WaterNet Strategy Paper

Outline of WaterNet Phase II
(2005-2009)

WaterNet - Human Capacity Building in IWRM

VERSION 4

Drafted by the WaterNet Secretariat

After consultations during 8th (April 2003) and 9th WaterNet Steering Committee (Oct 2003) and 4th WaterNet Annual General Meeting (Oct 2003)

9th February 2004

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Table of Contents

1 The WaterNet project (1999 – 2003)

1.1 Original objectives

WaterNet, a network of tertiary institutions, was established in 2000 through a grant from DGIS via SAIL to IHE-Delft. WaterNet has four objectives:

1. to *raise awareness* with regard to the regional scale of IWRM among institutes and people active in this field;
2. to stimulate regional cooperation in the field of *education* in IWRM by developing a modular Master Degree Programme to which several institutes in the region contribute;
3. to increase the *accessibility* to training and education in IWRM for participants from the Southern Africa Region;
4. to stimulate, regionalise and strengthen *research* in the field of IWRM in the Southern Africa Region by offering opportunities to perform joint research.

WaterNet was conceptualised as an "open-ended and phased programme". Phase one was aimed at creating ownership. Phase two aimed to build and strengthen educational capacity, and phase three was to operate the network. The inception of the network (phase one) was a relatively prolonged process in order to cultivate the necessary ownership amongst the members. This was achieved. Phase two (building and strengthening educational capacity) is still an ongoing process whilst phase 3 happened concurrently with phases one and two.

1.2 Timeframe of 1ˢᵗ phase

The WaterNet Project was to have started January 1, 1999 and end 31 December 2002and the new scheduled ending was August 2003.

The WaterNet project started formally in September 1999, but practically in November 1999, after approval of funding by DGIS via SAIL to IHE-Delft. Implementation actually commenced in 2000 and a founding workshop was held in March 2000.

The 1ˢᵗ phase of WaterNet will terminate on August 31ˢᵗ 2003. However, under spending during the initial phases of the project because of the complexity of the project, resulted in a budget neutral extension till 31 December 2004 being applied for and granted by the DGIS.

1.3 WaterNet – A network for human capacity building in IWRM

WaterNet is a regional program to build and strengthen regional capacity for integrated management of water resources in Southern Africa through education, research, and training.

WaterNet was the 1ˢᵗ regional network established with the particular focus to train a new generation of water resource managers in how to plan and manage water based on an integrated water resource management (IWRM) approach.

WaterNet is a network of higher learning institutions, both National and International, from both North and South, actively involved in human capacity building on water management in Southern Africa.

The WaterNet programme has been approved by the SADC Water Sector Coordination Unit, and is an Associated programme of the Global Water Partnership (GWP).

Presently WaterNet has 36 member institutions in 12 countries in East and Southern Africa..

1.3.1   Establishing the Network

A number of consultations preceded the launching of WaterNet. Already in August 1997 the WaterNet concept was presented to the GWP at the Stockholm Water Symposium. An Assessment study of Integrated Water Resources Management activities in Southern Africa was carried out in Oct-Dec 1997. In April 1998 the stakeholder workshop laying the foundations for WaterNet and the Water Research Fund (WARFSA) was held in Harare. This workshop formed the basis for project documents of both programmes. In December 1998, SADC endorses WaterNet as one of its priority programmes during the SADC/UNDP Water Round Table Conference in Geneva. In May 1999, WaterNet is presented during the Africa Water Resources Forum in Nairobi, and in Aug-Oct 1999, WaterNet is presented in the SADC Water Week seminars in most SADC countries (Angola, Botswana, Lesotho, Malawi, Mozambique, Namibia, South Africa, Swaziland, Tanzania, Zambia, Zimbabwe)

The WaterNet founding workshop was held in February 2000, attended by institutions in Southern Africa who had expressed interest in the Network during the consultative process preceding the launch. The founding workshop, attended by HRH the Prince of Orange and all the 18 prospective member institutions, who eventually became the founding members of WaterNet, was held 1 – 4 March 2000.

The WaterNet project builds on the experiences of the DGIS supported Project on Capacity Building in the Water Sector of Zimbbawe and Southern Africa, which is a collaborative Programme between IWSD, IHE-Delft and University of Zimbabwe.

1.4   Achievements during the 1st phase

1.4.1   Forging the network

Establishing the Network in Southern Africa
The first two years (effectively calender years 2000 and 2001) were strongly focused on the participatory process of establishing a member owned, demand driven, credible and relevant network. Objectives were translated into tangible activities which were set in motion, and strong emphasis was put on launching the WaterNet "Flagship"; the Regional Master Programme in IWRM. It is only in 2002 that all WaterNet windows of capacity building were fully operational (Fellowship fund, and funds for Staff exchange, Nodal strengthening, and Staff Development).

The WaterNet secretariat was established at the University of Zimbabwe, formally attached to the Faculty of Engineering. By April 2003 this secretariat was fully staffed, with a WaterNet Manager recruited among WaterNet member institutions, an adminitrator and a secretary, and an Unesco-IHE appointed Advisor to the network.

The WaterNet Constitution was approved by the WaterNet Annual General Meeting in 2002. The legal status of WaterNet was further strengthened in April 2003 through the establishment of the WaterNet Trust, which will enable WaterNet to receive and administrate its own funds.

At the end of its 1st phase, WaterNet has clearly accomplished the task of establishing itself as a relevant and important network in Southern Africa in efforts of enabling a transition to integrated approaches to water resource management. This has been achieved by combining a strategy of a progressive member driven network building, and a delivery based network approach. WaterNet is not a conventional network among other networks, primarily focused on information sharing network, but has instead put its emphasis on being a true partner in capacity building and development, by establishing several windows of action deliverables. The core initiative is the WaterNet Master Program in IWRM, where WaterNet through its Fellowship Fund (FF) has supported 45 scholarships in the region. The additional WaterNet capacity building funds; the Nodal Strengthening Fund (NSF), the Staff Exchange Fund (SEF) and the Staff Development Fund (SDF), all offer staff at WaterNet member institutions a unique opportunity to build delivery capacity on IWRM. The WaterNet Symposia, where researchers in the region are given the chance to share research advancement in various aspects of water resources management, is an additional key network quality.

While all of the envisaged WaterNet capacity building activities (in the original project document) are fully up an running at the end of the 1st phase, much work remains to be done. The Master program, which was offered twice in the 1st phase (2003/04 and 2004/05) still require substantial development. Course modules need continuous improvement, the overall program requires a stronger quality control mechanism, mutual recognition of courses among member host institutions needs to be formalised, and capacity built among more member institutions in order to widen the host institution base.

WaterNet – A partner in Regional Development
WaterNet plays an important role in the wide SADC context of promoting IWRM in Southern Africa. WaterNet forms part of the SADC initiatives on water and capacity building (under the code label PCN23), and figures prominently among the Capacity Building and Training programs presented at the Southern African Sub-regional Action Plan to respond to the Millennium Development Goals (MDGs) and the outcome of the World Summit on Sustainable Development (WSSD) (Johannesburg, August 2002), held at the African Ministerial Council on Water Steering Committee Meeting in Burkina Faso, 27-29 October 2003. This Sub-regional Action Plan on Water forms the sub-regional contribution to the initiatives of the African Ministerial Council on Water (AMCOW). This framework for action, in turn, was developed from the SADC Regional Strategic Plan for Integrated Water Resources Management and Development (RSAP/IWRMD). The RSAP/IWRMD, which originates from a

highly consultative process, presents WaterNet as the SADC initiative on Capacity Building and Training on IWRM (REF?).

As a result of WaterNet's close links with SADC, GWP and the Water Sector in Southern Africa, and the achievements so far in human capacity building, WaterNet was included in the Ministerial Declaration from the AMCOW initiated Pan African Implementation and Partnership Conference on Water, held in Addis Ababa, Ethiopia, 8 – 12 December 2003, as a success story on human capacity building in IWRM in Africa (CHECK REF??).

WaterNet – a Partner in Global Development
WaterNet is the first regional capacity building network on IWRM in the world. As such, Southern Africa has become something of a learning ground for similar recent efforts in West Africa, Latin America and Asia. WaterNet's close links to research, through the collaboration with its sister, the Water Research Fund for Southern Africa (WARFSA), and through own initiatives in research capacity building, has further strengthened WaterNet regional and global reputation as an important vehicle to advance thinking, policy and management in IWRM. WaterNet was represented at the World Summit on Sustainable Development (WSSD) in Johannesburg, as an example of how to go about capacity building in water for sustainable development. WaterNet similarly was part of the capacity building presentations in both the 2nd (the Hague, 2000) and the 3rd (Kyoto, 2003) World Water Forum. WaterNet is a co-convenor of sessions for Young Water Professionals at the Annual Stockholm Water Symposia in Stockholm, Sweden. WaterNet has similarly supported young water researchers from Southern Africa to present papers at the Annual European Geophysical Society (EGS) General Assembly in Europe.

1.4.2   To raise awareness with regard to the regional scale of IWRM

Through its annual symposia, WaterNet has strongly contributed to raise awareness on multiple facets of IWRM. The WaterNet/Warfsa symposia (co-convened between WaterNet and the Water Research Fund for Southern Africa, Warfsa) has grown from humble beginnings of mainly WaterNet members to a significant gathering of educationist, researchers, water professionals and other interested persons. Attendance at the symposia increased from approximately 45 participants in Maputo in 2000 to an estimated 150 in Gaborone, 2003. The WaterNet symposium has become a "must attend" event for anybody interested or involved in water.

IUCN realised the significance of the event and hosted a special Session at the 2003 Gaborone symposium dedicated to Water Demand Management. The potential of the symposium as an awareness raising occasion and an educational event has also been recognised by GWP-SA and negotiations are underway between WaterNet/WARFSA and GWP-SA to broaden the reach of the symposium in 2004 and onwards.

While WaterNet, in its core, is a network of higher learning institutions, it aims at being closely linked to the water sector in its widest context; professionals, scientists, managers, policy makers, and government institutions involved in water management. The key strategy to achieve this is through the close links to SADC and GWP. GWP-SA, which essentially is an association of stakeholders in IWRM in Southern Africa, constitutes a critical WaterNet partner, with which strong synergies are achieved (in linking the client side of water management with the supply side).

Much remains to be done here though, in order to further improve on WaterNet capability to answer to the demands of the region.

1.4.3 To stimulate regional cooperation in the field of *education* in IWRM by developing a modular Master Degree Programme.

Already at its inception, in March 2000, the WaterNet Steering Committee conceptualised what would become the flagship of WaterNet; the Regional Master Programme in IWRM. The program was conceived out of a well-articulated need for a new generation of Water Managers (based on a regional Survey Carried out by Mudege and Zaag, 2000). The program would train Water Managers and Researchers that could answer to the new reality of water management in many countries of the World, where water increasingly is understood, in policy, legislation and management, as a corner stone of economic and social development, but also as a resource to be shared among multiple uses and users (society and nature). To achieve this an innovative program was designed, where WaterNet member institutions in 12 countries, brought forward comparative strengths to develop a modular program with an inter-disciplinary core program, 5 multi-disciplinary specialisation and elective programs (covering hard and soft science domains of IWRM – Water resource Management, Hydrology, Water and Environment, Water for People and Water and Society). In total the program includes 30 course modules (each of three weeks), of which 27 modules have been finalised over the course of the 1st phase.

The structure of the WaterNet Regional Master programme in IWRM is shown in Figure 1. As seen from the structure the programme is multi-disciplinary, offering course modules in all aspects of IWRM, from socio-economics of water and environmental resources to water supply and sanitation. At the same time the programme is highly inter-disciplinary, offering state-of-the-art course modules on topical interdisciplinary subjects such as Principles of Integrated Water Resource Management, Policy and Institutions of IWRM, Environmental Water Requirements, and Water Demand Management.

WaterNet

MASTER DEGREE PROGRAMME IN INTEGRATED WATER RESOURCES MANAGEM

STRUCTURE

PREPARATORY MODULE

0.0 English for Water Managers

CORE

0.1 Principles of IWRM
0.2 Principles of Hydrology
0.3 Socio-Econ. of Water & Env. Res.
0.4 Principles of Aq. Ecol. & Env. Mgt.
0.5 Policies, Laws and Institutions
0.6 Project

SPECIALISED PROGRAMMES

A. WATER RESOURCES MGT
6.1 Water Res. Analysis and Planning
6.2 Catchment Management
5.2 GIS and Database Management

B. WATER AND ENVIRONMENT
2.2 Environmental Impact Assessment
8.1 Water Quality Management
2.4 Environmental Water Requirements

C. HYDROLOGY
3.1 Hydrogeology
5.1 Remote Sensing & GIS
7.1 River Engineering

D. WATER AND LAND
4.1 Irrigation Design & Management
4.2 Drainage & Soil Degradation
6.2 Catchment Management

E. WATER FOR PEOPLE
1.1 Water Supply and Sanitation
1.2 Utility Management
8.2 Waste Water Management

F. WATER FOR SOCIETY
Water and Security
Environmental Education
Water and Development

ELECTIVES

(choose 2 out of remaining elective modules)

WATER SUPPLY AND SANITATION
1.1 Water Supply and Sanitation
1.2 Utility Management

ENVIRONMENTAL MANAGEMENT
2.1 Wetlands, Ecology and Mgt
2.2 Environmental Impact Assessment
2.3 Coastal Zone Management
2.4 Environmental Water Requirements

WATER RESOURCES
6.1 Water Res. Analysis and Planning
6.2 Catchment Management

SURFACE WATER
7.1 River Engineering
7.2 Early Warning for Droughts & Floods

GROUNDWATER
3.1 Hydrogeology
3.2 Groundwater Modelling
3.3 Groundwater Management
3.4 Hydro-geochemistry

AGRICULTURAL WATER USE
4.1 Irrigation Design & Management
4.2 Drainage & Soil Degradation

WATER QUALITY
8.1 Water Quality Management
8.2 Waste Water Management
8.3 Water Quality Modelling

CAPITA SELECTA
9.1 Capita Selecta in IWRM
Water Demand Management
Conflict Prevention in IWRM

INFORMATION TECHNOLOGY
5.1 Remote Sensing & GIS

8

Figure 1. Structure of the WaterNet Regional Master Programme in Integrated Water Resource Management.

The full modular Masters was first launched at the University of Dar es Salaam in October 2002 and at the University of Zimbabwe in February 2003. During this first intake, only three Specialisations were offered – Hydrology at UDSM, Water Resource Management at UZ, and Water and Society offered at the University of Western Cape (UWC). In its 2nd intake, in February 2004, the full Masters programme was offered to 30 WaterNet scholarship recipients from 11 countries. The Master program is still hosted at two member institutions (i.e, this is where student register and get the final degree), while 5 member institutions offer five WaterNet Specialisation programmes (University of Malawi – Water and Environment, University of Western Cape – Water and Society, Polytechnic of Namibia – Water for People, UDSM – Hydrology and UZ – Water Resource Management).

The original Master programme structure included 28 course modules. During the course of the development of the programme advancements in R&D in IWRM resulted in the addition of two course modules – one on Water Demand Management and one on Conflict Resolution and Cooperation on International Water Resources. Both these courses were developed through externally financed partnerships between WaterNet and international institutions. The WDM module was developed with Sida support through a partnership with IUCNs Regional office in Southern Africa (IUCN-ROSA) while the Conflict Resolution module was developed with support from Unesco.

During the course of its 1st phase WaterNet has awarded 83 full Master Scholarships for students in Southern Africa. These scholarships have been awarded in two sequences.

The first generation of fellowships were awarded to three intakes of the existing Water Resources Engineering and Management (WREM) and Water Resource Engineering (WRE) Master Programmes at University of Zimbabwe and University of Dar es Salaam, respectively. In total 30 fellowships were awarded to the WREM/WRE programmes from 1999-2002 (see Figure 2).

The second generation of WaterNet fellowships have been awarded to the WaterNet IWRM Master programme. In total 53 fellowships have been awarded in two intakes – 2003/04 and 2004/05 (Figure 2). Of these 83 students, 29 (all but one) have graduated from the WRE/WREM programmes.

WaterNet Fellowships 1999-2004

Figure 2. WaterNet fellowship awards in Southern Africa during 1999-2004. WRE/WREM refers to the existing Master programmes at UDSM and UZ, respectively, and IWRM is the newly developed WaterNet Master programme.

Not surprisingly, the largest number of students on the WaterNet IWRM programme come from the two host countries – Zimbabwe and Tanzania. The geographical distribution of students is relatively satisfactory though, as seen from Figure 2, which shows the geographical distribution of students in the 2 intakes to the WaterNet programme 2003/04 and 2004/05.

Country distribution WaterNet Master Program (2003/04 & 2004/05)

Figure 2. Geographical distribution of WaterNet students. Differentiation is made between the 2003/04 and the 2004/05 intake (the 04/05 intake may still be adjusted slightly depending on final changes in admission).

The gender distribution among the WaterNet awarded fellowships and on the WaterNet IWRM programme is not satisfactory, but still higher than what is normally observed on engineering oriented programmes. The 2nd intake to the WaterNet Master Programme, when WaterNet for the 1st time offered the full spectrum of "hard" and "soft" science specialisations, attracted 40% women among 30 fellowships. Despite the progress, there is still a lot of work to be done to attain a 50/50 balance in gender on the WaterNet programme.

Figure 3. Gender balance among the WaterNet supported Master scholarships 1999 - 2004

Even though the program has run for two times in the 1st phase of WaterNet, much work remains to be done in developing both structure and quality of the program. WaterNet agreed early in its 1st phase to invite a 3rd core host of the program in its first phase, and a 4th host in the 2nd phase. This never materialised during the 1st phase due to the complexity of hosting and implementing such a wide regional post-graduate programme. It is envisaged though that the challenge of further widening the host base of the programme will be taken up as a priority in the 2nd phase of WaterNet. Furthermore, the program requires continuous evaluation, quality control, staff development, and scientific backstopping. Unesco-IHE has played and important role in developing the Master programme so far, and it is envisaged that Unesco-IHE will continue to function as the main knowledge backstopper for the continued consolidation of the programme in its 2nd phase.

1.4.4   To increase the *accessibility* to training and education in IWRM for participants from the Southern Africa Region.

A notable achievement of this objective was the offering of a English course for Water Managers to participants from Mozambique and the Democratic Republic of Congo. The aim of the course is to facilitate the participation of water managers from these two countries in SADC activities. Feed-back from the participants indicated that it the course was very useful and that it should be offered on a regular basis.

Other efforts to increase access to education and training in IWRM have been ongoing in collaboration with GWP-SA. For example, IWSD, together with GWP-SA and WaterNet put in a bit to GWA to host a gender mainstreaming workshop.

WaterNet is also working with GWP-SA in planning workshops for GWP-SA's Country Water Partnerships for training in compiling IWRM plans. This is one of the major water related outputs of the WSSD action plan from Johannesburg, 2002, where countries are supposed to prepare national IWRM plans. For Southern Africa, WaterNet can play a critical role in supplying the Water Sector with the know-how required to carry out that exercise, particularly graduates from the WaterNet Master program, but also water professionals among WaterNet member institutions.

WaterNet and SADC has evaluated the prospects of complementing the academic training with professional or proficiency training for water managers in the region. The evaluation resulted in a proposal which was never implemented during the 1st phase of WaterNet. Instead it is envisaged that the professional training component of WaterNet will develop during the 2nd phase.

1.4.5   To stimulate, regionalise and strengthen *research* in the field of IWRM in the Southern Africa Region by offering opportunities to perform joint research.

WaterNet has throughout the 1st phase stimulated research and research collaboration through its Symposia, the Staff exchange between institutions in the region, and the Master research projects that are supported from the WaterNet Fellowship Fund. Furthermore, the collaboration with Warfsa (joint Symposium, board and steering committee meetings held simultaneously, activity collaboration), has further resulted in some synergies in research support. However, overall, this area has not received systematic attention during the 1st phase and will require more attention in a 2nd phase.

The WaterNet/WARFSA annual scientific Symposium has been held 4 times (Maputo, Mozambique in 2000, Cape Town, South Africa, in 2001, Dar es Salaam, Tanzania in 2002, and Gaborone, Botswana, in 2003). The Symposium has established itself as the major scientific event on IWRM related research in the region, if not on the continent. The number of scientific papers presented at the Symposia have increased steadily over the years, from some 30 papers in 2000 to 90 papers in 2003. Participants at the Symposia are not exclusively WaterNet members, but include WARFSA supported researchers, scientists from Africa and beyond.

Unesco-IHE has played an important role in facilitating research development, linking WaterNet partners to the international research community and funding opportunities. It is envisaged that this role will continue and probably be strengthened in a 2nd phase.

An important example of the facilitation role played by Unesco-IHE is the successful submission by 8 WaterNet partners in Mozambique, South Africa and Zimbabwe (and 19 partners in total), of a research proposal on developing IWRM in the Limpopo Basin, through the Challenge Programme on Water for Food. This 5 year research project was approved in October 2003, and started in February 2004.

Furthermore, during 2004 WaterNet decided to strategically use its staff development fund (SDF) for research capacity building among selected WaterNet members. TO ADD THE EXPERIENCE 2004
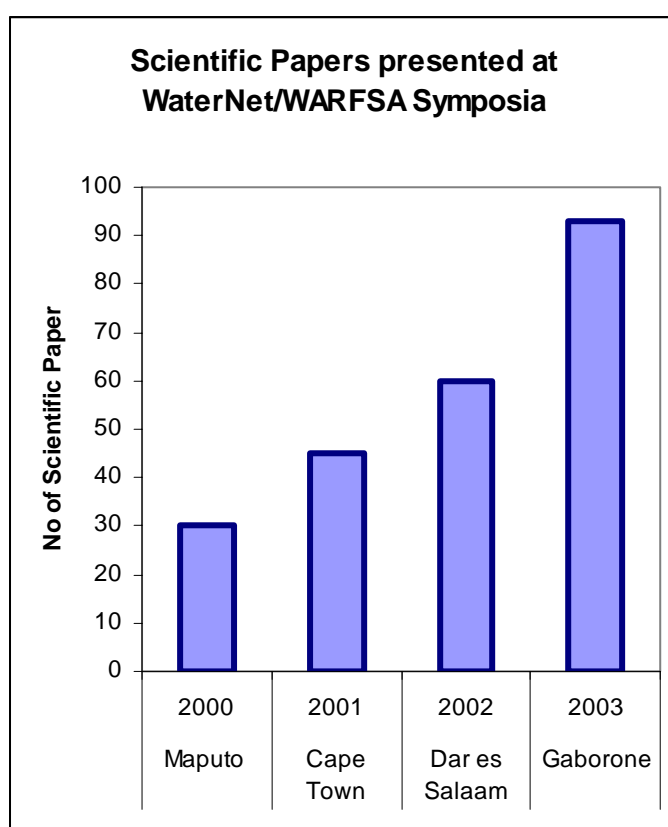

Scientific Papers presented at WaterNet/WARFSA Symposia

Figure 5. Development of scientific paper presentations at the WaterNet/WARFSA Symposia abetween 2000-2003

2 The need for human capacity building in IWRM

Since the adoption of the Dublin Principles in 1992 on principles for water resource management, the concept of IWRM has evolved rapidly in theory and policy. The Global Water Partnership (GWP) together with several agencies and internatinal for a (e.g., the 2ⁿᵈ and 3ʳᵈ World Water Fora as well as the World Summit on Sustainable Development in Johannesburg, August 2002) have subscribed to the notion that an integrated approach to freshwater management is a prerequisite for sustainable development. Water legislation in Southern Africa (e.g., in Zimbabwe and South Africa) and management institutions (e.g., Catchment Management Agencies) are formulated and structured with a mandate of supporting IWRM principles. In reality though, water resource management remains by and large sectoral and mono-disciplinary in its execution. Water resources supporting development are still largel conceived in terms of accessible blue water resources to sustain domestic, industrial and irrigation purposes. Efforts of incorporating water for the environment and the role of green water flows to sustain societal development remains isolated from the mainstream of water management. The needs for human capacity building in IWRM have been expressed clearly by regional institutions, such as the GWP and SADC, as well as from national government institutions and higher learning institutes. WaterNet offers the only regional platform for human capacity in IWRM, presently within academic post graduate training. The 2ⁿᵈ phase of WaterNet will address the much needed research integration and professional training of professionals involved in water management.

WaterNet is a SADC endorsed project on human capacity building in IWRM. It has during the 1ˢᵗ phase contributed to the wide endeavour of SADC on sustainable management of water resources, and thus contributes to the Regional Strategic Action Plan for Integrated Water Resources Management (1999-2004), the so-called RASP, which was developed in 1998. In this process SADC Water Sector (now the SADC Water Division) developed 31 Projects Concepts Notes (PCNs) in priority areas. Under Capacity Building and Training on IWRM Project Concept Number 23 was denoted WaterNet. In 2001 SADC, with facilitation from WaterNet, developed a full proposal for the PCN 23 WaterNet (carried out by Mr Ngoni Mudege and Mr Paul Taylor) (SADC, 2001). This proposal assessed the needs of human capacity building in the SADC region, and outlines a Capacity Building and Training project (PCN 23 WaterNet) with three pillars:
   - Research capacity building
   - Academic training
   - Professional Training

WaterNet in its 1ˢᵗ phase has primarily contributed to the 2ⁿᵈ pillar of PCN23, through its flagship, the Regional Master Programme in IWRM. Research capacity building has been addressed through the WaterNet affiliated but independently managed Water Research Fund for Southern Africa (WARFSA). The professional training pillar has not been implemented as yet, while WaterNet has carried out certain efforts on professional training in principles of IWRM, Water Demand Management and Conflict Prevention and Cooperation in International Water Resources.

In summary, during its 1st phase WaterNet has evolved towards the full implementation of the SADC PCN 23 on human capacity building in IWRM. As is suggested further on in this strategic plan, WaterNet proposes to take on the full implementation of the SADC PCN 23 project in a 2nd phase.

In the SADC context, WaterNet during its 1st phase contributes to the recently developed Regional Integrated Strategic Development Plan (RISDP) of SADC. The RISDP outlines the strategic objectives to attain SADC's regional integration and development goals. Integrated Water Resource Management contributes to several of the RISDP priority intervention areas:

- Poverty eradication;

- Combating of the HIV/AIDS pandemic;

- Gender equality and development;

- Trade/economic liberalization and development;

- Infrastructure support for regional integration and poverty eradication;

- Sustainable food security; and

- Human and social development.

However, WaterNet (PCN23) falls primarily under the RISDP intervention area in Infrastructure support for regional integration and poverty eradication

The African Minister's Council on Water (AMCOW) held its Pan-African Implementation and Partnership Conference on Water in Addis Abeba, December 2003. WaterNet was lifted forwarded in the Ministerial Declaration from this meeting as a successful example of the much needed efforts on regional human capacity building in sustainable water resource management (REF).

3 WaterNet Strategy

WaterNet, through its 4 year development (1999 – 2004) in partnership with higher learning institutions in the region, has built up a solid platform to formulate a strategy for a 2nd phase. During its first four years WaterNet has continuously assessed its achievements and formulated adjustments and additional initiatives required to achieve its goal of becoming a relevant, regionally owned, and demand driven network for human capacity building in integrated water resource management. The WaterNet Steering Committee has formulated several additional activities to strengthen the delivery capacity of WaterNet, which resulted in a request for Additional funds to the Dutch Embassy in Mozambique in 2002. This request, based on broad consultations within the WaterNet steering committee and the WaterNet Annual General Meeting (AGM), included the following components: The establishment of WaterNet Professorial Chairs at five WaterNet host institutions of the Master program in IWRM; The launch of an Outreach Fund to support dissemination, translation, publication of WaterNet outputs and the WaterNet Symposium; professional training (strongly brought forward in the SADC PCN 23 proposal), and a Flood research center in Mozambique. In September 2002 CAPNET

carried out a Lessons Learnt study on WaterNet, to document experiences of setting up the world's first regional network on capacity building on IWRM (Krugmann and Kwai Sim, 2002). This was followed in May 2003 by the WaterNet Evaluation, which gave guidelines on strengths and weaknesses, advice on focus for the remaining part of the 1st phase, and elements of what a 2nd phase of WaterNet could include (van Woersen and Boroto, 2003). Parallel to these developments, WaterNet initiated early 2003 a process of developing a strategic plan for a 2nd phase together with key partners in the region. Consultations with SADC Water Division and the Global Water Partnership (GWP) Southern Africa office, have been important components of this planning.

3.1 WaterNet – the Rationale

WaterNet is unique in its effort of translating the concept of IWRM into human capacity building with the aim of educating a new generation of Water Managers in Southern Africa. Since the Dublin Principles in 1992, and the further development of the concepts of IWRM through the World Water Vision exercise prior to the 2nd World Water Forum, the Hague 2000, and the important work by the GWP in developing an IWRM Tool Box, there is a growing consensus that the IWRM may be good in theory, but it also has to be applied in practice. The 3rd World Water Forum in Kyoto, March 2003, was a strong reminder of the need to go from Knowing to Doing in applying principles of IWRM.

In Southern Africa there is a growing realization of the needs for an integrated approach to water resource management. Water legislation increasingly emphasis the need to safeguard freshwater for different function in the landscape, from human direct needs to water to sustain ecosystems. Managing water resource in transboundary river basins is a major concern, as well as equitable sharing of water resources a the catchment level. Catchment Management Agencies (CMAs) are established in several countries, with the role of applying principles of IWRM in their day to day management of freshwater. The SADC Water Division and the GWP, through its network of management and policy stakeholders in Southern Africa, confirm the large need for human capacity to address the new challenge of integrated management of water resources.

WaterNet is a strategic initiative to develop and maintain a momentum on building capacity in Southern Africa to meet the present and future challenges of managing scarce water resources in the region. However to do this, WaterNet must take steps beyond the present (1st phase) focus on academic postgraduate education. While the 1st phase of WaterNet was still largely focused on the "Knowing" side of IWRM – building up a human knowledge base on IWRM – the 2nd phase of WaterNet will broaden this knowledge building to also include the challenge step of going from knowing to doing. WaterNet will achieve this by consolidating and expanding on its platform – the academic training of a new generation of water managers into new areas.

4 WaterNet major thrusts

WaterNet will have three major thrusts in a 2nd phase, which all will contribute to the objective to enhance the regional capacity in integrated water resource management in Southern Africa:
- Strengthen and maintain a relevant, effective and sustainable network on human capacity building in IWRM
- Carry out human capacity building in IWRM
- Be a partner in taking IWRM from "Knowing to Doing" in Southern Africa.

WaterNet in its 2nd phase will widen its capacity building scope, from the present focus on post-graduate education, to encompass the full spectrum from university training to research capacity building and continued professional training for water managers.

WaterNet will thus achieve its thrusts through three pillars:
1) Academic training
2) Research capacity building
3) Professional training

The 1st pillar on Academic training, through the WaterNet Master Programme in IWRM will continue to be the major foundation of the network. The Master programme through the growing alumni of new water managers in the region, and the staff collaboration it generates between higher learning institutions in the region, constitutes the basic condition for WaterNet to be able to embark on a widened scope into research and professional training. WaterNet will thus build on its Master programme experience in order to effectively develop IWRM capacity building in research and professional training. This said, the Master programme, which during the 1st phase has been offered twice (and only once with its full spectrum of specialisation programmes) still requires substantive development efforts as mentioned under Achievements above.

The 2nd pillar will be implemented primarily by the Water Research Fund of Southern Africa (WARFSA) through the suggested inclusion of WARFSA in the overall WaterNet initiative (see Establishing the Network below). A closer integration of WARFSA and WaterNet in the overall endeavour of capacity building in IWRM will offer important synergies. Already in its 1st phase, WaterNet has been involved in research capacity building, through its coordination of the WaterNet Challenge Programme research project on IWRM in the Limpopo river basin, and through research capacity building using its Staff Development Fund. Similarly, WaterNet and WARFSA have agreed in the 1st phase to jointly support MSc dissertation research projects by students graduating from the WaterNet post-graduate programme, in an effort to support academic capacity building from post-graduate level into research.

The 3rd pillar on professional training will include a strengthening of WaterNet's current efforts on professional training (through its short course development), and possibly the establishment of a partnership with an existing regional initiative on IWRM capacity building through professional training, such as the Unesco and Belgian supported capacity building initiative FETWater (coordinated by the Department of Water Affairs and the Water Research Commission in South Africa).

The widened scope of WaterNet will require a continued, and in parts even strengthened, support from Unesco-IHE. Unesco-IHE will continue to support WaterNet with technical know-how, management support, and regional and global links to education and research in IWRM.

4.1 Establishing a relevant, effective and sustainable Network

In its 1st phase WaterNet has succeeded in establishing itself as a membership driven and relevant network. The core focus has been on forging the network and developing regional post-graduate training. In the 2nd phase, WaterNet will take on three major challenges in terms of network development:

1) Further strengthen the ownership of the Network and the partnerships involved in the Network
2) Secure the long-term sustainability of the Network
3) Widen the scope of the Network by becoming the implementing institution of the SADC regional initiative on human capacity building in IWRM (PCN 23).

The 1st challenge involves continuing on the course set out in the 1st phase, with a difference that partnerships will be established with a wider range of stakeholders in the region, including to a larger extent policy makers and water professionals. WaterNet will establish stronger links with water users in Southern Africa through a closer partnership with GWP.

The sustainability of WaterNet will be addressed in three ways:
- broadening the funding base of the 2nd phase
- increasing the commercial supply of WaterNet products (e.g., marketing of short courses)
- establishing WaterNet as a legal entity (see below under legal status).

WaterNet will aim at widening its donor support base, preferably through a basket funding strategy with several donors to secure a basic long term support.

4.1.1 WaterNet Phase II – Implemeting the SADC PCN 23

The achievements of WaterNet during its 1st phase has established a institutionally credible network to take on the wider task of implementing the SADC PCN 23 initiative on human capacity building in IWRM in Southern Africa. The SADC PCN 23 needs an implementing institution, and it is suggested that WaterNet takes on this role during the course of its 2nd phase. The PCN 23 initiative falls under the SADC Water Division. The SADC Water Division reports to the SADC Division of Infrastructure and Services, which in turn falls directly under the SADC Secretariat.

The structure of the WaterNet as implementing institution of the SADC PCN 23 is shown in Figure 6. As seen from this structure, WaterNet will in a 2nd phase develop into the umbrella initiative on human capacity building in IWRM, including the 3 pillars outlined above and in the PCN 23 proposal of SADC. Each pillar would remain with its own Implementing Agency (IA),with WARFSA spearheading the implementation of the WaterNet Research Capacity Building Pillar. The present core

of WaterNet, on regional academic training, will remain the core of WaterNet's implementation also in a 2nd phase.

Figure 6. The new SADC WaterNet structure

WaterNet, as implementing institution for the SADC PCN23 will become the umbrella initiative in the SADC region for capacity building in IWRM. As such, each pillar may on the long term include several Ias – institutions that contribute to the overall objectives of PCN23 and which establish a partnership with WaterNet.

It is envisaged that the transition from the present WaterNet project to becoming the WaterNet PCN23 initiative, will have to occur progressively over the course of the 2nd phase of WaterNet. It is proposed that WaterNet by 1st January 2006, i.e., after the first year into the 2nd phase, is fully established at the SADC initiative on human capacity building in IWRM.

4.1.2 <u>Legal Status of WaterNet</u>
In its first phase WaterNet established the WaterNet Trust in order to enable WaterNet to solicit and receive funds from external partners/investors such as:

Industry, Commerce, Foundations, and governments. A board of Trustees was appointed and a Deed of Trust signed, which determines the governing structure of the WaterNet Trust. The Trust was never made operational during the 1st phase of WaterNet due to the need to further clarify the relations between the Trust and the Network (i.e., translating in operational terms the regulations adopted in the WaterNet Constitution and the Deed of Trust of WaterNet). It was further felt that the operationalisation of the WaterNet Trust should be set in the context of the Network developments in a 2nd phase. The legal status of WaterNet – an absolute necessity in order to secure the long term sustainability of WaterNet – is therefore addressed within the context of SADC, in order to investigate the most transparent and strategic institutional setup for such a wide ranging, complex and regional initiative as WaterNet.

4.2 Human capacity building in Integrated Water Resource Management

In its 1st phase WaterNet was primarily involved in post graduate education in IWRM. As mentioned above under Major Thrusts – this will remain the core thrust of WaterNet. In a 2nd phase WaterNet will facilitate human capacity building in the continuum from professional training via academic post-graduate education to research training. As outlined above, the capacity of WaterNet to deliver this larger mandate on capacity building, will be through the incorporation of the 3 capacity building pillars (Research, Academic training, and Professional training) under the WaterNet initiative.

An important further step in strengthening the WaterNet delivery capacity in human capacity building will be the appointment of 4 WaterNet Professorial Chairs in Integrated Water Resource Management at the four WaterNet Master Program host institutions in the region. These Professorial chairs will spearhead the education and research training, as well as WaterNet partnerships in research initiatives.

4.2.1 Post-graduate training

Academic training in IWRM will continue to be a main thrust of WaterNet. The WaterNet IWRM Master program will be expanded in the region. A total of at least four WaterNet member departments to be running a complete set of core modules and at least one clearly defined specialisation option by the end of 2005, and thereafter on an on-going basis (**PIAO3-2-1**).

One of the four WaterNet member institutions should include Universidade Eduardo Mondlane (Mozambique). (**PIAO3-2-2**).

The number of specialisation will increase, to reflect fully the social dimensions of IWRM. This will include the development of capacity to deliver modules in, e.g., of Water Diplomacy covering Policies, Laws, and Institutions, Conflict resolution, etc. (**AO2-5).**

Continuous review and assessment of the Post-graduate program will be important developments in the 2nd phase of WaterNet. Discussions with stakeholders will be held in order to revise/update the WaterNet Masters curricula, and the objectively

determined needs of the sector in the region will be reflected in these developments (**AO3-2**).

4.2.2 Proficiency training

In close partnership with the SADC Water Division and the GWP WaterNet will facilitate the development of professional competency training on IWRM (in line with the objectives of the SADC PCN 23 proposal). The needs of the region will be assessed, and training programmes carried out by selected institutions (AO3-3).

WaterNet, together with CAPNET and GWP Southern Africa, has supported – in the final year of the 1st phase (2004) training of trainers in Principles of IWRM, Conflict resolution and Water demand management as a part of the initiative to build capacity at national level to enable the development of national IWRM plans (as part of the implementation of the WSSD plan of action on water). This work, which is funded through external funding support to GWP, will continue under the Professional Training Pillar of WaterNet, in partnership with CAPNET and GWP.

WaterNet II, under a PCN 23 setting, will need to establish a partnership with a lead Implementing Agency for the professional training pillar. A suggestion is to let the recently established FETWater Network on training on IWRM take the role of lead instution for the WaterNet Professional Training pillar. FETWater, which is hosted by the DWAF and WRC in South Africa, and funded by the Flemish Government through Unesco support, has a regional mandate of training in IWRM.

DEVELOP FURTHER…

4.2.3 Research training

As a first step (2 first years of the 2nd phase) WaterNet will link its Master program to WARFSA in order to enable Master students to carry out Master research projects within the framework of WARFSA supported research projects. IWRM Master students will also be able to carry out research dissertations within WaterNet facilitated research initiatives in Southern Africa and in IWRM demonstration catchments (see below under Partner in Research).

WaterNet through its Professorial Chairs in IWRM will be able to support training of research staff and water professionals from post-graduate education to full Doctoral graduates in IWRM in Southern Africa.

As a 2nd step (2006 onwards) WARFSA will become the implementing agency of the WaterNet Research capacity building pillar.

DEVELOP FURTHER…

4.3 Partner in Research

WaterNet will more clearly become a partner in integrated research initiatives. The links with the Water Research Fund for Southern Africa will be strengthened, and WaterNet will focus most strongly on the continuum from post-graduate education, Master science dissertation and PhD-research training. WaterNet will be more

actively involved in research facilitation – functioning as a regional hub for research partnerships, and assist members in formulating and executing research.

WaterNet will support member institutions in developing research projects, assist in mentoring research processes, and become a partner in execution of research programs. This will be based on the experiences within the Challenge Program on Water for Food, where WaterNet is coordinating an integrated IWRM research program on the Limpopo with 19 partner institutions.

WaterNet intends to establish partnerships with 1 or 2 Catchment Management Agencies and link the capacity built among partner institutions in the region, to support the implementation of IWRM principles in practical catchment and basin management. These WaterNet demonstration catchments on IWRM will function as learning grounds for WaterNet, and assist all stakeholders involved in IWRM development in the region to go translate theory in IWRM to practical management.

5 WaterNet Vision and Objectives

5.1 WaterNet Vision

The vision or overall goal of WaterNet is to contribute to equitable and sustainable utilization of water for social, environmental justice, and economic benefit for present and future generations in Africa.

To establish a sustainable and relevant, membership and demand driven, network on capacity building in IWRM in Southern Africa. Financial sustainability will be an important thrust of WaterNet in a 2nd phase. WaterNet will strategically establish donor partnerships for basket funding. WaterNet outputs, such as training courses, will be marketed commercially in the region, in order to generate own funds for activities.

WaterNet will be a relevant network for other regions in the World. Partnerships will be strengthened with similar initiatives in other parts of the World, and reciprocal exchange of experiences on IWRM will be carried out between North-South as well as South-South.

5.2 Developmental Objective

To enable the peoples of Southern Africa to efficiently and effectively manage their water resources WaterNet seeks to enhance regional capacity in Integrated Water Resources Management (IWRM) through training, education, research, and outreach by harnessing the complementary strengths of institutions in the region

5.3 Immediate Network objectives

1. Forging the network
2. To raise awareness with regard to the regional scale of IWRM
3. To stimulate regional cooperation in the field of *education* in IWRM by developing a modular Master Degree Programme.

4. To increase the *accessibility* to training and education in IWRM for participants from the Southern Africa Region.
5. To stimulate, regionalise and strengthen *research* in the field of IWRM in the Southern Africa Region by offering opportunities to perform joint research.

6 Attaining the objectives

The current experience shows that the most efficient manner to attain the objectives is to have dedicated funding for each objective. At present WaterNet operates four dedicated funds, the SDF, the SEF, the NSF and the FF. Dedicated funding prevents the possibility of what could be called a creeping distortion of expenditure because spending is prescribed by the criteria and procedures of each fund.

In a 2nd phase it is proposed that WaterNet establishes several new funds in order to fulfil the wider mandate under SADC, while at the same time integrating existing capacity building funds (e.g., WARFSA) under the new WaterNet initiative (PCN 23).

The new WaterNet funds will include:
- A WaterNet Management Fund (Secretariat operations)
- WaterNet/WARFSA Outreach Fund
- WaterNet/WARFSA Symposium Fund
- WaterNet Publication Fund
- Curriculum development Fund
- Professorial Chair Fund
- Catchment Partnership Fund
- Education and Training Fund
- Language Course Fund
- WARFSA Research Fund

1 Forging the network
Activities 1.1, 1.2, 1.3, 1.4
Fund: WaterNet Management Fund, Nodal Strengthening Fund

2 Outreach, Awareness and Policy development
Activities 2.1, 2.2
Fund: WaterNet/Warfsa Outreach Fund, Symposium Fund, Publication Fund.

3 To stimulate regional cooperation in the field of *education* in IWRM by developing a modular Master Degree Programme.
Activities 3.1, 3.2, 3.3, 3.4, 3.5,
Funds: Fellowship Fund, Curriculum Development Fund, Staff Exchange Fund, Professorial Chair Fund.

4. To increase the *accessibility* to training and education in IWRM for participants from the Southern Africa Region.
Avtivities 4.1, 4.2, 4.3, 4.4
Catchment Partnership Fund, Education and Training Fund, Language Course Fund

5. To stimulate, regionalise and strengthen *research* in the field of IWRM in the Southern Africa Region by offering opportunities to perform joint research.
Activities 5.1, 5.2, 5.3, 5.4, 5.5
Staff Development Fund, WARFSA Fund

7 WaterNet Outputs and Activities

1 Forging the Network

Activity 1.1

Develop WaterNet into the SADC initiative on human capacity building in IWRM (PCN 23), establish the partnerships required to implement the three pillars of the SADC PCN 23 initiative (Academic Training, research capacity building and Professional training), and establish the governance and institutional capacity required to implement the full WaterNet PCN 23 initiative. The objective is to have the full WaterNet initiative in place by 1 January 2006.

Activity 1.2

A Network of active member institutions in charge of implementing WaterNet activities. WaterNet will put a particular emphasis to invite members from Angola, Democratic Republic of Congo, and Mozambique. A tentative target is a network with 50 member institutions in 15 countries of East and Southern Africa

Activity 1.3

A fully staffed and efficiently operated WaterNet Secretariat. Network Manager recruited from the region from end of Phase I. WaterNet Advisor initially contracted by Unesco-IHE (2005-2006) and then recruited from the region (2006 onwards). The secretariat is expanded with a Training Officer and an Outreach Officer in 2005.

Activity 1.4

Ensure that the WaterNet Trust is fully operational (soliciting and receiving donations from external partners/investors such as: Industry, Commerce, Foundations, Governments), investing funds professionally, awarding scholarships for IWRM studies, awarding grants for research and outreach, and judiciously overseeing the management of WaterNet assets **(AO2-3)**.

Activity 1.5

Manage the present WaterNet Funds in a professional and transparent manner: The WaterNet Staff Exchange Fund (SEF), The WaterNet Staff Development Fund (SDF) and the WaterNet Nodal Strengthening Fund (NSF).

2 Outreach, Awareness and Policy development

Increasing numbers of qualified IWRM practitioners (at both the graduate and technicians levels) and political decision makers who are well informed about water issues are produced. *[Human ware]*

Activity 2.1

Mobilize the necessary funding for establishing and operating the following Funds, (WAFSA/WaterNet Outreach, Publications and Translation, Symposium, Curriculum Development, and Consultancy Funds) **(AO4-4)**.

Activity 2.2

Undertake effective public relations, and information dissemination on WaterNet to foster ownership and support from interested stakeholders [PR]. Also participate in / collaborate with other initiatives or programmes (e.g. CAPNET, POWER, GWP) in cases where such collaboration will support the efforts of WaterNet for improved IWRM (**AO4-3**).

3 To stimulate regional cooperation in the field of *education* in IWRM by developing a modular Master Degree Programme

Activity 3.1

Ensure that five SADC WaterNet Professorial Chairs in IWRM are established by the end of 2006 in consultation with SADC, interested WaterNet member departments, and pro-actively implement the relevant HRD policies to foster commitment, and increased productivities in IWRM research [HR] (**AO4-2**). The SADC WaterNet

Professorial Chairs will support research capacity building in the region, and will from their establishment work closely with WARFSA in assisting higher learning institutions in the region to formulate and carry out research (contributing to Output/Objective 5).

The Professorial chairs, while being widely focused on IWRM, will have specific orientations, in fields agreed with partners in the region (e.g., flood management, governance etc.).

Activity 3.2

Run the WaterNet Master Program in IWRM in the region with 4 host institutions of the core program (adding University of Eduardo Mundlane, Mozambique in 2005). Run the program with 5 hosts of specialisation programs, offering > 25 fully developed course modules.

Activity 3.3

Establish a WaterNet Fellowship Fund offering at least 40 annual fellowships for the post-graduate program (the one year taught part of the program) over the full 2nd phase of WaterNet (2004-2008).

Activity 3.4

Establish a regional review procedure for evaluation and monitoring of the WaterNet Master program.

Activity 3.5

Establish the WaterNet Master dissertation Fund together with WARFSA for support of 40 Master dissertation research projects per year within the WaterNet Master Program.

4 To increase the *accessibility* to training and education in IWRM for participants from the Southern Africa Region.

Activity 4.1

IWRM principles tested in an action learning framework at Catchment scale. Establish IWRM catchment partnership with 1 – 2 Catchment Management Agencies and facilitate the practical implementation of IWRM principles in real water management on the ground. WaterNet, through the IWRM capacity of its members, will carry out training, knowledge transfer, and institutional support within the demonstration catchments. These IWRM learning catchments will be used for professional, educational and research training. This work will contribute to improved policy formulation and awareness among stakeholder on IWRM issues (Outputs/Objective 2).

Activity 4.2

Procure/Build/Expand, or facilitate the procurement/ building/expansion of the various IWRM research and development facilities where necessary, including a Water Resources/Flood Management Centre in a WaterNet member department in Mozambique (**AO1-3**).

Activity 4.3

Together with SADC Water Sector initiate the WaterNet competency training program in IWRM (PCN 23). This programme to be running (being coordinated) from at least two WaterNet member departments by the end of 2005, and thereafter on an on-going basis (**PIAO3-3**).

Activity 4.4

Investigate and if found feasible disseminate/conduct some of the WaterNet modules as distance Education modules where the needs justifies this approach.

5. To stimulate, regionalise and strengthen *research* in the field of IWRM in the Southern Africa Region by offering opportunities to perform joint research.

Activity 5.1

Support WaterNet members in developing research projects and assist in mentoring research processes

Activity 5.2

WaterNet to function as a hub in the region in developing integrated research initiatives, and to coordinate major group research initiatives among WaterNet member institutions.

Activity 5.3

WaterNet to facilitate the integrated research program on IWRM in the Limpopo Basin through support from the Challenge Program on Water for Food

Activity 5.4

Develop, over the course of the 1st year of the 2nd phase, the links with WARFSA in supporting IWRM research within the WaterNet facilitated research activities. WaterNet and WARFSA will establish a close collaboration on support to MSc research within the WaterNet IWRM program, and WaterNet will devote efforts to research capacity building within WARFSA activities.

At the time of the full establishment of the WaterNet PCN23 initiative, WARFSA becomes the lead Implementing Agency of the WaterNet Research capacity building pillar. The strategic management of WARFSA is then lifted up to the WaterNet Steering Committee level, which WARFSA retains the role of managing the Research Fund at the IA level and the operations of the Research Fund (peer review, project selection etc.). It is further suggested, that while WaterNet and WARFSA should remain hosted at two different institutions (presently IWSD for WARFSA and University of Zimbabwe, for WaterNet).

Activity 5.5

Actively seek funding for major research acvities from external partners such as Industry, Commerce, Foundations, NGOs, International Aid Organizations, and Governments (national or foreign). Of necessity, such projects would also involve several B.Sc., Masters, and Doctorate sub-projects **(A02-2)**.

8 Structure and financial management of Network

At present WaterNet has a dual structure, with a membership driven network structure with the mandate of deciding on all network activities (through the WaterNet Steering Committee and the Annual General Meeting), and a Trust with the mandate to raise funds, channel funds to the implementation of activities and to carry out audits of use of funds (Figure. 7).
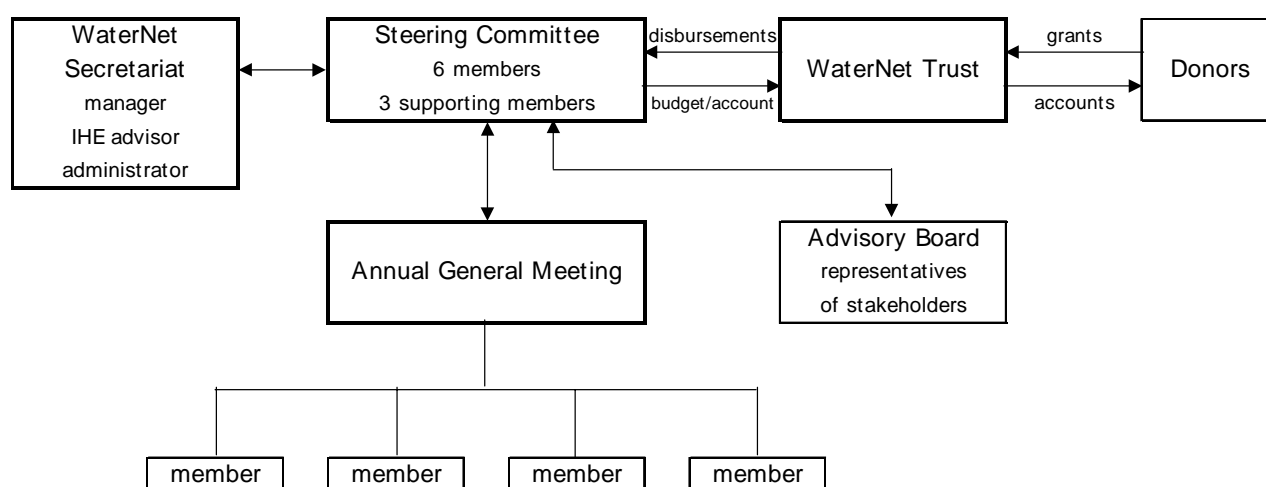

Figure 1. WaterNet Structure in 1st phase

WaterNet – A new Network Structure

It is suggested that WaterNet retains the principle structure of the present network even in a PCN23 context (Figure 8). The WaterNet Annual General Meeting (AGM) continues to be the supreme governance level of the WaterNet initiative, with the role of approving workplans, budgets and appointing of certain members of the WaterNet steering committee. The WaterNet steering committee, in parts appointed by the AGM, will have representation from the IAs from the three pillars of WaterNet. The SC appoints a Secretariat, which implements the workplans approved by the AGM. The WaterNet Steering Committee has representation from four major categories of institutions; WaterNet member institutions, Implementing Agencies of WaterNet Pillars, Supporting members (donors and technical backstopping) and *ex-officio* members (e.g., SADC and Institution hosting the WaterNet Secretariat).

WaterNet PCN 23

Figure 8. Network structure of the proposed WaterNet PCN 23

In the proposed 2nd phase of WaterNet, the WaterNet Trust will play a more prominent role in receiving and disbursing funds to WaterNet. The strategy opted by WaterNet to achieve long-term sustainability is to initially establish partnerships with several donors to secure a broader financial support base (through basket funding of WaterNet Funds). Parallel to this WaterNet will function as a hub in the region to generate funds for capacity building activities implemented by member institutions. WaterNet products, such as training courses, will be commercially marketed in the

region, in order to cover running cost of the Network as well as strengthen the financial basis of member institutions.

It is suggested that Unesco-IHE continues to financially manage the Network operations (the Secretariat) during the first 2 years of a 2nd phase (January 2005 – December 2006). WaterNet funds will already from the initiation of a 2nd phase be operated by the WaterNet Trust. From January 2007 onwards, WaterNet will be fully managed by the WaterNet institutions in the region.

Unesco-IHE will continue to be a close partner in capacity building within WaterNet, and throughout the 2nd phase IHE staff will support Network activities through scientific backstopping, curriculum development, educational review, facilitation of course delivery etc.

9 Network Budget

WaterNet Phase II Tentative Budget (Euros)

Fund	Operated by	2005	2006	2007	2008	2009
Forging the network						
WaterNet Management Fund	Core Funding	500,000	475,000	450,000	450,000	500,000
Network Manager and Advisor						
Network Advisor						
Network Outreach Officer						
Network Professional Training Officer						
Network Administrative Officers						
Unesco-IHE Scientific backstopping	Unesco-IHE	50,000	50,000	50,000	50,000	50,000
Nodal Strengthening Fund	WaterNet Trust	40,000	40,000	40,000	40,000	40,000
	Subtotal	**590,000**	**565,000**	**540,000**	**540,000**	**590,000**
To raise awareness with regard to the regional scale of IWRM						
WaterNet/Warfsa Outreach Fund						
Symposium Fund	WaterNet Trust	90,000	90,000	90,000	90,000	90,000
Publication Fund	WaterNet Trust	25,000	25,000	25,000	25,000	25,000
Southern Africa Journal Fund	WaterNet Trust	50,000	50,000	50,000	50,000	50,000
	Subtotal	**165,000**	**165,000**	**165,000**	**165,000**	**165,000**
To stimulate regional cooperation in the field of *education* in IWRM by developing a modular Master Degree Programme.						
Fellowship Fund	WaterNet Trust	480,000	480,000	480,000	480,000	480,000
MSc Dissertation Fund	WaterNet Trust	150,000	150,000	150,000	150,000	150,000
Curriculum Development Fund	WaterNet Trust	50,000	50,000	50,000	50,000	50,000
Staff Exchange Fund	WaterNet Trust	75,000	75,000	75,000	75,000	75,000
Professorial Chair Fund	WaterNet Trust	68,000	136,000	340,000	340,000	340,000
	Subtotal	**823,000**	**891,000**	**1,095,000**	**1,095,000**	**1,095,000**
To increase the *accessibility* to training and education in IWRM for participants from the Southern Africa Region.						
Catchment Partnership Fund	WaterNet Trust	40,000	40,000	40,000	40,000	40,000
Education and Training Fund (PCN23)	WaterNet Trust	225,000	225,000	225,000	225,000	225,000
Language Course Fund	WaterNet Trust	40,000	40,000	40,000	40,000	40,000
	Subtotal	**305,000**	**305,000**	**305,000**	**305,000**	**305,000**
To stimulate, regionalise and strengthen *research* in the field of IWRM in the Southern Africa Region by offering opportunities to perform joint research.						
Staff Development Fund	WaterNet Trust	75,000	75,000	75,000	75,000	75,000
Water Resources/Flood Centre Mozambique	UEM	100,000	100,000	100,000	100,000	100,000
Warfsa Fund	Warfsa			600,000	600,000	600,000
	Subtotal	**175,000**	**175,000**	**775,000**	**775,000**	**775,000**
	Total	**2,058,000**	**2,101,000**	**2,880,000**	**2,880,000**	**2,930,000**
	Grand Total					**12,849,000**

10 References

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11 Annexes

Annex 1   WaterNet Master Programme – Programme Modules
Annex 2   WaterNet Programme Structure 2004/05
Annex 3   WaterNet Evaluation Key Findings

Annex 1 WaterNet Master Program – Program Modules

IWRM	0.0	English for Water Managers
IWRM	0.1	Principles of Integrated Water Resources Management
IWRM	0.2	Principles of Hydrology
IWRM	0.3	Socio-Economics of Water & Environmental Resources
IWRM	0.4	Principles of Aquatic Ecology & Environmental Management
IWRM	0.5	Policies, Laws and Institutions
IWRM	0.6	Project
IWRM	1.1	Water Supply and Sanitation
IWRM	1.2	Utility Management
IWRM	1.3	Water Demand Management
IWRM	2.1	Wetlands, Ecology and Management
IWRM	2.2	Environmental Impact Assessment
IWRM	2.3	Coastal Zone Management
IWRM	2.4	Environmental Water Requirements
IWRM	3.1	Hydrogeology
IWRM	3.2	Groundwater Modelling
IWRM	3.3	Groundwater Management
IWRM	3.4	Hydro-geochemistry
IWRM	4.1	Irrigation Design & Management
IWRM	4.2	Drainage & Soil Degradation
IWRM	5.1	Remote Sensing and Geographic Information Systems
IWRM	5.2	Geographic Information Systems and Database Management
IWRM	6.1	Water Resources Analysis and Planning
IWRM	6.2	Catchment Management
IWRM	6.3	Water Resources Modelling
IWRM	7.1	River Engineering
IWRM	7.2	Early Warning for Droughts & Floods
IWRM	8.1	Water Quality Management
IWRM	8.2	Waste Water Management
IWRM	8.3	Water Quality Modelling
IWRM	9.1	Capita Selecta 1
IWRM	9.2	Capita Selecta 2
IWRM	9.3	Capita Selecta 3
IWRM	9.4	Capita Selecta 4
IWRM	10.1	Water and Security
IWRM	10.2	Environmental Education
IWRM	10.3	Water and Development
IWRM	10.4	Conflict Resolution

Annex 2 WaterNet Programme Structure 2004/05

Institution	Polytechnic of Namibia	University of Zimbabwe	University of Western Cape	University of Dar es Salaam	University of Malawi	
Specialisation	Water for People	Water Resources Mngt	Water for Society	Hydrology	Water and Environment	
week starting on						
9 February		*Registration*		*Registration*		
16 February		**0.1 Principles of IWRM**		**0.1 Principles of IWRM**		
8 March		**0.2 Principles of Hydrology**		0.2 Principles of Hydrology		
29 March		**0.4 Principles of Aquatic Ecology & Environmental Management**		0.3 Socio-Economics of Water & Environmental Resources		
19 April		*Break*		*Break*		
26 April		**0.3 Socio-Economics of Water & Environmental Resources**		0.4 Principles of Aquatic Ecology & Environmental Management		
17 May		**0.5 Policies, Laws & Institutions**		**0.5 Policies, Laws & Institutions**		
7 June		**6.1 Water Resources Analysis & Planning**		**5.1 Remote Sensing & GIS**		
28 June		*Break*		*Break*		
12 July	1.1 Water Supply & Sanitation	5.2 GIS & Database Management	**10.1 Water & Security**	3.1 Hydrogeology	2.2 Environmental Impact Assessment	
2 August	1.2 Utility Management	3.1 Hydrogeology	**10.2 Environmental Education**	7.1 River Engineering	8.1 Water Quality Management	
23 August	8.2 Waste Water Management	*Break*	**10.3 Water & Development**	2.2 Environmental Impact Assessment	2.4 Environmental Water Requirements	
30 August		9.1 Capita Selecta / Water Resources Modelling				
				Break		
20 September		**6.2 Catchment Management**		9.1 Capita Selecta / Water Quality Modelling		
11 October		**0.6 Project**		**0.6 Project**		
8 November		*Break*		*Break*		
15 November					Confirmed Timing	**Bold**
		Dissertation		Dissertation	Core Modules	
18 May '05 ???		Defense		Defense	Specialisation Modules	

Appendix 2 WaterNet Evaluation – Key Findings

1 The WaterNet Evaluation – Key findings

A DGIS initiated external evaluation of WaterNet was carried out in May 2003. The key findings of this evaluation are summarized below. In summary though, the evaluation acknowledged the complex challenge of establishing a comprehensive human capacity building at a regional level on such a broad theme as IWRM. It recommended WaterNet to consolidate launched activities, with particular focus on securing the full operationalisation of the

1.1 Challenging task

The task of the WaterNet project is very challenging and time consuming one. In fact the project tries to achieve its main objective of strengthening the overall human and institutional capacity of the water sector in Southern Africa in the following manner:

- to establish functional relations between universities in the region
- to request them to endorse each others programmes
- to have an innovative set-up of the programme with core and specialized modules
- to have a programme with a strong interdisciplinary character

1.2 Realization of objectives

Regarding the realization of its four immediate project objectives WaterNet has made major achievements in the field of awareness raising and the stimulation of regional cooperation in the field of IWRM academic education, while achievements in the field of the strengthening of research in the region have been less obvious. Delays in the WaterNet core business, the establishment of the regional IWRM MSc programme, are due to a number of constraints, which can be overcome in future.

1.3 Creating the network

Substantial progress has been made in creating the network amongst universities with a total of 35 member institutions (including two regional organizations SADC and IWMI) from 11 countries. There is a limited representation of non-academic institutions, while technical university departments are over-represented in the network. Approximately 40% of the members actively participate in some WaterNet related activities (module development, research related activities, etc.) with special reference to departments within UDSM and UZ.

The external linkages of WaterNet have remained weak in the past. At present actions are being taken to intensify these linkages.

1.4 Development regional IWRM MSc programme

Progress has been made in the development of the regional MSc programmes, which started at the University of Dar es Salaam in October 2002 and at the University of Zimbabwe in February 2003. However, the development of modules is far behind schedule (as compared to planning) with less than half of the modules ready. Reasons

for this delay are (i) an over-ambitious project document; (ii) the focus on regional ownership of the modules takes more time than expected; (iii) the assumptions underlying the module development were not correct (no professional and financial incentives); (iv) the requirements related to the development of modules within the context of a regionally based IWRNM programme were under-estimated and; (v) different interpretations of the time frame of the WaterNet project.

In view of the above it has to be emphasized that WaterNet correctly does put much emphasis on the creation of regional ownership of the IWRM modules.

WaterNet has been very successful in conducting together with WARFSA three regional research related symposia. The relations between WaterNet and research are gradually being strengthened. The four WaterNet funds for capacity building are still under-utilized due to a lack of information, no clear focus and delays in the WaterNet programme itself.

1.5   Short training courses

Short training courses were given low priority within the WaterNet project from the beginning. This meant a certain deviation from the original project document and agreement with SADC. Moreover, external non-academic parties which were meant to participate in the Advisory Board, did not participate in the WaterNet project as this Board was not established. All this limited the opportunities for discussion and communication with the non-academic world (with "the market" as the project document states). This discussion has just started to take place as of present.

1.6   Organizational set-up

The creaton of the WaterNet network and the establishment of the basic MSc programme

In IWRM can be considered as a major achievement for the small and understaffed WaterNet secretariat. The recent appointment of a manager will further improve the capacity and will increase the regional ownership of WaterNet. The legal structure of WaterNet and the role and responsibilities of the general meeting and other bodies needs to be carefully re-assessed. The non-establishment of an Advisory Board risks to make WaterNet too much an "inward looking" academic institution.

The most important stakeholder for WaterNet is SADC as its regional custodian. In the course of carrying out its activities, WaterNet tended to overlook the need to maintain the level of ownership that SADC was supposed to have. In addition, WaterNet has not yet pursued the opportunity of being formally recognised by the SADC Education Sector as a regional organisation of institutions offering training in the water sector and the associated benefits. Discussions with SADC indicated that there is still room to redress this and to maximise in this way the opportunities that the political ownership of WaterNet provides.

1.7   Finance

The total WaterNet budget is Euro 3,454,000 of which 53% has been spent as of April 2003. The total expected expenditures as of August 31, 2003 (end of the original project phase) are Euro 2,151,000 equivalent to 62% of the total budget. The main

reasons for under-spending are (i) the over-ambitious project document; (ii) delays in module development; (iii) no clear role and place of some of the capacity building funds: (iv) the time consuming efforts to ensure regional ownership of WaterNet and; (v) an unclear perception of the time frame of the project by various parties.

1.8   Efficiency, effectiveness and sustainability

The development of a regional IWRM MSc programme collectively by sharing expertise and resources is a complex, challenging, time and energy consuming process. Its efficiency might appear to be low, but at the end the effectiveness of the strategy chosen is possibly high. However, such a strategy requires proper management, strict monitoring and tailor made financial and professional incentives. The management aspect of this process needs to be strengthened within WaterNet.

The more or less tailored in-country (or better in-region) human resource development activities are found to be effective as the process tends to be locally owned and implemented to a substantial extent, while the costs are approximately a factor 3 lower in the region as compared to a MSc programme in Europe.

The sustainability of WaterNet and its activities are pursued by: (i) the recognition of WaterNet by SADC as a project; (ii) the module development and teaching of the modules by academic staff from within the region and: (iii) the establishment of the WaterNet Trust.

The sustainability of WaterNet and its activities is hampered by: (i) the lack of a legal structure of the WaterNet network and its secretariat; (ii) the relatively weak Human Resources /staffing situation in the region related to IWRM; (iii) the fact that fellowships are only assured at short term; (iv) major management problems at UZ and UDSM and; (v) payment of the permanent staff for lecturing in the IWRM master programme.

1.9   Need for a budget neutral extension till 31-12-2004

In view of: (i) the achievements realized to date; (ii) the urgent need for further regionally based and owned capacity building; (iii) and taking into consideration the delays and factors responsible for these delays, it is strongly recommended to extend the present WaterNet project with a budget neutral extension till 31-12-2004. The GON funds still available and required for the budget neutral extension period are Euro 1,283,000. A realistic budget proposal including clear outputs, milestones and verifiable indicators needs to be elaborated in the coming months by the project.

During this budget neutral extension the WaterNet project should focus its programme, implement it in a business like manner and herewith ensure the delivery of the following outputs as per December 31, 2004:

A.   Module development and broadening towards other universities
Consolidation of the masters programme in IWRM through the finalization of at least 25 modules and 4 specializations.

Elaboration, approval and implementation of a socio-economic specialization in IWRM with five modules to be delivered by the University of Western Cape together with others.

Inclusion of the University of Western Cape (UWC) as third core university for the MSc IWRM and the start of discussions with other universities including the Universidade Eduardo Mondlane in Maputo. In Maputo modules related to the specialisation "Water and Land" could be developed possibly to be integrated in the MSc programme on Rural Development at the Universidade Eduardo Mondlane.

B.   Institutional issues:

To conduct Peer Reviews and the publication of modules. To make these modules available to a larger non-academic audience and subsequently use these modules as an entry point for short professional courses to be conducted by IWSD and other non-academic organizations.

Institutionalisation of WaterNet as a member organization of higher learning institutes under the Educational Protocol of the Ministers of Education under SADC. This will be a major step to ensure sustainability.

Strengthening of the external relations with the SADC water sector, with GWP, with WARFSA and other organizations.

Intensification of the relations regarding research between WARFSA, WaterNet and the Non-academic stakeholders/organizations.

The WaterNet Steering Committee should elaborate before mid 2004 a conceptual framework and an integrated medium term perspective plan for WaterNet to be presented to donors for financing