, manuals etc. are an integral part of the organization's knowledge repository, centrally accessible and are widely used by staff; staff jointly update and maintain these assets and train new staff in their use; the regulatory framework enables staff to do their jobs in a synergistic way; the regulatory centre is connected through different recursion levels of organization	
4.7	**Financial operations management**	Income deposited and acknowledged, bills paid, supporting documentation collected/retained; a financial operations manual may exist but is not in use		Financial activities transparent, clearly and consistently recorded and documented, include appropriate checks and balances, and tracked to approved budget; a financial operations manual exists but is not widely in use		Formal internal controls governing all financial operations; fully tracked, supported and reported, annually audited fund flows well managed; attention is paid to cash flow management; a financial operations manual exists and is widely in use		Robust systems and controls in place governing all financial operations and their integration with budgeting, decision making, and organizational objectives/strategic goals; cash flow actively managed; a financial operations manual exists and is strictly followed	

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4.8	**Human resources management** -- *management recruiting, development and retention--*	Standard career paths in place without considering managerial development; no or very limited staff training, coaching, and feedback; no regular performance appraisals; no systems/processes to identify new managerial talent; HR management is generally intransparent; staff retention is generally low; the "best" are leaving too early		Some tailoring of development plans for brightest stars; personal annual reviews incorporate development plan for each manager and for some staff; limited willingness to ensure high-quality job occupancy; some formal recruiting networks are in place; some staff retention strategies in place; occasional querying when good people leave; HR management is sometimes transparent, a HR policy exists		Recruitment, development, and retention of key managers and staff is priority and high on CEO/executive director's agenda; some tailoring in development plans for brightest stars; relevant training, job rotation, coaching/feedback, and consistent performance appraisal are institutionalised; genuine concern for high-quality job occupancy; well connected to potential sources of new talent; HR management is generally transparent, a comprehensive HR policy exists		Well-planned and managed process to recruit, develop, and retain key managers and staff; CEO/executive director takes active interest in managerial development; individually tailored development plans for brightest stars; relevant and regular internal and external training, job rotation, coaching/feedback, and consistent performance appraisal are institutionalised; proven willingness to ensure high quality job occupancy; well connected to potential sources of new talent; HR management is fully transparent and based on a set of interconnected HR policies	

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Production and existence (*what has to be in place to meet the purpose of the organization: human resources and infrastructure*)									
5.1	**Staffing levels** and salary structure --*incl. Incentives*--	Many positions within and peripheral to organization (e.g., staff, board, senior management) are unfilled, inadequately filled, or experience high turnover and/or poor attendance; no transparent salary structure; and arbitrary incentives scheme may be in place		Most critical positions within and peripheral to organization (e.g., staff, board, senior management) are staffed (no vacancies), and/or experience limited turnover or attendance problems; salary structure is in place but not always transparently followed; an incentive scheme is in place and occasionally applied		Positions within and peripheral to organization (e.g., staff, board, senior management) are almost all staffed (no vacancies); few turnover or attendance problems; salary structure is in place and mostly transparently followed; an incentive scheme is regularly followed		Positions within and peripheral to organization (e.g., staff, board, senior management) are all fully staffed (no vacancies); no turnover or attendance problems; salary structure is in place and always transparently followed; a comprehensive and practical incentive scheme is in place and connected to performance management	
5.2.1	CEO/Manager passion and vision	Low energy level and commitment; little continued attention to organizational vision		Good energy level; visible commitment to organization and its vision		Inspiringly energetic; shows constant, visible commitment to organization and its vision; excites others around vision		Contagiously energetic and highly committed; lives the organization's vision; compellingly articulates path to achieving vision that enables others to see where they are going	

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5.2.2	CEO/Manager impact orientation/**result focus**	Focused purely on social/political impact; financials and result focus viewed as an unfortunate constraint; fails to deliver impact consistently; delays decision taking; reluctant to change status quo; mandates rather than leads change		Focused on social/political impact with some appreciation for cost-effectiveness and result focus when possible; constantly delivers satisfactory impact driven results; promptly addresses issues; understands implications and impact of change on people		Sees result focus and financial soundness as essential part of organizational impact, together with social/political impact; focuses on ways to better use existing resources to deliver highest impact possible; has a sense of urgency in addressing issues and rapidly moves from decision to action; develops and implements actions to overcome resistance to change		Guides organization to succeed simultaneously in dual mission of social/political impact and optimal result focus and financial efficiency; constantly seeks and finds new opportunities to improve impact; anticipates possible problems; has sense of urgency about upcoming challenges; communicates compelling need for change that creates drive; aligns entire organization to support change effort	
5.2.3	CEO/Manager people and organizational **leadership/ effectiveness**	Has difficulty building trust and rapport with others; micro-manages projects; shares little of own experiences as developmental/coaching tool; performance/productivity management unknown		Is responsive to opportunities from others to work together; expresses confidence in others' ability to be successful; shares own experience and expertise; performance/productivity management known		Actively and easily builds rapport and trust with others; effectively encourages others to succeed; gives others freedom to work their own way; gives people freedom to try out ideas and grow; performance/ productivity management known and actively applied		Constantly maintaining trust and establishing successful, win-win relationships with others, both within and outside the organization; delivers consistent, positive and reinforcing messages to motivate people; able to let others make decisions and take charge; finds or creates special opportunities to promote people's development; performance and productivity management fully applied	

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5.2.4	CEO/Manager analytical and **strategic thinking**	Is uncomfortable with complexity and uncertainty and does whatever possible to reduce or avoid it; relies mainly on intuition rather than strategic analysis		Is able to cope with some complexity and uncertainty; able to analyse strategies but does not yet generate strategies		Quickly assimilates complex information and able to distil it to core issues; welcomes uncertainty and is comfortable dealing with the unknown; develops robust strategies		Has keen and exceptional ability to synthesize complexity; makes informed decisions in uncertain situations; develops strategic alternatives and identifies associated rewards, risks, and actions to lower risks	
5.2.5	CEO/Manager **financial judgment**	Has difficulty considering financial implications of decisions		Draws appropriate conclusions after studying all the facts; understands basic financial concepts and drives for financial impact of major decisions		Has sound financial judgment; consistently considers financial implications of decisions		Has exceptional financial judgment; has keen, almost intuitive sense for financial implications of decisions	
5.2.6	CEO/Manager **experience** and **standing**	Limited experience in profit/non-profit management and few relevant capabilities from other field(s); limited recognition in the business community		Some relevant experience in profit/non-profit management; some relevant capabilities from other field(s); some local recognition in the business community		Significant experience in profit/non-profit management; many relevant capabilities from other field(s); some national recognition as a leader/shaper in particular sector		Highly experienced in non-profit management; many distinctive capabilities from other field(s) (e.g., for-profit, academia); possesses a comprehensive and deep understanding of the sector; recognized nationally as a leader/shaper in particular sector	

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5.3	**Management team and staff** – dependence on CEO	Very strong dependence on CEO/executive director; organization would cease to exist without his/her presence		High dependence on CEO/ executive director; organization would continue to exist without his/her presence, but likely in a very different form		Limited dependence on CEO/executive director; organization would continue in similar way without his/her presence but operations would likely suffer significantly during transition period; only a few members of management team could potentially take on CEO/ED role		Reliance but not dependence on CEO/ executive director; smooth transition to new leader could be expected; operations likely to continue without major problems; senior management team can fill in during transition time; several members of management team could potentially take on CEO/ED role	
5.4	**Senior management team**	Team has no or very limited experience in profit/non-profit management; team represents only a few areas (non-profit, academia, corporate, government, etc.) and has no or very limited capabilities and track record from other fields; limited track record of learning and personal development; sometimes energetic and committed		Team has some experience in profit/non-profit management; team represents some areas (non-profit, academia, corporate, government, etc.); some relevant capabilities and track record from other fields; good track record of learning and personal development; energetic and committed		Team has significant experience in profit/non-profit management; team represents most areas (non-profit, academia, corporate, government, etc.); significant relevant capabilities and track record from other fields; good track record of learning and personal development; highly energetic and committed		Team highly experienced in profit/non-profit management; drawn from full spectrum of non-profit, academia, corporate, government, etc.; outstanding capabilities and track record from other fields; outstanding track record of learning and personal development; contagiously energetic and committed	

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5.5	**Staff** *(refer to "Staff: programme focused individual assessment")*	Staff drawn from a narrow range of backgrounds and experiences; interest and abilities limited to present job; little ability to solve problems as they arise		Some variety of staff backgrounds and experiences; good capabilities, including some ability to solve problems as they arise; many interested in work beyond their current jobs and in the success of the organization's mission		Staff drawn from diverse backgrounds and experiences, and bring a broad range of skills; most are highly capable and committed to mission and strategy; eager to learn and develop, and take increased responsibility		Staff drawn from extraordinarily diverse backgrounds and experiences, and bring broad range of skills; most staff are highly capable in multiple roles (redundancy/reliability), committed both to mission/strategy and continuous learning; most are eager and able to take on special projects and collaborate across divisional lines; staff are frequent source of ideas and momentum for improvement and innovation	
5.6	**Physical infrastructure** like buildings and office space	Inadequate physical infrastructure, resulting in loss of effectiveness and efficiency (e.g., unfavourable locations for clients and employees, insufficient workspace for individuals, no space for teamwork)		Physical infrastructure can be made to work well enough to suit organization's most important and immediate needs; a number of improvements could greatly help increase effectiveness and efficiency (e.g., no good office space for teamwork, no possibility of holding confidential discussions, employees share desks)		Fully adequate physical infrastructure for the current needs of the organization; infrastructure does not impede effectiveness and efficiency (e.g., favourable locations for clients and employees, sufficient individual and team office space, possibility for confidential discussions)		Physical infrastructure well-tailored to organization's current and anticipated future needs; well-designed and thought out to enhance organization's efficiency and effectiveness (e.g., especially favourable locations for clients and employees, plentiful team office space encourages teamwork, layout increases critical interactions among staff)	

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5.7	**ICT infrastructure**	Status, lack of sophistication, or limited number of telephone and fax facilities are an impediment to day-to-day effectiveness and efficiency; Limited/no use of computers or other technology in day-to-day activity; and/or little or no usage by staff of existing IT infrastructure; organization has no individual Web site		Adequate basic telephone and fax facilities accessible to most staff; may be moderately reliable or user-friendly, or may lack certain features that would increase effectiveness and efficiency (e.g., individual voice-mail), or may not be easily accessible to some staff (e.g. front-line deliverers); well-equipped IT infrastructure at central level; incomplete/limited IT infrastructure at locations aside from central offices; equipment sharing may be common; satisfactory use of IT infrastructure by staff; Basic Web site containing general information, but little information on current developments; site maintenance is a burden and performed only occasionally		Solid basic telephone and fax facilities accessible to entire staff (in office and at front line); cater to day-to-day communication needs with essentially no problems; includes additional features contributing to increased effectiveness and efficiency (e.g., individual, remotely accessible voice-mail); solid IT hardware and software infrastructure accessible by central and local staff; no or limited sharing of equipment is necessary; limited accessibility for frontline program deliverers; high usage level of IT infrastructure by staff; contributes to increased efficiency; stable IT networks; Comprehensive Web site containing basic information on organization as well as up-to-date latest developments; most information is organization-specific; easy to maintain and regularly maintained		Sophisticated and reliable telephone and fax facilities accessible by all staff (in office and at frontline), includes around-the-clock, individual voice mail; supplemented by additional facilities (e.g., pagers, cell phones) for selected staff; effective and essential in increasing staff effectiveness and efficiency; state-of-the-art, fully networked computing hardware with comprehensive range of up-to-date software applications; all staff has individual computer access and e-mail; accessible by frontline program deliverers as well as entire staff; used regularly by staff; effective and essential in increasing staff efficiency; sophisticated, comprehensive and interactive Web site, regularly maintained and kept up to date on latest area and organization developments; praised for its user-friendliness and depth of information; includes links to related organizations and useful resources on topic addressed by organization	

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5.8	**Transport, tools, machinery and equipment**	Transport facilities are insufficient and/or poorly maintained; machinery/ equipment is insufficient and/or poorly maintained; hand tools are insufficient and/or poorly maintained		Transport facilities are insufficient but generally maintained; machinery/ equipment is insufficient but generally maintained; hand tools are insufficient but generally maintained		Transport facilities are sufficient and generally maintained; machinery/ equipment is sufficient and generally maintained; hand tools are sufficient and generally maintained		Transport facilities, machinery and equipment and hand tools are fully adequate and well maintained to meet the purpose and objectives of the organization	

Individual Level: Managerial Capacity Threshold Assessment (*to contribute to the organization's success*)

What needs assessing

Core-functions	…based on S.Beer viable system model, F.Malik effective top management, assessment partly following the McKinsey capacity assessment grid and the eco-systemix Namibia "enabling environment programme"
Function 1	**Normative management** *(i.e. my contribution to supporting the aspirations/structure/culture of my organization)*
Function 2	**Strategic management** *(i.e. my contribution to identifying the best strategy to advance my organization)*
Function 3	**Steering and operative management** *(i.e. my management contribution to effectively meeting the purpose)*
Function 4	**Coordinating and monitoring** *(my contribution to anchoring and protecting the organization's values)*
Function 5	**Producing the purpose** *(what has to be in place to meet the purpose of my organization: my contribution as a human resource)*

REM: during self-assessment, please put in the date of assessment to keep track of capacity maintenance and building results. Where are you now? Where do you want to be in 1 / 2 / 5 years? Were you disabled in the past through either the organization or yourself or both?

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Normative management (*my contribution to supporting the aspirations/structure/culture of my organization*)									
1.1	**Mission** (purpose of the organization) *--why do we exist?--*	Do not know what this is; have once heard about it		Understand the meaning; occasionally recall the statement; occasionally use this to guide me on the job		Use it regularly to guide my job activities; normally contribute to meeting the purpose		I know why our organization exists, which services I have to contribute; actively contribute my part to meet the purpose of the organization	

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1.2	**Vision** – clarity and boldness --*where do I/we want to be in 5 or 20 years?*--	Have no idea what is planned for the next years		Occasionally my boss mentions this; have a rough idea what is expected to happen in the coming years		Regularly reminded about how we want to develop; use this to guide my personal development		Is guiding me every day in my development; am actively engaged supporting the aspirations; know where I want to be in 5 years	
1.3	Overarching **objectives** and goals -- *what must I do to meet our purpose?*--	Do not know what this is; they tell me what to do; I am not involved in planning and decision making		Occasionally I am asked to brief on my job planning; have some minor ideas on what must be done		Regularly review what I have to work in order to contribute to the organizational success; have a record on my personal job planning		Am proactive in my job planning; know what needs doing to stay within the budget; actively contribute my part to the organizational objectives setting and performance; this is evident from my planning and management portfolio	
1.4	G**overnance** --*how do I manage my job?*--	Managed by others; they tell me what to do; do not have responsibilities; was never held accountable for my doing		Occasionally I am asked to manage my personal job; my management training and experience is limited; occasionally I have some minor responsibilities		Regularly manage my personal job; am responsible for what I am doing; am held accountable; receive some management training on the job; occasionally share my management skills with my co-workers; normally I deliver to expectations		Am fully empowered to manage my personal job; take full responsibility for what I am doing; know the accountability pathways in my organization and what information needs to flow back; regularly share my management skills with my co-workers, am fully engaged in broadening my management skills;	

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								always deliver prior agreed results	
1.5	Objectives/ **performance targets** *--**potentiality**, what I ought to be getting right--*	Do not know what this is; my boss tells me what to do and by when it must be complete; have no personal targets		Some idea about my job targets; occasionally am reminded about agreed objectives and performance targets; need high input levels to do things right		Regularly set my personal objectives and performance targets in agreement with the rest of my division; objectives are outcomes focused and quantified; personal targets normally derived from organizational targets		Have a limited set of quantified; genuinely demanding objectives and performance targets in my area of work; objectives are tightly linked to aspirations and strategy and are outcome-focused; have annual milestones; actively use my personal and the organization's potentiality for personal performance management	
1.6	**Organizational design** *--roles and recursion levels of organisation--*	Do not know my role; my role is often changing; have no clear set of responsibilities		Know my role; have a few (changing) responsibilities		My role is clearly defined; have some responsibilities which are occasionally connected to organizational reality		My role is clearly defined; am enabled to carry my set or responsibilities; am empowered for autonomous decision taking; know to which recursion level of organization I belong to; have full access to the organization's regulatory centre	

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1.7	Performance as **shared value** --*the normative ground rules*--	Do not know what performance is with regards to my job; do not know the ground rules of the organization		Occasionally understand my performance contribution; know of some performance related ground rules in my organization		Generally understand my performance contribution; my performance relates to a social, financial and organizational impact; performance related ground rules are in place and I refer to them		Fully understand my performance contribution; my performance fully relates to an objective and purpose relevant social, financial and organizational impact; performance related ground rule guide me constantly	

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Strategic management (*my contribution to identifying the best strategy to advance my organization*)									
2.1	Overall strategy	Do not have a personal strategy		Do have a vague strategy but do not know how to connect it to the organization's mission and overarching goals; my strategy has limited influence over my day-to-day behaviour		Have a fairly clear strategy connected to the organization's mission and objectives; my strategy generally drives my day-to-day behaviour		Have a clear, coherent medium- to long-term strategy that is both actionable and linked to the organization's mission, vision, and overarching objectives; my strategy consistently helps drive my day-to-day behaviour	
2.2	**Strategic planning** --***capability***, *what I could be getting right with existing resources and capacity*--	Have limited ability and/or tendency to develop strategic plan, do not use a strategic plan; am not informed about my personal capability (strengths)		Have some ability and tendency to develop a strategic plan; do not know what "constraint focused management" is; strategic plan roughly directs my management decisions; personal capability is partly known		Have ability and tendency to develop and refine a concrete, realistic strategic plan; do carry out strategic planning on a near-regular basis; occasionally apply "constraint focused management"; strategic plan used to guide my management decisions; my personal capability is known		Have full ability to develop and refine a concrete, realistic and detailed strategic plan; do regularly carry out strategic maintenance and planning exercise; base my strategic plan on "constraint focused management" and succeed in identifying, observing and servicing institutional and client related bottlenecks; strategic plan used extensively to guide my management decisions; my personal capability is	

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								well known to me and communicated to decision makers and to most staff; use my capability actively to measure and control personal and organizational success	
2.3	**Work place relevance and integration** *--what can I contribute to become more effective and efficient?--*	Core duties for my work place are vaguely defined and lack clear alignment with mission and goals; duties are scattered and largely unrelated to each other		Most duties for my work place are well defined and can be solidly linked with mission and goals; duties may be somewhat scattered and not fully integrated into clear strategy		Core duties for my work place are well defined and aligned with mission and goals; duties fit together well as part of a clear strategy		All my duties are well defined and fully aligned with mission and goals; duties are clearly linked to one another and to my overall strategy; am enabled to capture synergies across programmes of the organization	
2.4	**Personal growth** on work place *--understanding the limits of growth--*	Have limited ability to scale up existing profile; have limited ability to understand the limits of my personal growth		Limited assessment of possibility of scaling up existing programmes and, even when judged appropriate, little or limited action taken; some ability either to scale up or replicate existing programmes; some ability to understand the limits of personal growth		Occasional assessment of possibility of scaling up existing programmes and when judged appropriate, action occasionally taken; able to scale up or replicate existing programmes; ability to understand the limits of personal growth		Frequent assessment of possibility of scaling up existing programmes and when judged appropriate, action always taken; efficiently and effectively able to grow existing programmes to meet needs of potential service recipients in local area or other geographies; well established ability to	

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								understand the limits of personal growth	
2.5	**Research potential --** *adaptation of services/ products/processes--*	Am uncomfortable with complexity and uncertainty and do whatever possible to reduce or avoid it; rely mainly on intuition rather than strategic analysis; prefer to leave things around me unchanged		Am able to cope with some complexity and uncertainty; able to analyse strategies but do not yet generate new strategies; occasionally adapt things around me		Quickly assimilate complex information and am able to distil it to core issues; welcome uncertainty; have ability to develop robust strategies; regularly adapt things around me		Have keen and exceptional ability to synthesize complexity; make informed decisions in uncertain situations; develop strategic alternatives; always adapt things around me to meet the organization's objectives	
2.6	**Monitoring of landscape** *--what happens around me? how must I respond?--*	Have minimal knowledge and understanding of other players and alternative models in my programme area		Have basic knowledge of players and alternative models in my programme area but limited ability to adapt my behaviour		Have solid knowledge of players and alternative models in my program area; have good ability to adapt my behaviour but only occasionally adapt it		Have extensive knowledge of players and alternative models in my program area; have refined ability and systematic tendency to adapt my behaviour	

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Steering and operative management (*my management contribution to effectively meeting the purpose*)									
3.1	**Performance measurement** -- *monitoring and evaluation of **actuality**, what I am getting right*--	Have very limited capability for measuring and tracking of personal performance; hardly know what I'm getting right; am trying hard		Partially measure and track my progress; regularly collect solid data on program activities and outputs but lack data-driven, externally validated resource impact measurement; occasionally understand that I'm getting something right		Measure my performance and track my progress regularly; consider social, financial, environmental and organizational impact of my activities; have a multiplicity of performance indicators; generally know what I'm getting right; partly use such information for my personal productivity and performance management		Have a well-developed comprehensive, integrated system (e.g., balanced scorecard) in use for measuring my performance and progress on continual basis, including social, financial, environmental and organizational impact of my activities; have a small number of clear, measurable, and meaningful and well interconnected key performance indicators; always know what I'm getting right; constantly use such information for my personal productivity and performance management	

FCT /No#	Function/element	1: Clear **need for increased capacity**	**Date**	2: **Basic level** of capacity in place	**Date**	3: **Moderate level** of capacity in place	**Date**	4: **High level** of capacity in place	**Date**
3.2	Performance **analysis** and **improvement** *--feedback planning--*	Do not make external performance comparisons; do not have internal performance data to improve my performance; do not know how to initiate feedback planning		Occasionally I make some efforts to benchmark my activities and outcomes against outside world; occasionally use internal performance data to improve my personal performance; basic feedback planning in place		Regularly I engage in internal and external benchmarking and often use such information to adjust and improve my performance; feedback planning is in place and often used		Have a comprehensive internal and external benchmarking system in place and use this for target-setting and daily operations; am fully aware of how my activities rate against internal and external best-in-class benchmarks; have a systematic practice of making adjustments and improvements on basis of benchmarking; feedback planning is an integral part of my self-management and organizational support strategy	
3.3	**Risk management** *--protecting my organization--*	Do not have a risk management strategy		Apply some basic risk management; critical risks are not fully identified, mostly technical risks are attended to		Have a risk management strategy in place and normally identify critical risks, both technical and non-technical; normally take the necessary mitigation action		Have a well developed risk management strategy in place, critical risks are always identified and communicated and necessary mitigation action is taken; risk management is an integral part of my self-management and organizational support strategy	

FCT /No#	Function/element	1: Clear **need for increased capacity**	**Date**	2: **Basic level** of capacity in place	**Date**	3: **Moderate level** of capacity in place	**Date**	4: **High level** of capacity in place	**Date**
3.4	Resources **planning/budgeting/ controlling** *--how do I contribute to my organization's resources pool?--*	Do not have a formal systems to capture and document work place knowledge; normally do ad-hoc planning and budgeting; do not know how LCA works; have little understanding about resource flow controlling		A KM-Systems exists on my work place in a few areas but either not user-friendly or not comprehensive enough to have an impact; planning and budgeting is generally applied and tracked to approved budget; time is understood as a resource and deadlines are generally kept; LCA is occasionally applied		Have a well-designed, user-friendly KM-systems in some areas; not yet fully comprehensive; my system is compatible with others in my division and many people within the organization use it and contribute to it; planning and budgeting is an integral part of my working strategy and is evident from my planning and management portfolio; time is understood as a resource and deadlines are mostly kept; LCA is generally applied		Have a well-designed, user-friendly, comprehensive systems to capture, document, and disseminate knowledge internally in all relevant areas; all staff is aware of my system, knowledgeable in its use, and make frequent contributions; planning and budgeting is fully integrated in my management portfolio; robust systems and controls are in place governing all financial operations and their integration with budgeting, decision making, and organizational objectives/strategic goals; deadlines are always kept; LCA is an integral part of my self-management and organizational support strategy	

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3.5	Local **community presence** and **engagement**	My presence is either not recognized or generally not regarded as useful; do not know how and why I should engage with the larger community		My presence is somewhat recognized, and generally regarded as positive within the community; some members of larger community constructively engaged with my organization		Am reasonably well known within larger community and perceived as open and responsive to community needs; members of the larger community are constructively involved in my organization		Am widely known within larger community, and perceived as actively engaged with and extremely responsive to it; many members of the larger community actively and constructively involved in my organization	
3.6	**Influencing of policy-making** *--national/regional level--*	Do not have ability or am unaware of possibilities for influencing policy-making; never called in on substantive policy discussions		Am aware of possibilities for influencing policy-making; have some readiness and skill to participate in policy discussion, but rarely invited to substantive policy discussions		Am fully aware of possibilities for influencing policy-making; am regularly contributing to my organization's policy-discussions on national and regional level		Am pro-actively and reactively influencing my organization's policy making drive, in a highly effective manner, on national and regional levels; always ready for and often called on to participate in substantive policy discussion and at times initiate discussions	

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Coordinating and monitoring (*my contribution to anchoring and protecting the organisation's values)*									
4.1	**Planning systems** *--my contribution to anchoring organizational drive--*	Planning happens on an ad hoc basis only and is not supported by systematically collected data; a work place knowledge repository is fragmented and scattered or non existent		Planning done regularly and use some systematically collected data; data and systems are scattered and not anchored in my work place knowledge repository		Regular planning complemented by ad hoc planning when needed; some data collected and used systematically to support planning effort and improve it; data and systems are partly anchored in my work place and the organization's knowledge repository		Regular planning complemented by ad hoc planning when needed; clear, use formal systems for data collection in all relevant areas; data used systematically to support planning effort and improve it; data and systems are fully anchored in my work place and the organization's knowledge repository	
4.2	**Monitoring and evaluation systems** *--unfiltered information and feedback for the organization's operative management--*	Objective specific data sources and indicators(input, process, output, outcome, impact) are unspecific or unknown or defined on an ad hoc basis, they are not anchored in my work place and the organization's knowledge repository; M&E is done occasionally to make my boss "feel good"		Objective specific data sources and indicators(input, process, output, outcome, impact) are partly known but not fully available to my boss or key staff; programme monitoring is done ad hoc, only fragments of M&E process are referred to in my work place and the organization's knowledge repository; M&E outputs are partly filtered to not overstress my boss		Objective specific data sources and indicators(input, process, output, outcome, impact) are known to my boss and key staff, programme monitoring is generally done and process of M&E is well described in my work place and the organization's knowledge repository and often referred to; generally use M&E to support my personal performance management		Objective specific data sources and indicators(input, process, output, outcome, impact) are known and accessible to my boss and key staff; regularly do programme monitoring; the M&E processes I use are well described and anchored in my work place and the organization's knowledge repository and often referred to; M&E is an integral part of my personal	

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								performance management	
4.3	**Quality assurance system** *--my contribution to the organization's quality assurance programme--*	My commitment to delivering a quality product/service is sporadic; quality control tasks are hardly known; I do not document quality through project closeout		My commitment to delivering a quality product/service is occasionally evident; quality is occasionally monitored and controlled throughout the delivery process; occasionally document the deliverables as they are met; the document templates are scattered and seldom referred to; input inspection, process checks, output inspection are occasionally carried out; quality control tasks and scheduling are not anchored in my work place and the organization's knowledge repository		My commitment to delivering an objective oriented quality product/ service is evident; I generally ensure that the level of quality is monitored and controlled throughout the delivery process; I document the deliverables as they are met; the document templates are available to me and other staff and often referred to; input inspection, process checks, output inspection are generally carried out; some quality control tasks and scheduling are anchored in my work place and the organization's knowledge repository; I ensure that most contractual quality standards and inspections are met		My commitment to delivering a objective relevant quality product/service is evident; I fully ensure that the level of quality is monitored and controlled throughout the delivery process; I document the deliverables as they are met; the document templates are available to me and other staff and constantly referred to; templates are reviewed regularly and adapted to meet objective relevance; input inspection, process checks, output inspection are regularly carried out; all quality control tasks and scheduling are anchored in my work place and the organization's knowledge repository; I ensure that all contractual quality standards and inspections are met;	

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								documenting quality through project closeout is an integral part of my personal performance management strategy	
4.4	**Decision taking** **--***my contribution to organizational responsibility/ accountability pathways*--	Mostly make decisions on an ad hoc basis; do not know my responsibility/ accountability well		Have a fairly well established decision making process and process is generally accepted, but often breaks personal and becomes informal; generally know my responsibility/accountability		Have a clear, largely formal system for decision taking but decisions are not always appropriately implemented or followed; dissemination of decisions generally good but could be improved; know my responsibility/accountability well		Have a clear, formal systems for decision taking that involve as broad participation as practical and appropriate along with dissemination/ interpretation of decision; decision taking is always connected to the organizational responsibility/ accountability pathways	

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Producing the purpose (*what has to be in place to meet the purpose of my organization: my contribution as a human resource*)									
5.1	My passion and vision *--what motivates me to come back the next morning--*	Low energy level and commitment; little continued attention to organizational vision		Good energy level; visible commitment to organization and its vision		Inspiringly energetic; show constant, visible commitment to organization and its vision; excite others around vision		Contagiously energetic and highly committed; live the organization's vision; compellingly articulate path to achieving vision; enable others to see where we are going	
5.2	My impact orientation/ **result focus** *--what generally motivates my organization to keep me on the payroll--*	Am more focused on social/political impact; want colleagues to "feel good"; rather mandate than lead change; am reluctant to change status quo;		Am focused on social/political impact with some appreciation for cost-effectiveness and result focus when possible; mostly deliver satisfactory impact driven results; promptly address issues; understand implications and impact of change on people		See result focus and financial soundness as essential part of organizational impact, together with social/political impact; focus on ways to better use existing resources to deliver highest impact possible; have a sense of urgency in addressing issues and rapidly move from decision to action; develop and implement actions to overcome resistance to change		Guide the organization to succeed simultaneously in dual mission of social/political impact and optimal result focus and financial efficiency; constantly seek and find new opportunities to improve impact; anticipate possible problems; have a sense of urgency about upcoming challenges; communicate compelling need for change that creates drive; align entire organization to support change effort	

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5.3	My people and organizational **leadership/ effectiveness** *--what motivates my colleagues to cooperate with me--*	Have difficulty building rapport with others; focus more on details; share little of personal experiences as developmental/coaching tool; result focused performance/productivity management seldom applied or unknown		Am responsive to opportunities from others to work together; express confidence in others' ability to be successful; share personal experience and expertise; performance/productivity management known and occasionally applied		Actively and easily build rapport and trust with others; effectively encourage others to succeed; give others freedom to work their personal way; give people freedom to try out new ideas and grow; performance/productivity management known and actively applied		Constantly maintaining trust and establishing successful, win-win relationships with others, both within and outside the organization; deliver consistent, positive and reinforcing messages to motivate people; enabled to let others make decisions and take charge; find or create special opportunities to promote people's development; performance and productivity management fully applied	
5.4	My analytical and **strategic thinking** *--what motivates my organization to engage with me--*	Am uncomfortable with complexity and uncertainty and do whatever possible to reduce or avoid it; prefer linear relations; rely mainly on intuition rather than strategic analysis		Am able to cope with some complexity and uncertainty; able to analyse strategies but do not yet generate strategies		Quickly assimilate complex information and able to distil it to core issues; welcome uncertainty and am comfortable dealing with the unknown; develop robust strategies		Have a keen and exceptional ability to synthesize complexity; make s informed decisions in uncertain situations; develop strategic alternatives and identify associated rewards, risks, and actions to lower risks	

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5.5	My **experience** and **standing** *--what motivates my organization to offer me a work place or to retain me--*	Limited experience in profit/non-profit management and few relevant capabilities from other field(s); limited recognition in the business community		Some relevant experience in profit/non-profit management; some relevant capabilities from other field(s); some local recognition in the business community		Significant experience in profit/non-profit management; many relevant capabilities from other field(s) as evidenced in my management portfolio; some national recognition as a leader/shaper in particular sector		Highly experienced in non-profit management; many distinctive capabilities from other field(s) (e.g., for-profit, academia) as evidenced in my management portfolio; possess a comprehensive and deep understanding of the sector; recognized nationally as a leader/shaper in particular sector	

7.6 ANNEX 6: THE POLYTECHNIC OF NAMIBIA STUDY PROGRAMMES RELEVANT TO IWRM

The Polytechnic of Namibia is one of the main drivers of technology capacity building in Namibia. Its responsive programmes and qualifications are the result of continuous and dynamic development to meet local and regional technology development demands.

The Polytechnic of Namibia MISSION AND VISION

VISION

The Polytechnic is Namibia's internationally recognised university of applied science and technology.

MISSION

The Polytechnic contributes to sustainable national development through excellence in technologically-oriented career education and training, applied research and service.

Details about the Polytechnic of Namibia are available through its different offices, Schools, Departments, Institutes and Centres. The Polytechnic of Namibia has an attractive and comprehensive web site (http://www.polytechnic.edu.na). Of special interest may be the Polytechnic annual prospectus, describing all the programmes and course offerings in detail. This document (one for under graduate and one for post graduate programmes) is freely available on the Polytechnic web site.

For the IWRMP capacity building framework, the formal study programmes of the Polytechnic of Namibia were analysed for suitability for key-skills training and are summarized here from its original documentation.

The Polytechnic of Namibia offers[14] regular full time/part time programmes and their average study times for different qualifications as per NQF[15] are:

- Certificates (1 year)
- Higher Certificates (2 years)
- National Diplomas (3 years)
- B-Tech Degrees (4 years)
- Bachelor Degrees (4 years different entry requirements)
- Master Degrees (additional 2 years to a B-degree)

Polytechnic of Namibia regulations worth noting for extracurricular courses and refresher courses.

These courses are offered for continuous professional development in industry.

[14] This may be subject to change because the Polytechnic of Namibia is constantly upgrading and extending its programmes.
[15] National Qualifications Framework

Any person who does not want to follow an approved degree or diploma programme, but wants instead to attend lectures in one or more courses may be admitted as a guest student, if he/she:

- completes the prescribed application form
- obtains the written permission from the relevant Dean to attend the lecture(s)
- registers as guest student (including payment of the prescribed fees) and
- submits such proof of registration to the relevant course lecturer(s)

A guest student is not entitled to formal evaluation and certification, i.e., he/she will write no tests or examinations and receive no credit for attending lectures in (a) specific course(s). A guest student is not entitled to any rights/privileges to which bona fide students are entitled. All uncertainties regarding this matter must be taken up with the Registrar.

The Polytechnic of Namibia Centre for Open and Lifelong Learning [COLL] offers the following IWRM relevant distance education mode programmes:

- Bachelor of Technology: Public Management
- Bachelor of Technology: Accounting and Finance
- National Diploma: Business Administration
- National Diploma: Marketing
- National Diploma: Human Resources Management
- National Diploma: Office Management and Technology
- Bachelor of Technology: Nature Conservation
- Certificate: Community-Based Natural Resource Management
- Certificate: Namibian Environmental Education (NEEC)

The Polytechnic of Namibia offers the following full/part-time programmes relevant to Water and Land-use Infrastructure Planning and Maintenance:

National Diploma in Aquaculture

The need for a National Diploma in Aquaculture stems from the emergence of Aquaculture in Namibia and the current lack of training opportunities. The Department of Agriculture at the Polytechnic is uniquely poised to meet this need because it currently offers parallels in Agriculture, thus many of the courses in the National Diploma already exist. Eight aquaculture-specific courses are included in the National Diploma in Aquaculture. Graduates are prepared as technicians and entrepreneurs in the culture of aquatic organisms. Graduates may also enter the Bachelor of Agricultural Management programme.

National Diploma in Land Use Planning

Land use planning is the statutory activity of directing and controlling all land use changes in an administrative area (Municipality, District, Region, and Province) by segmenting the area into zones and designating a planning instrument to each zone. Land Use Zoning (LUZ) is the American variety of Land Use Planning (LUP). Town and Country Planning is the British

equivalent also used in several southern African countries. Regional Planning, Town and Regional Planning and Physical Planning are sub sets of LUP in other countries.

By definition Land Use Planning is the art and science of ordering and assigning different parcels of land to different and competing uses, so that equity, compatibility, economy and aesthetics are achieved. Planning however is one thing and implementation is another. The broader concept of creating a plan as well as ensuring that the plan is implemented is referred to as Land Use Management. Land Use Planning also includes watershed use planning and provides valuable information for Intergated Water Resources Management.

Bachelor of Information Technology: Business Computing

Business Computing is a branch of Information Technology that primarily deals with the question of how to use computers and computer programs most effectively for business and general purposes. Therefore, a thorough understanding of the field of business management and accounting is equally important to an excellent ability to use computers efficiently and to the limits of their capabilities. Successful candidates in Business Computing are able to select, implement and manage computer systems cost-efficiently and suitable for the intended use in business. Often, this requires research or knowledge in a wide variety of hardware and software systems (offered by commercial vendors or as “open source”), and the ability to match that knowledge to the business needs in innovative ways.

Bachelor of Technology: Civil Engineering: Urban

Studies are focused on technologies related to engineering mathematics, engineering physics and chemistry, basic surveying practices, soil mechanics and material science, water engineering, structural design and construction of roads, buildings, bridges and dams, and key elements of project management, onsite logistics and quantity surveying, solid and liquid waste management, urban planning and design and systems reticulation and design.

Bachelor of Technology: Civil Engineering: Water

Studies are focused on technologies related to engineering mathematics, engineering physics and chemistry, basic surveying practices, soil mechanics and material science, water engineering, systems reticulation and design, water purification and wastewater treatment, water supply and sanitation concepts, water utility and Integrated Water Resources Management, solid and liquid waste management, key elements of project management and water legislation.

Bachelor of Information Technology: Systems Administration

Systems Administration and Networks is a branch of Information Technology that concerns itself with the task of establishing and maintaining the technical environment for computer systems with optimal functionality, reliability and security. Information system administrators design, and create computer networks, install and maintain software systems, implement rules and procedures to ensure high performance, reliability and “round-the-clock” availability of service, take responsibility for security both against equipment failure, and against unauthorised intrusion by viruses and hackers, and trouble-shoot arising problems. Successful candidates often rise into middle and upper-level technical management, charged with the responsibility for all computing requirements of an organisation.

Bachelor of Geo-Information Technology

A Geographic Information System (GIS) can be defined as a computerised system that facilitates the phases of spatial data entry, storage, maintenance, analysis and dissemination. It can be viewed also in general terms as an information technology that is used to acquire, manage, interpret, integrate, display, analyse, or otherwise use spatial data to produce spatial products such as maps [both digital and analogue].

Whereas GIS is defined as above, Geoinformatics is viewed as the scientific field that attempts to understand and integrate different disciplines studying the methods and techniques of handling spatial information. The discipline that provides the background for the production of necessary tools required for spatial data handling is called Spatial Information Theory. Geoinformatics (or Geomatics as the Canadians like to call it) has evolved from just a concept to a recognised study and professional field.

Bachelor of Engineering: Civil

The Bachelor of Engineering: Civil is a professional degree worth 590 credits at NQF Level 8. The degree will incorporate project-based assessments, a research component and six months of practical work-based learning. The programme essentially focuses on all fields of civil engineering and concludes with a bachelor research thesis.

Bachelor of Mechanical Engineering

The Bachelor of Mechanical Engineering programme is a 585 credit Namibia Qualifications Authority (NQA) level 8 professional scientific bachelor's degree in mechanical engineering. It has a normal duration of eight semesters of instruction and a ninth semester devoted to experiential learning in industry. The programme consists of forty four core - and six elective courses of which students are required to select two from one of three fields of specialization, being mechatronics, energy and manufacturing. The field of specialization is selected at the end of the third year of studies. The curriculum for the first year of the proposed programme is identical to that of the B Eng programmes proposed by the Departments of Civil - and Electrical Engineering.

Bachelor of Environmental Health Science

The four (4) year Professional Bachelor of Environmental Health Sciences with an exit level outcome of one (1) year for the National Certificate in Environmental Health Science and three (3) years for the National Diploma in Environmental Health Science primarily focuses on environmental pollution control, occupational health and safety, environmental management, food and meat hygiene.

Bachelor of Engineering: Mining

The Bachelor of Engineering: Mining degree features two specialisations of Mining Production and Mineral Processing. The degree is worth 624 credits (Mining Production) and 627 credits (Mineral Processing) respectively at NQF level 8. It consists of eight semesters of instruction and a ninth devoted to experiential learning in industry and to applying the obtained knowledge in a bachelor's thesis.

MSc Water Engineering-IWRM (SADC, in cooperation with universities in Tanzania, Zimbabwe, South Africa, Botswana, Malawi, Zambia)

Some notable characteristics of the modular Master degree in IWRM are:

- it is a general Master degree programme, not limited to engineering graduates, and offers a broad spectrum of courses relevant to Integrated Water Resources Management;
- it is a modular programme, whereby students can gradually build up their portfolio of course modules; it is therefore a flexible programme, with multi-entry and multi-exit (i.e. Course Certificates, Post Graduate Diploma and Master Degree);
- it is a regional programme, whereby WaterNet member institutions offer a limited number of course modules, focusing on their relative strength in terms of expertise.
- an international academic committee will ensure academic quality and facilitate a process of regular peer review.
- The degree programme consists of a taught part and a dissertation part. Each course module will be taught on a full-time basis during a period of 3 weeks. At the end of each course module an exam is given.

The core modules are:

- Principles of Integrated Water Resources Management,
- Principles of Hydrology,
- Socio-Economics of Water & Environmental Resources,
- Principles of Aquatic Ecology and Environmental Management,
- Policies, Laws and Institutions,
- Research Project.

After having followed the core modules, students choose between the following 'specialised programme':

A. Water resources management {Tariffs, Catchment management, GIS};

B. Water and environment {EIA, Water quality management, Environmental water requirements};

C. Hydrology {Hydrogeology, Remote sensing, River engineering};

D. Water and land {Irrigation design and management, Drainage and soil degradation, Catchment management};

E. Water for people {Water supply and sanitation, Utility management, Wastewater management}

This module ‘E.’ is taught at the Polytechnic of Namibia.

The Polytechnic of Namibia offers the following full/part-time programmes relevant to Natural Resources Management and Resource Management in general. Some of these programmes are also ideal for BMC and WPC skills training

Namibian Environmental Education Certificate

This certificate is an introductory Environmental Education (EE) study programme for adults who wish to know more about applying environmental education in their community or work. The NEEC is most valuable to people who are involved with EE and those who intend to become involved in EE. The NEEC is a competence-based study programme and therefore aims to help students develop practical, foundational and reflexive competencies.

Certificate: Community-Based Natural Resource Management

Natural Resource Management (Nature Conservation) provides knowledge and skills which will allow students, after the successful completion of this programme, to pursue a career as Nature Conservationist, Tour Operator, Information Officer, Resource Manager, Environment Interpretation Officer, Environment Education Officer.

This certificate focuses on the attributes that will equip high potential entry-level practitioners of community-based natural resource management with relevant managerial and research skills. The study programme concentrates on improved productivity and effective management of natural and human resources.

National Certificate: Nature Conservation (Techniques)

Nature Conservation (Techniques) provides knowledge and skills to pursue a career as Ranger in the field of Nature Conservation.

Bachelor of Technology: Accounting and Finance

This bachelor of technology programme focuses primarily on financial accounting and accounting systems, cost and management accounting, company law, business ethics, taxation, and financial auditing.

Bachelor of Technology: Economics

This programme primarily focuses on business statistics, mathematics for economics, business accounting and operation, financial intermediation, institutional investment, economics of agriculture and rural development, economics of growth and development, economics of Namibia and SACU, estate investment.

Bachelor of Technology: Public Management

The programme focuses on public management in Namibia, Regional and Local Government, public financial management and organizational management. It aims to train future public administrators.

Bachelor of Business Administration

This bachelor programme primarily focuses on business management, human resources management, marketing, entrepreneurship, and international business management as well as strategic business management planning and control. A supportive bachelor programme in marketing was introduced in 2007.

Bachelor of Human Resources Management

The programme focuses on organizational management and communication and includes education and training of staff, business operations and organizational development as well as occupational health and safety related courses and labour law.

Bachelor of Office Management & Technology

The programme focuses on general office management and information administration and includes business accounting and human resources management, commercial law and labour law.

Bachelor of Agricultural Management

Agriculture is aimed at producing food, fuel, fibre and other products, through management of living organisms and the non- living resources that influence them. The most common form of agriculture in Namibia is livestock farming, to produce domestic animals, while arable agriculture produces crops, fruits and vegetables, and is limited to areas with better rainfall or where extra water is available for irrigation. Major challenges include the need to improve the efficiency of production, to exploit Namibia's comparative advantages, to meet the growing demands for food and to counter increasing urbanization. One option is to produce a diversity of both animals and plants at a high rate in integrated bio systems, whereby they support each other and optimise use of scarce resources such as water. Other options include the integration of valuable living organisms into existing farming systems. In order to be sustainable, agriculture needs to be socially acceptable, it needs to produce in a way that supports ecological processes that it depends upon, it needs to earn more money than is spent on it and it should not be too risky. All these issues and many more are included in the agriculture program at the Polytechnic of Namibia.

Bachelor of Technology: Nature Conservation

Nature Conservation focuses on the attributes that will equip high potential entry-level employees with relevant managerial and research skills. In particular, the programme concentrates on improved productivity and effective management of natural and human resources including finances.

Bachelor of Technology: Land Management

For decades the central social and political issue in Southern Africa has been access to land. The recent democratisation in Namibia and RSA and in other Southern African countries has resulted in new constitutional provisions, new laws and new policies on land. Consequently land managing institutions face an immense task to implement land reform. At the same time the new democracies in Southern Africa lack a trained and experienced cadre in all segments of society and in particular in Land Management.

Master of Integrated Land Management

The Master of Integrated Land Management programme aims at providing professionals working in the natural resources field, the core competencies necessary to become managers leading teams across all land management sectors. Graduates are equipped with

skills that will allow them to formulate and implement policies relating to integrated land management in Southern Africa.

Master of International Business

The programme is divided into four phases:

i. theory and practice of management,

ii. value creating skills,

iii. networking across cultures, and

iv. managing for results.

All the modules in phases i to iii are considered core management areas and are therefore compulsory for all the students except for exchange students who have covered the equivalent in other institutions. The modules in phase iv are optional and at least one area must be taken in addition to the core modules.

The Polytechnic of Namibia currently offers the following full/part-time programmes relevant to Communication in the water and environment sector.

Legal Studies application support courses

- Labour law
- Company law
- Environmental law
- Law for public managers

Bachelor of Arts in Communication

The Bachelor of Arts in Communication is a three-year degree programme (Full-time/Part-time) that is aimed at equipping students with both theoretical knowledge and practical skills in communication management and administration. Holders of this degree will have communication skills that will enable them to effectively design, manage and evaluate communication processes that involve individuals, groups, organisations and the public. The degree programme's Work Integrated Learning component will provide students with the necessary experiential learning at the workplace.

Bachelor in Journalism and Communication Technology

The Bachelor of Journalism and Communication Technology rests on a strong core educational structure with a balance between the practical and the academic instruction. Apart from the education of students in the practice of journalism, this curriculum also includes course-work in Communication Technology, which allows students to specialise in one of the areas of specialisation provided: Journalism, Public Relations and Corporate Communication, and Multi-Media Design and Production.

Bachelor (Honours) in Journalism and Communication Technology

The Bachelor (Honours) in Journalism and Communication is an initial postgraduate specialisation that builds on a Bachelor Degree in the same cognate areas. Students who

enrol for this degree may practice in the fields of Journalism or Communication Technology. This Degree prepares students for the study of how people and organisations interact with the Media as well as research-based postgraduate study. The courses require an advanced level of conceptual ability and intellectual autonomy, as well as, specialised knowledge in Journalism and Communication.

Extra-curricular 7-Language Courses

- Oshikwanyama
- Portuguese
- Spanish
- German
- French
- English
- Afrikaans

7.7 ANNEX 7: ASSESSMENT OF CURRENT SKILLS DEVELOPMENT CAPACITY AT THE POLYTECHNIC OF NAMIBIA [PON]

The Polytechnic of Namibia is again used as an example to assess the current skills development capacity.

With specific focus on the **key-required skills** for IWRM as outlined in the section “Broad Skills Mix” and for rapid access and overview elaborated in Annex 4, the following assessment of **skills development capacity** at the Polytechnic of Namibia was prepared in graphical form. The centre knots follow the same colour scheme as on the key-required skills spectrum bar graph above. The respective formal study programmes are described in Annex 6.

Figure 7.1: Graphical representation of skills development at the Polytechnic of Namibia.

The PON capacity for **managerial effectiveness** skills development and maintenance is basic for IWRM purposes. Namibian industry is a key partner for managerial effectiveness skills development. It is recommended to make use of industry as an active capacity building and networking partner and in turn support the Polytechnic to install additional capacity in this regard.

Figure 7.2: PON engineering and science spectrum skills development

The PON **engineering and science spectrum** is adequate to build and maintain national IWRM related capacity. However, groundwater/ hydrology/geohydrology/water law specific capacity still needs to be enhanced. UNAM and South African universities could be good service providers in this regard.

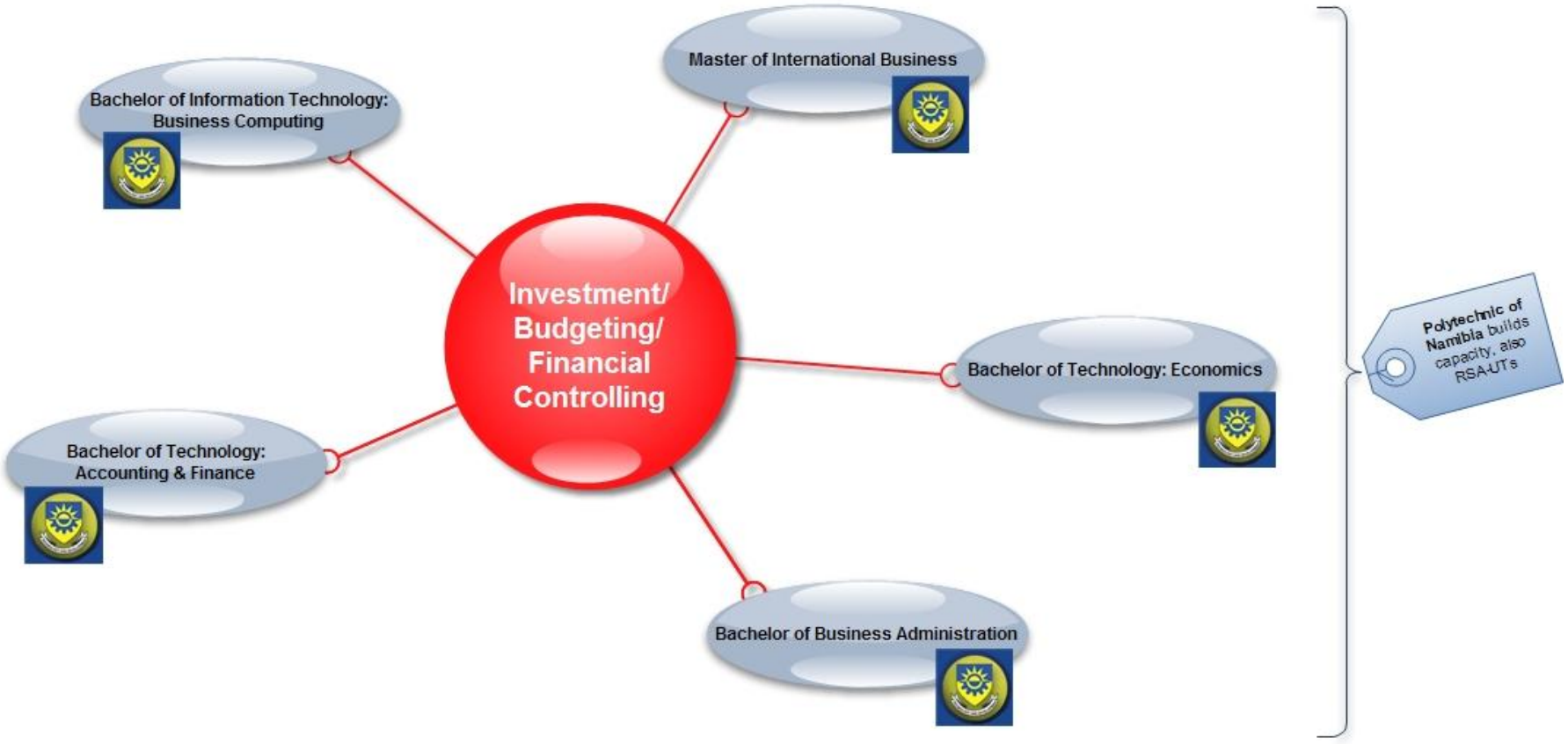

Figure 7.3: PON budgeting and financial controlling skills development

The PON capacity for **budgeting and financial controlling** skills development and maintenance is adequate for IWRM purposes.

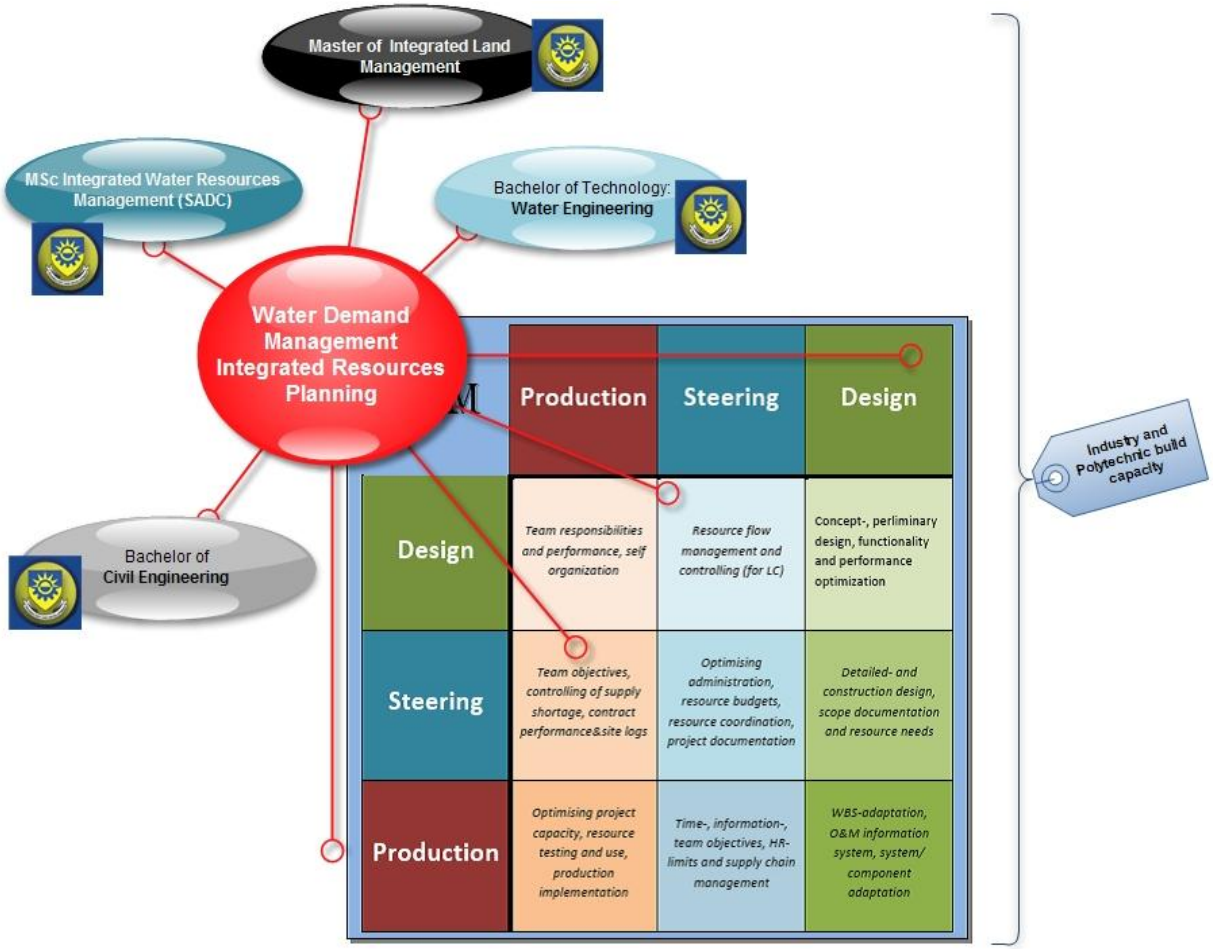

Figure 7.4: PON integrated resource planning skills development

The PON capacity for **integrated resource planning** skills development and maintenance is basic for IWRM purposes. Additional capacity needs to be built especially in the field of systems design and steering.

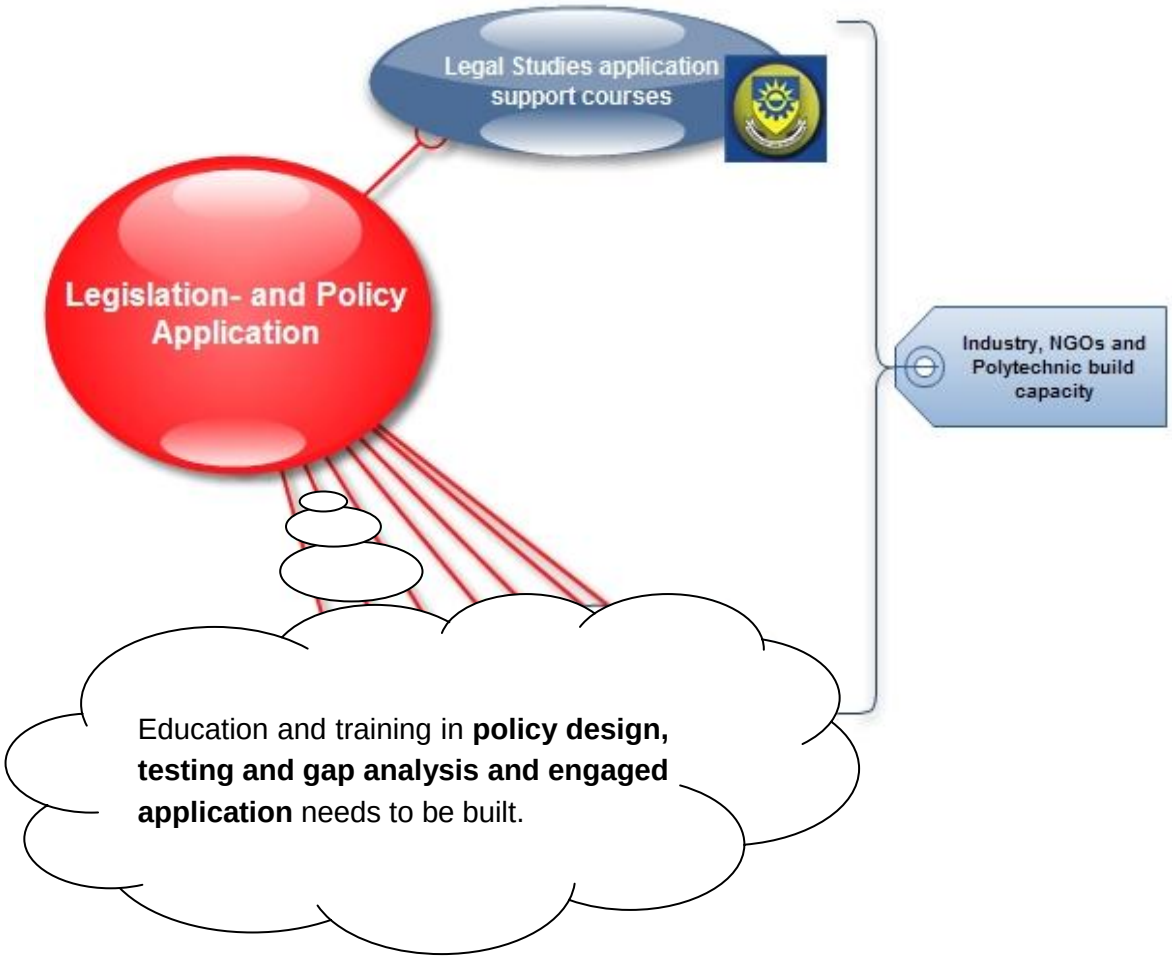

Figure 7.5: PON legislation and policy application skills development

The PON capacity for **legislation and policy application** skills development and maintenance is currently inadequate for IWRM purposes. Additional capacity related to water and environmental legislation must be build at the Polytechnic. UNAM and South African universities as well as industry and NGOs could in the interim be good service providers in this regard.

Figure 7.6: PON resource conservation and pollution prevention skills development

The PON capacity for **resource conservation and pollution prevention** skills development and maintenance is adequate for IWRM purposes.

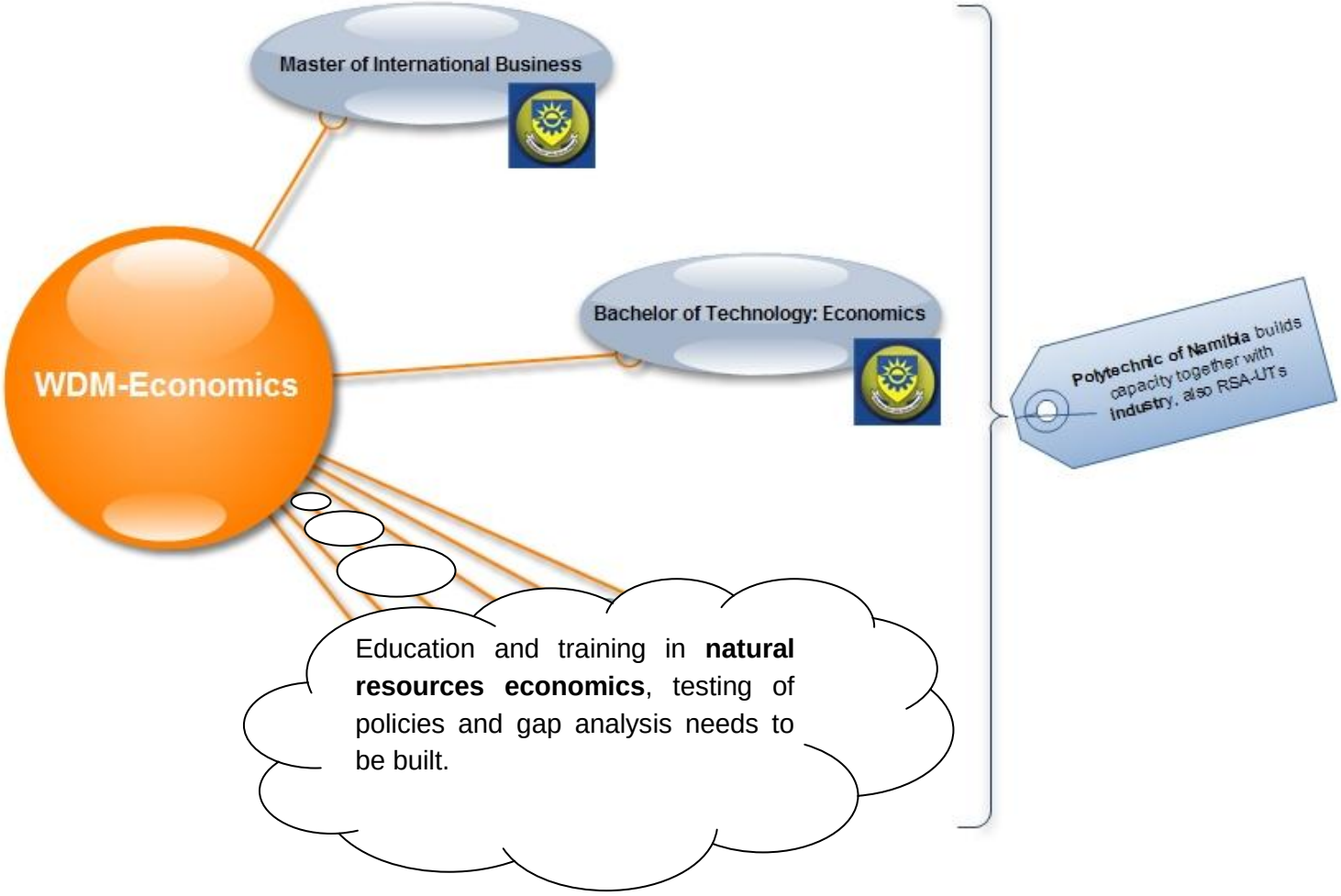

Figure 7.7: PON Water Demand Management Economics skills development

In the field of **Water Demand Management Economics** additional skills development capacity must be built in Namibia.

Figure 7.8: PON information and communication technology skills development

The PON capacity for **information and communication technology** skills development and maintenance is adequate for IWRM purposes.

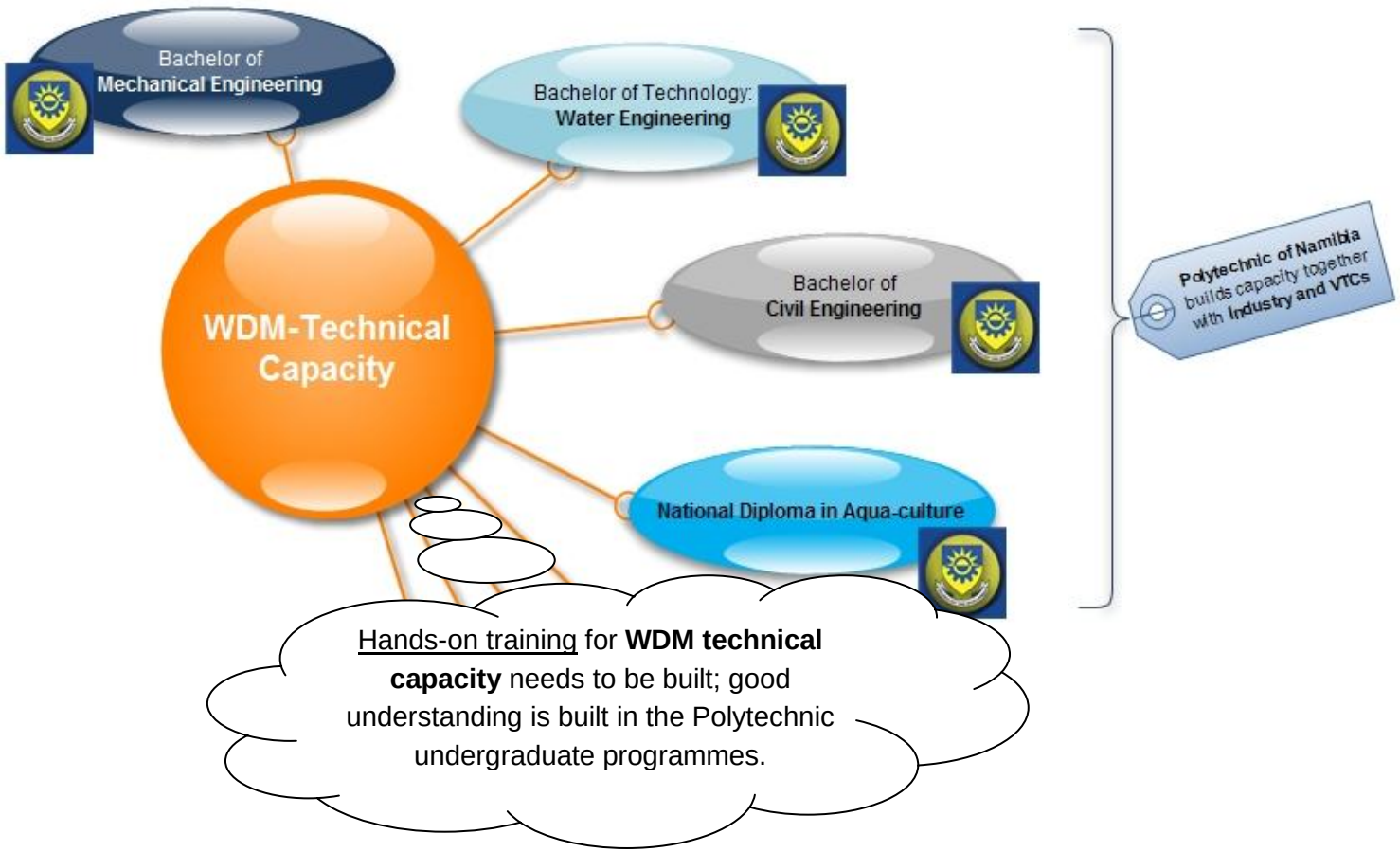

Figure 7.9: PON WDM technical skills development

The theoretical background programmes of the PON capacity for **WDM technical** skills development and maintenance is adequate for IWRM purposes. However, PON needs to meet industry to integrate hands-on technical training in WDM in its experiential learning.

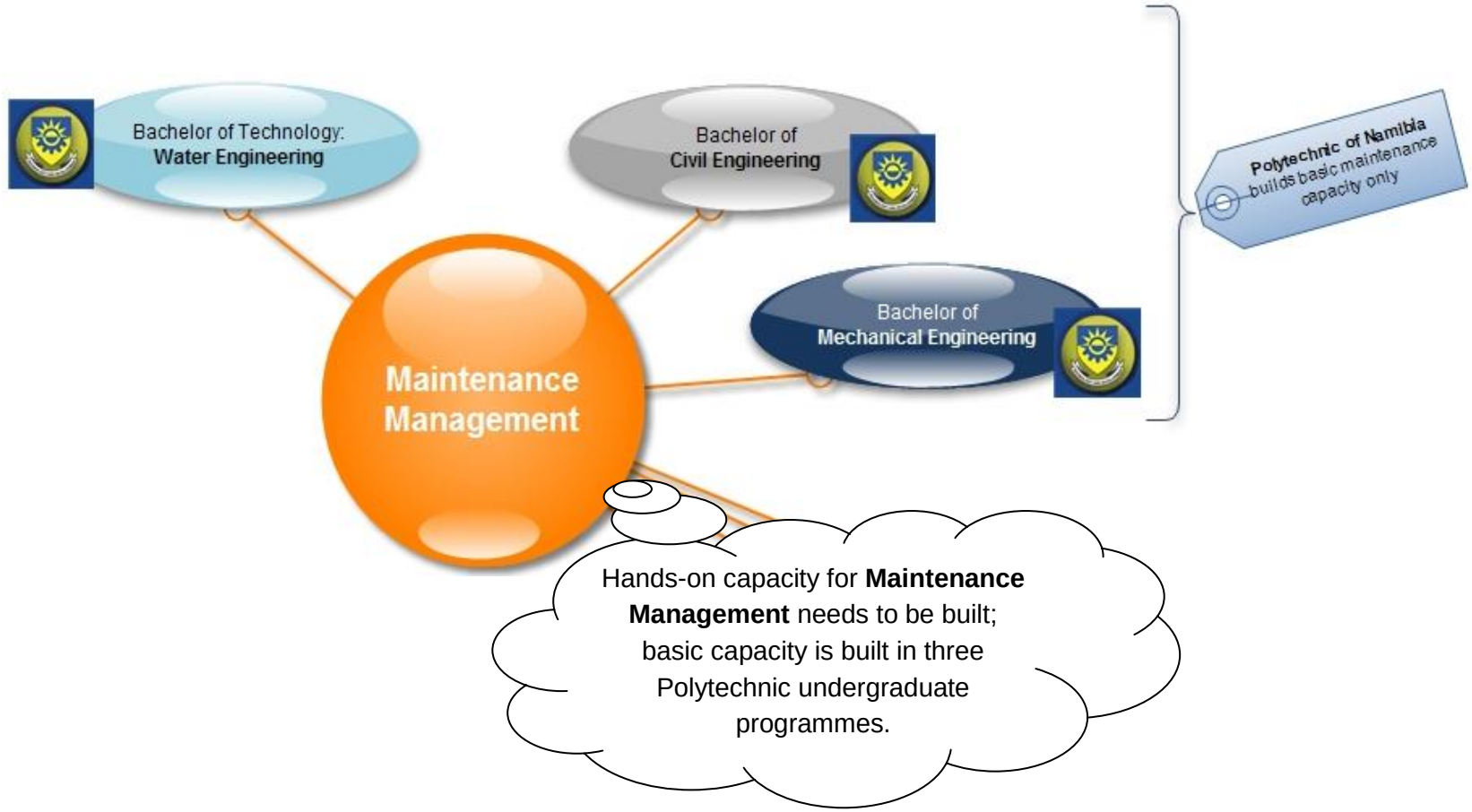

Figure 7.10: PON maintenance management skills development

The theoretical background programmes of the PON capacity for **maintenance management** skills development are adequate for IWRM purposes. However, PON needs to meet industry to integrate hands-on technical training in WDM in its experiential learning.

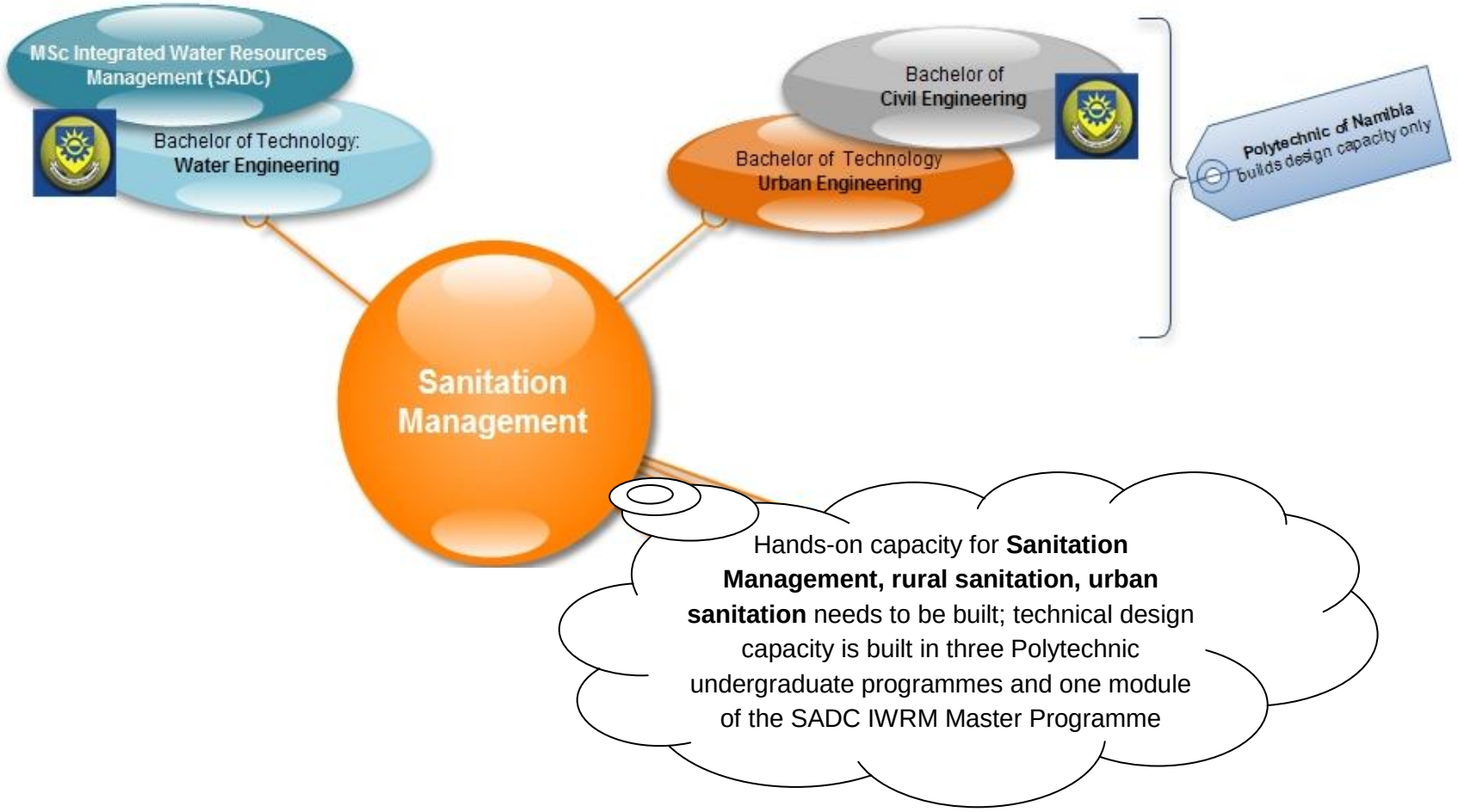

Figure 7.11: PON sanitation management skills development

The theoretical background programmes of the PON capacity for **sanitation management** skills development is adequate for IWRM purposes. However, PON needs to meet industry to integrate hands-on technical training in WDM in its experiential learning.

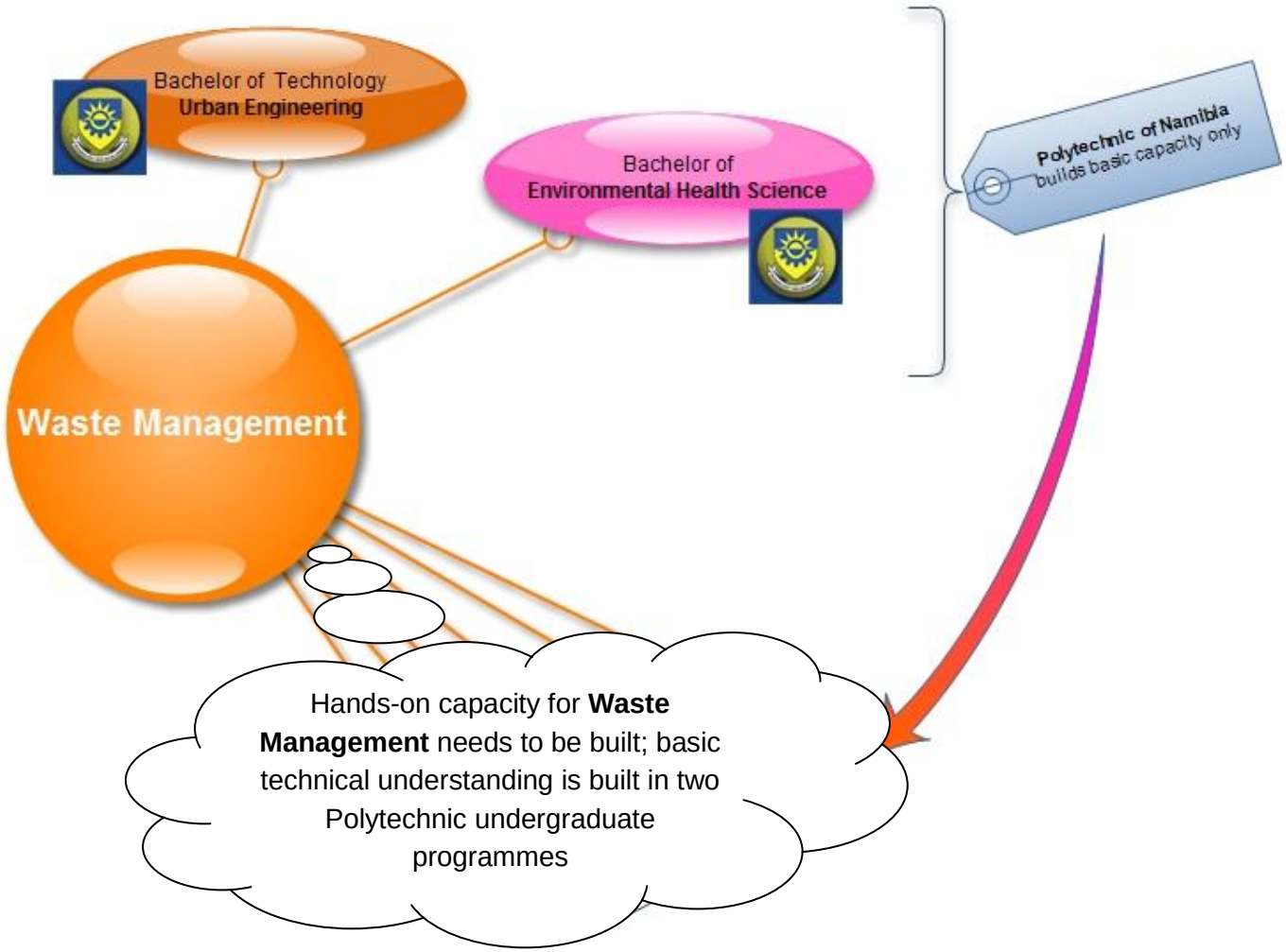

Figure 7.12: PON waste management skills development

The theoretical background programmes of the PON capacity for **waste management** skills development is adequate for IWRM purposes. However, PON needs to meet industry to integrate hands-on technical training in waste management in its experiential learning offerings.

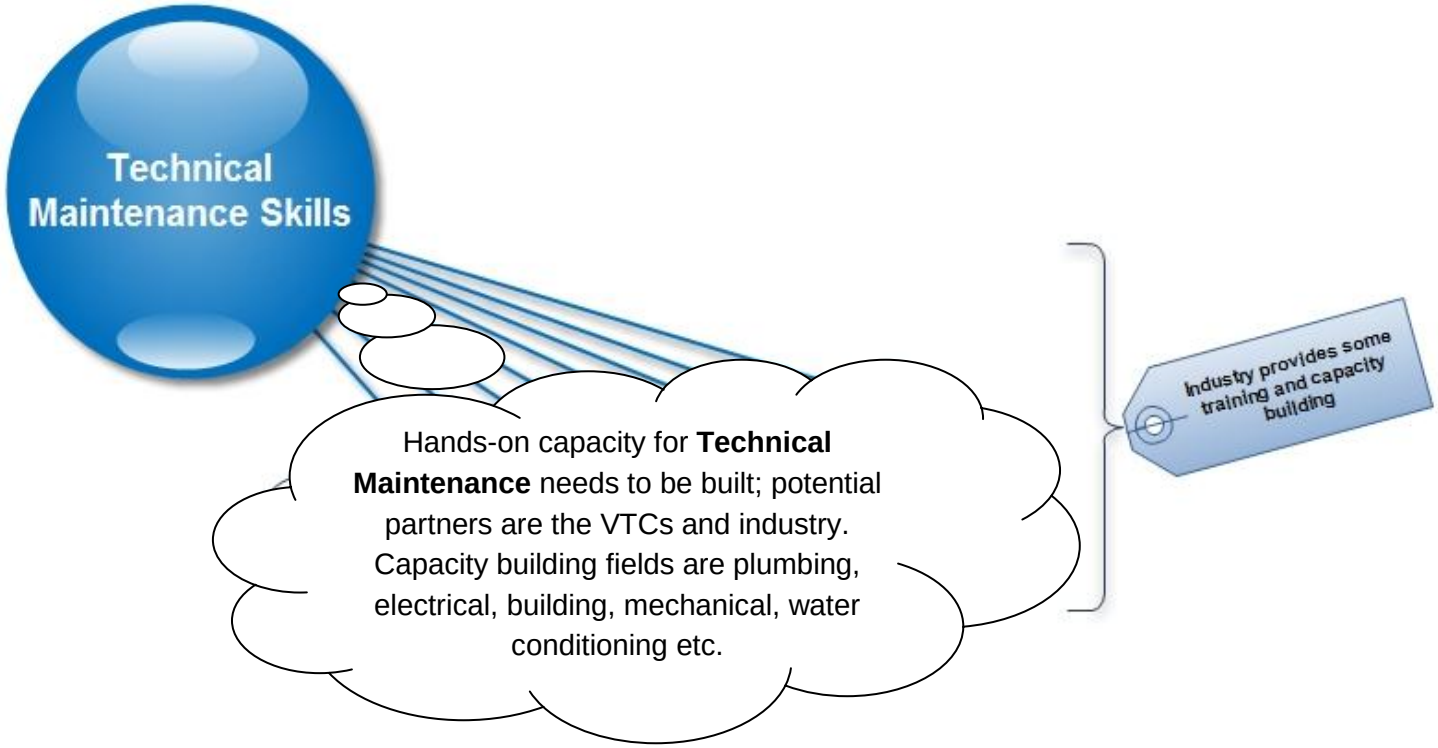

Figure 7.13: Technical maintenance skills

Service providers, Vocational Training Centres and industry must work hand-in-hand to establish IWRM relevant **technical maintenance** skill training programmes. Technical maintenance should ideally go together with maintenance management. The Polytechnic of Namibia operates the Department of Technical Vocational Education and Training (DTVET). This department offers train-the-trainer programmes which should ideally include IWRM relevant technical maintenance modules.

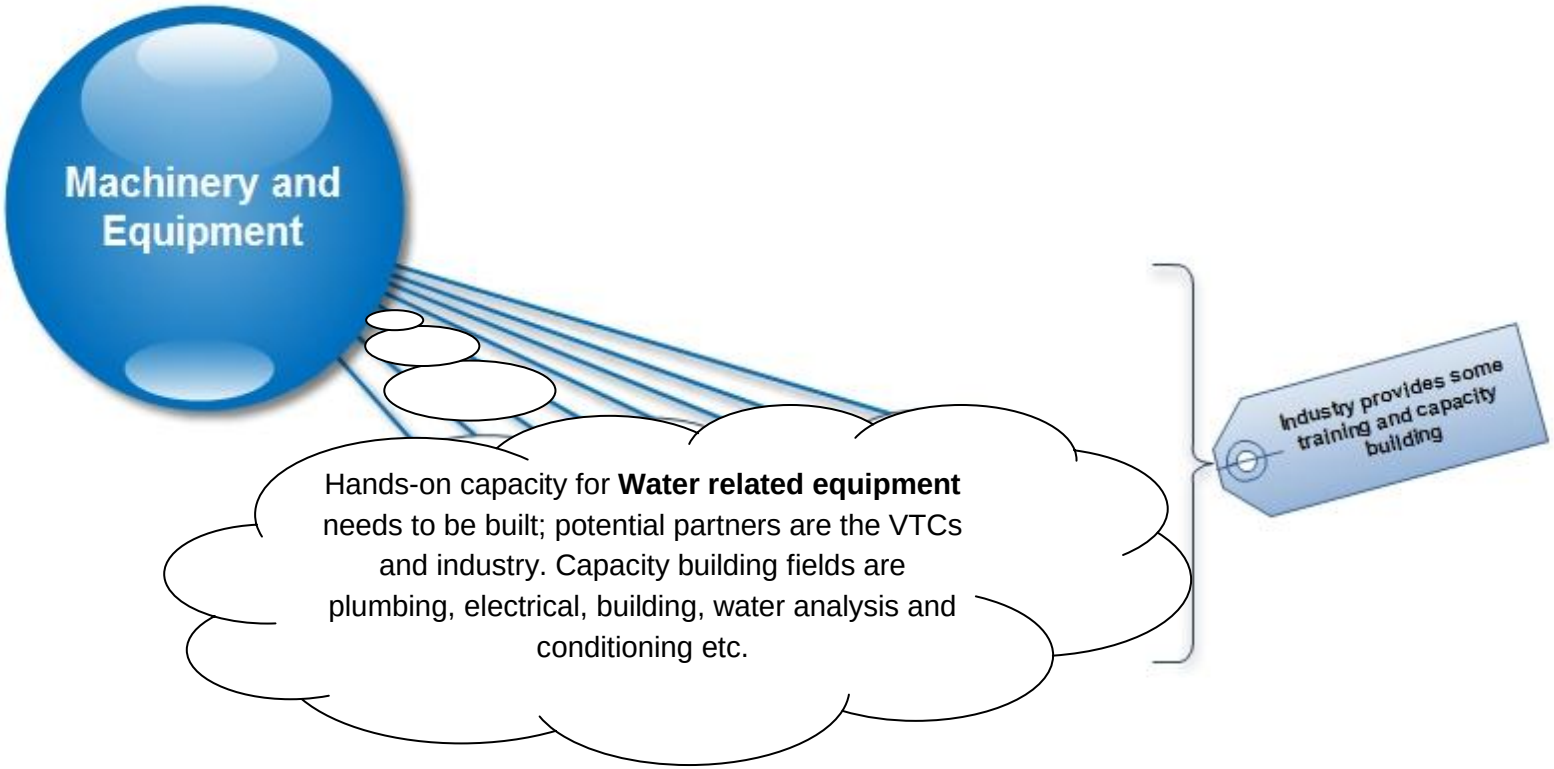

Figure 7.14: Hands-on capacity for water related equipment

Machinery and equipment operation is mostly done through the supply industry. It is strongly recommended that service providers include operations training and respective skills development for machinery and equipment in use in the commissioning process and plan for periodically offered refresher courses.

7.8 ANNEX 8: RESEARCH CAPACITY BUILDING AND SUPPORT

(*Example: Polytechnic of Namibia*)

The Polytechnic of Namibia operates the following Research and Capacity Building Facilities which substantially contribute to national development:

1. **REEEI**, renewable energy and energy efficiency institute primarily focusing on renewable energy matters like solar water pumping and PV solar lighting. The institute is an active player in the policy development arena.
2. **CART**, Centre for Applied Research and Technology development is the Polytechnic of Namibia arm for research integration into departmental programme offerings. CART is an active driver of resource conservation and IWRM integration into the curricula of the different schools and departments.
3. **Civil Engineering Laboratories for Materials Testing** are fully equipped for building materials testing and have the potential for the integration of new materials development.
4. The **Water Engineering Laboratory for Hydraulics** is well equipped with demonstration facilities for hydraulic engineering. This laboratory has the potential to include sanitation development.
5. The Civil Engineering **Mobile Water Quality Laboratory** (sample analysis on site) was established in 2004 to support the then developed and integrated SADC Master Programme for IWRM. The laboratory serves for under- and post graduate programmes and has the potential for onsite research and pollution investigation.
6. **Mechanical Engineering laboratories** for thermo dynamics, strengths of materials, prototype workshop are well equipped to serve under- and post graduate programmes. The prototype workshop in particular has a good potential to be supportive in IWRM related hardware development.
7. The **Civil/Mechanical/Electrical Engineering Computer laboratories** are equipped with state-of-the-art software and hardware and can house up to 35 students at the time. High end software for hydraulic engineering, civil engineering, CAD/CAM, simulations, system dynamics are installed and provide good opportunities for ICT training, research and development.
8. The **Polytechnic Resource Centre and Library**, sited next to the New Engineering Building, is well equipped with digital and printed media related to IWRM.

Other research institutions well known for their enhancement of development in Namibia contributing to natural resource development and management are the University of Namibia, the newly established Namibia Institute for Sustainable Development (NISD) through the Desert Research Foundation of Namibia and the Namibia Nature Foundation, Gobabeb Training and Research Centre and members of industry. Their relevance to IWRM is not elaborated in detail in this section because they are well known partners for sustainable water and environment development in Namibia and internationally.