

Thematic Document Cross-Cutting Perspective C: Capacity Development and Social Learning

**4th World Water Forum
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Preface

At present, capacity development and social learning are among the most important challenges facing water management. Following the outcomes of the 2nd World Water Forum, the World Summit on Sustainable Development, the 3rd World Water Forum, and further consultations with interested stakeholders, significant progress has been made in awareness raising and mobilizing decision-makers and stakeholders around Water Education, Capacity Development and Social Learning.

Capacity has been identified as a recurrent issue preventing the achievement of many national and international goals such as the Millennium Development Goals. Education, training and capacity development have frequently been treated as add-ons to development programs. In particular, local capacity development institutions have been ignored. Capacity development is viewed as a continuous process essential to achieve sustainability of investments. Social learning is intimately linked with capacity development emphasizing the dynamic process of enabling individuals to engage in new ways of thinking together to address sustainable water use.

This document was prepared by a special Consortium on Capacity Development and Social Learning that was established at the request of 4th World Water Forum Secretariat. This Consortium includes five organizations: UNESCO-IHE, Cap-Net, IRC, Streams of Knowledge and the Cooperative Programme on Water and Climate.

This document is aimed to stimulate discussion at the Fourth World Water Forum and brings together the views of experts as described in recent publications as well as the results of the various regional consultations that took place all over the world (described in Annex 1). The document deals with capacity development and social learning as a crosscutting perspective addressing the five framework themes of the 4th World Water Forum, Mexico, 2006. Lilian Saade was responsible for co-ordinating the work and consolidating the final output.

The document is organized in eight sections: it starts with the executive summary and key messages followed by a discussion on the need for capacity development and social learning. The next section presents definitions. Section IV deals with the paradigm shift. The following section introduces capacity development for change management and improved decision-making followed by a section on specific Capacity Development and

4th World Water Forum. Mexico, 2006

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Social Learning aspects related to the five framework themes of the Forum. Section VII deals with how to make capacity development more effective. The last section presents recommendations for the way ahead.

I. Executive Summary and Key Messages

More and faster than ever before, water management is facing challenges like water scarcity, climate change, mega-cities, and decentralization. These challenges require more capabilities of people and institutions as well as a shift in attitudes and systems that are prone to adaptation caused by these ever-increasing changes. Such capacities need to be strengthened at all levels, even more in an environment when more and more actors are participating as water management stakeholders, particularly at the local level and in developing countries. Capacity development is a cornerstone for sustainable development, hence directly related to the real chances to achieve the Millennium Development Goals and reduce extreme poverty. Together with this, there is growing awareness that a paradigm shift is needed in the way water-related problems are addressed and solved. As a consequence, a more holistic approach to strengthen the capacity of both individuals and organizations is required. The coming two decades will prove to be critical in boosting water sector capacity development and human resources development, both in terms of quantity and quality.

The level of success or failure in achieving the Millennium Development Goals is therefore strongly related to the availability of local and national capacities. Capacity is hence observed as a key element to maintaining and achieving the viability of investments in the sector and requires stimulating social learning processes among stakeholders.

Significant progress on capacity development and social learning have been made over the last years. A variety of approaches and methodologies have been developed and applied. Today, the broad umbrella of capacity development covers tools such as gap analysis of organizational systems and functions, strategic visioning and planning, training and human resources development, financial management and results orientation. It also includes activities related to networking, social accountability, ICT & development, learning processes and the learning organization, regulatory frameworks, institutional rules and reform and improved policy environments.

In particular, networks for capacity development and social learning have proved to be cost-effective options to leverage funds through network members at the local level and respond to local capacity development demands; operational and active partnerships which facilitate scaling up capacity development.

At the same time, the development of resource centers and improved knowledge management have shown to be instrumental in the development of a culture and practice of sharing of information and lessons learnt.

As already acknowledged during the previous World Water Forum, the new strategy for capacity development needs to reflect local ownership, partnerships and demand responsiveness.

This document deals with the main challenges of capacity development and social learning for each of the five framework themes of the 4th World Water Forum:

The key messages presented in this document include:

1. Capacity development is also about developing adequate incentives and the enabling environment.

Incentives are policy mechanisms for changing behavior. If well developed, incentives reward user's practices towards a more sustainable use of water while penalizing unwanted behavior. Decisive capacity development actions must be taken to support the urgent process of harmonizing the existing incentive system with the reiterative international call for IWRM and more sustainable water use in agriculture, water supply and sanitation and industry. Also action must be taken to support capacity initiatives that pay particular attention to transparency, fighting corruption, accountability, conflict resolution mechanisms, tools for cooperation, negotiation and political participation, as pre-requisites for good water governance.

2. Capacity development requires a holistic and integrated approach.

Capacity development cannot be addressed in isolation of the political, institutional, economical and socio-cultural context. Moreover, in addition to reinforcing individual capacities, other levels of capacity must be strengthened such as the institutional and enabling environment under which they all perform.

3. Investing in capacity will pay off in the long-term.

Investing in the development of capacities, especially at the local level, is essential to the sustainability of the water sector. Investing in capacity now will create long-term benefits to both donor and recipient. For development, investment in the "softer" legal, management, institutional and social components is as vital as the investment in the "hard" technical ones.

4. Capacity development actions require knowledge management systems to encourage exchange and dissemination.

Participation and decentralization brings a large potential development for water management. All actors, jointly and individually may contribute to the development and diffusion of more sustainable ways to use, develop and manage water. Therefore, actions should be taken to facilitate capacity exchange and diffusion. Such exchange and dissemination should be systematic, reaching the local level effectively and

assuring that marginalized actors are gaining capacities to enable fairer water development, use and management.

5. Capacity development actions in the water sector need to be scaled up.

There are successful experiences that should be systematically replicated. For instance, networking and partnerships have proven to be two effective vehicles for sharing information and knowledge while making use of the expertise, skills and experiences available. They also enable the creation of a mass of experts for research on water development and management, which is a critical fault in developing countries.

6. Gender mainstreaming is of particular relevance in capacity development programs.

Women are as important as men for changing water management practices. Recognizing this, gender mainstreaming seeks to enable more gender-balanced decision-making processes for water management in the future and ensure that both women's and men's needs are properly addressed. Capacity development for gender mainstreaming also means being aware of the potential effects of water laws, policies, programs and actions on women's and men's lives. Such awareness should be actively transformed into actions to avoid greater social inequities that hamper poverty alleviation.

7. Capacity development actions need to support emerging actors in water management with particular regard to the local and intermediate levels.

New water governance systems bring large challenges: first, new actors are emerging in water management: user associations, public action groups, NGO's, water providers, and community-based organizations. Second, traditional actors are changing their views regarding water: local authorities, sector agencies and national governments. Third, there are new mechanisms to interact. Actors have different levels of capacity to participate actively and therefore, they have different capacity-development needs. Actions should be taken to enhance their capacities. However, there are larger needs at the local and intermediate level; they are experiencing bigger changes and expectations; they historically have not attracted highly qualified water professionals.

8. Capacity development actions should shift to more locally owned and implemented actions.

Capacity development actions must be less directed in a top-down manner and more in a participative way. It implies that international and national efforts should be particularly focused on empowerment while mobilizing leadership around locally owned capacity development actions. It also means enhancing the knowledge exchange mechanisms with pairs simultaneously.

9. Developing the adequate incentives and institutional and human capacity among farmers is essential.

To win over farmers for innovative approaches and practices requires: trust that change and investments ultimately means improving the livelihood of farm families; ensured access to reliable water resources, affordable and technologies that are not too complex and affordable credit mechanisms for these investments; long-term security on land, water and access to markets; access to affordable environmental friendly technologies and pesticides, advice and information services on environmental implications of farm practices, and exposure and dialogue with those affected by farming practices.

10. Capacities to reduce the exposure to risks in the future must be built now, involving both specialists and the public Water professionals are not adequately prepared to cope with extreme situations. With climate change, extreme events such as floods, droughts and storms seem to be increasing in frequency and intensity. Changes in the hydrological cycle and increases in hazards like extreme events give rise to enormous increase in human, economic and environmental risks. Now is the time to build the capacities of sector professionals and the general public to protect socio-economic and environmental interests through enhancing protection and resilience against the increasing risks.

II. The Need for Capacity Development and Social Learning

Throughout the last century population growth, combined with increased urbanization, expanding human activities, contributed to an explosion in demand for water services. This trend is expected to continue into the foreseeable future. Importantly, the next two decades could prove critical: population growth will probably add 2.5 billion people to the earth. Nearly the whole generation to be born in that period will be concentrated in already densely populated areas in developing countries. In these countries, urban populations will have doubled by 2025. This will put further stress on already strained water supply systems. By 2015, one in five people will live in big cities compared to one in nine in 1999 (Catley-Carlson, 1999).

Many towns and cities in developing countries have unreliable piped water systems and experience regular supply interruptions. Moreover, the quality of services provided is deteriorating, chiefly because of fast rates of population growth and urbanization, high costs of infrastructure, and diminishing government resources to address water issues. Existing systems also often suffer from inefficient design and operation. Thus it is imperative to learn from available experiences, especially given the high costs of water-related infrastructure (OECD, 2003).

In addition to these issues, our physical environment is also changing: climate changes bring about natural disasters at a heightened pace. Even within the sector, we have to deal with new challenges: decentralization of services, sector reform and new funding opportunities requiring versatility and flexibility to better and more quickly adapt to an ever-changing framework for action.

With the establishment of the Millennium Development Goals (MDGs) and the launching of the United Nations' International Decade for Action 'Water for Life' on World Water Day 2005, pressure is increasing to show definitive progress in implementing commitments towards poverty reduction and environmental sustainability. As such, actions to reduce poverty shall directly be addressed in sub-sectors such as irrigation, water supply, sanitation and human settlements. Yet, other sub-sectors such as hydropower might have a strong influence in poverty reduction by means of increasing the economic capabilities of local communities. All stakeholders are looking for ways to contribute in a measurable and sustainable fashion to the MDGs.

It is clear that a lack of technology or even funding are no longer the main obstacles to making progress in terms of the MDGs. The real bottleneck lies in the capacity or the lack thereof to address the problems faced in an effective and sustainable way over a period of time.

Throughout the different sub-sectors, a number of actors such as suppliers, communities, user associations, governments at regional, national and local levels, universities, UN agencies, NGO's, and some networks and partnerships among these actors in both the South and the North are working to find solutions to these mandates. Each one possesses a part of the puzzle.

Capacity development is widely recognized as a pre-requisite for poverty reduction and development. Over the past decades, perspectives on development and poverty have evolved from purely economic to increasingly human-based. This new perception of poverty led to a shift in development assistance towards capacity development. For instance, built capacities in the water and sanitation sector will greatly contribute to the improvement of health, which in turn will have an effect on poverty reduction. (SNV, 2005).

Capacity development is not new on the agenda. Also in the former Water Decade, capacity development was identified as an important factor. Significant insights and expertise have been acquired over the last few years. A variety of schools, approaches and methodologies have been developed and applied. Today, the broad umbrella of capacity development covers tools such as gap analysis of organizational systems and functions, strategic visioning and planning, training and human resources development, leadership development, financial management and results orientation. It also includes activities related to networking, service delivery models, social accountability, ICT & development, learning processes and the learning organization, regulatory frameworks, institutional rules and reform and improved policy environments (SNV, 2005). During the previous World Water Forum, it was acknowledged that the new strategy for capacity development needs to be developed, reflecting local ownership, partnerships and demand responsiveness (Hartvelt *et al*, 2003).

III. Definitions

The term “capacity development” has been a subject of eager interest over the last years. “Capacity building” is not employed in some countries and international organizations given its connotation of starting the process from scratch. Others prefer the term “capacity development”. This is done in order to convey the sense of improving or utilizing what capacity already exists (Morgan, 2000). In the remainder of this text, the term capacity development is therefore used.

Capacity Development (CD) is the process by which individuals, organizations, institutions and societies develop abilities (individually or collectively) to perform functions, solve problems and set and achieve objectives (UNDP, 1997 and Lopes and Theisohn, 2003). It is about acquiring skills, information, attitudes and the knowledge to put into action, adopting, adapting and innovating when necessary. In addition to being a continuous process of improvement within an individual, organization, or system, capacity development also implies the effective possibility of using these existent or acquired capacities (LA-WETnet, 2005). CD is about improved access to water, effective forms of government (including the local level), increased production and income for small farmers or realization of concrete rights for a minority (SNV, 2005).

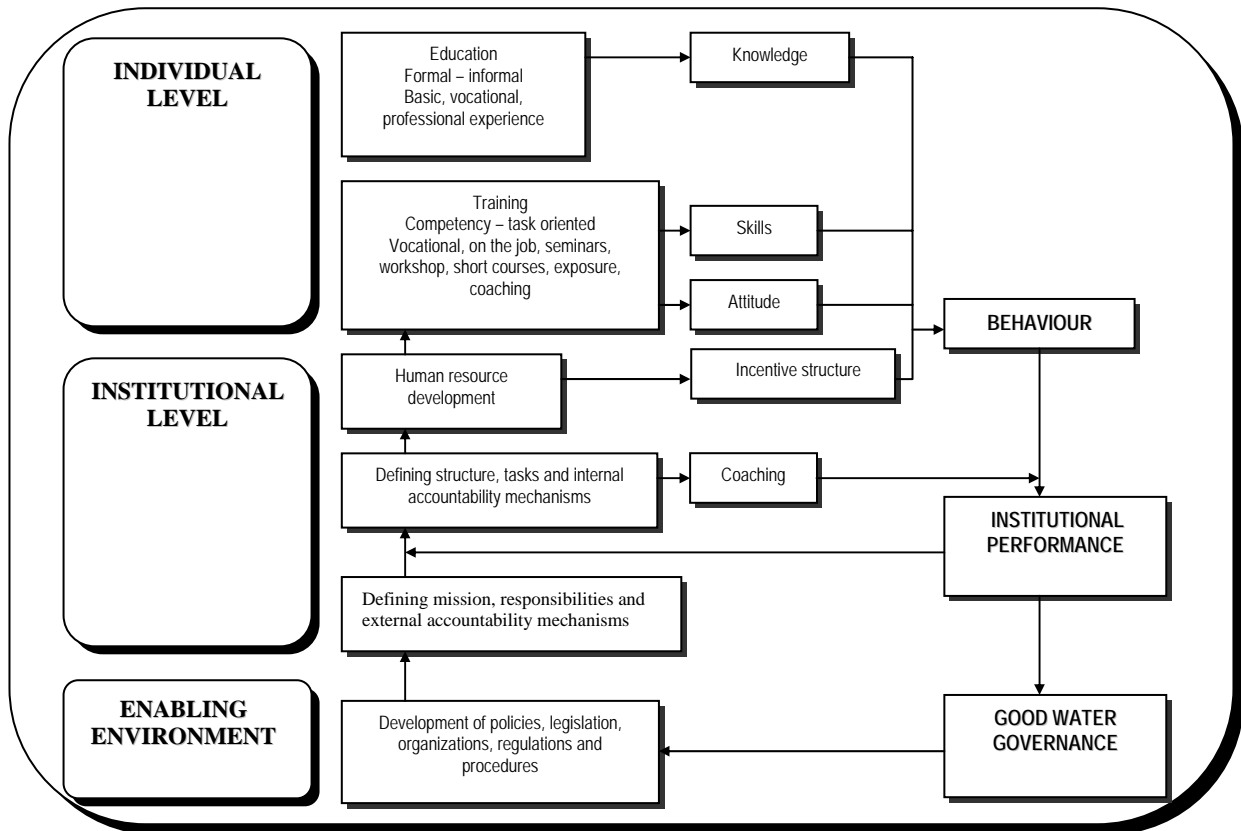
Social Learning (SL) is an intrinsic component of CD dealing with the set of actions that stimulate people to change their behavior and to collectively manage their system in a sustainable way. It combines information and knowledge as well as empowerment, motivation and incentives to change attitudes. Within the framework of water resources management, social learning also refers to those skills required to engage in negotiation process and move towards a concerted action.

The main components of capacity development programs are (Alaerts, 1999):

- (1) the creation of an *enabling environment* with appropriate policy and legal frameworks;
- (2) *institutional development*, including community participation,
- (3) *human resources development* and the strengthening of managerial systems.

These three components of capacity development, their activities, outputs and goals are described in figure 1.

Figure 1. Capacity development: levels, activities, outputs and goals



Source: Adapted from Van Hofwegen (2004).

Capacity development involves transparency, accountability, conflict resolution, policy, economy, organizations' performance, human resources, access and availability of information, financial resources, infrastructure, training, incentives, participation, and motivation.

Message 1: Capacity is also about developing adequate incentives and the enabling environment.

Box 1. Social Learning as a component of Capacity Development

During the regional consultation that took place in Cali, Colombia on 30 October 2005 (see Annex 2), it was suggested that the discussion should be focused on the concept of capacity strengthening and not capacity building that gives a connotation of starting the process from scratch. Throughout this paper there was a preference to use the term capacity development. In addition, it was considered that Social Learning was part of capacity development and therefore adding the concept of Social Learning had the risk of missing the integrated vision that had been agreed for a number of years. In effect, it took several years to talk about capacity strengthening as an integral concept that already includes the social dimension, as well as the political, institutional and technical ones. Social learning should be considered as a component of capacity development.

Source: CINARA *et al.* (2005).

IV. A paradigm shift

In many developing countries a paradigm shift has taken place in the water sector towards:

- Decentralization of responsibilities
- More attention on management and O&M of water systems
- Demand driven decision processes
- Stakeholder involvement at all steps in the planning and monitoring processes
- Orientation on water service delivery, cost recovery and more efficiency

Decentralization and sector reform. A vast movement of administrative and fiscal decentralization is happening throughout the sector and worldwide. There is a strong need for building capacities of staff beginning at the most basic level possible. Local staff needs to acquire the right skills, experience and organizational/institutional capacity to take up their new tasks. But also the responsibilities of institutions at the national levels are changing for which the current capacity is not always sufficient or adequate.

More attention on management and O&M systems. For many reasons, in many countries the infrastructure exists but little has been done with respect to O&M, causing many systems to be non-operational. More and more attention is focused on management aspects as well as O&M water systems.

Demand driven decision processes. The trend in the sector is to move from a supply driven approach to a demand driven approach. In a demand-driven project (bottom-up), the problems and needs are identified with and by local stakeholders and institutions. This requires appropriate approaches (methodologies and tools) as well as the right skills to ensure participation and equity in local planning processes.

Stakeholder involvement at all steps in the planning and monitoring processes. Involving stakeholders in the planning and monitoring processes guarantees representation of various points of view and ensures transparency and accountability concerning decisions. Appropriate channels for community participation and representation are also essential.

Orientation on water service delivery, cost recovery and more efficiency. Institutions are evolving in a context where water allocations and the provision of services have to respond to efficient management rules and processes, and productivity ratios, with adequate pricing policies. Vouching for the sustainable provision of water requires the financial resources that ensure the operation and maintenance of its related infrastructure. In that respect, strengthening methods and processes, which can lead to higher managerial efficiency and social equity, are essential.

V. Capacity development for change management and improved decision-making

With the ever-increasing changes mentioned above, stakeholders at all levels must deal with many uncertainties in their decision-making. Developing capacities and managing knowledge prepares people to deal with these uncertainties and to work together to find the adequate solutions to a given problem, for instance to introduce new governance systems, with innovation, flexibility and creativity. As a consequence, an enhanced system to build and develop capacities should consider the following essential elements:

Provision of a platform to stimulate learning and integration.

Learning from mistakes and scaling up best practices. Mistakes from the past are not sufficiently recognized and analyzed and lessons learned have not been sufficiently used as insights to future decisions. This has huge economic costs in terms of time, money and frustration, which can also have dramatic consequences on trust and commitment. Similarly, many good results have been achieved in the water sector, many best practices and innovations (including the use of indigenous knowledge) have been identified, but they have not been mainstreamed or scaled up in terms of implementation. If we do not pay attention to the specific institutional, organizational and economic settings of the country/region of work where the initial efforts occurred, mainstreaming becomes extremely hazardous and susceptible to mistakes. Existing capacities and insights ought to be shared and scaled up. We end up reinventing the proverbial wheel again and again. Furthermore, dissemination and capacity development components should be integrated as soon as any initiative is designed. Otherwise, the relevant regulation and implementation institutions that can scale up the innovations and ensure their sustainability have no sense of ownership and again mainstreaming is negatively impacted.

In the water sector¹, there is a tendency to consider that all the problems will be solved with engineering skills, while in the field most common failures in projects are related to social, political, financial or economic factors. Consolidation of learning, sharing of knowledge and capacity development has often failed. Most projects include only limited dissemination and capacity development components, and often only at the end of the project. This fails to create ownership of the process and content of the innovations among the relevant regulation and implementation institutions that can scale up the innovations and ensure their sustainability.

Knowledge Management for CD. Knowledge is intimately linked to all three components of capacity previously discussed, and its knowledge base relates to the acquisition and analysis of the already huge and still growing amount of data and information. These data

¹ The water sector as defined here includes the different sub-sectors that it normally deals with: water supply and sanitation, irrigation, hydropower, navigation, water for environment, etc. This baseline paper addresses the need for the effective and sustainable management of water, highlighting the overarching function of integrated water resources management as it relates to the different sub-sectors.

are encapsulated explicitly in: databases, documents, models, procedures, tools, and its knowledge base also includes implicit or tacit knowledge inherent in people, namely their skills, experience and natural talents to understand, create and apply knowledge. In this way implicit knowledge becomes a synonym for capacity-to-act or a competence to solve problems. For capacity development, knowledge management offers a number of new opportunities. Over the past years, increasing attention has been given to the role of information and knowledge in enhancing the capacities of organizations and the sector. Organizations within the water sector are becoming more conscious of the use of knowledge within them and also how it is to be shared with the outside world: other organizations and individuals. This focus on knowledge is certainly not out of place because capacity development initiatives are comprised of knowledge-based practices (Luijendijk *et al*, 2005). Capacity development and social learning can play a crucial role in creating that sense of ownership and sharing relevant knowledge. Their principles provide indeed fertile ground for a higher leverage in the water sector.

Breaking sector barriers. The water sector is sub-divided into various sub-sectors: Irrigation and Drainage, Water for the Environment, Drinking Water and Sanitation, etc. A strong drive for integration calls for managing, analyzing and understanding larger amounts of data, but also to understand each other's viewpoints, and appreciate water quantity and quality, as well as land use and social values of water. Integrated Water Resource Management (IWRM) works in that perspective. Breaking sector barriers goes further and implies the coordination with other sectors such as the education and health sectors. This is especially important since in the context of decentralization the local territory is (increasingly) the bases for (local) planning processes in which because of multi-sectoral problems as well as limited resources coordination and synergy between the different prioritized actions become even more important. But breaking through sector barriers also implies the ability to share with and learn from other sectors e.g. in the use of participatory planning tools etc.

Strengthening CD towards good water governance

Good water governance relies on capacity development and social learning. Indeed, enhanced governance in the water sector implies not only a transfer of responsibilities and resources to the lowest appropriate level based on the subsidiarity principle. It also implies that staff at that level have the knowledge, attitude and skills to make informed decisions and carry out their function in a demand-responsive manner. Moreover, it implies the availability of effective and accountable socio-political and administrative systems that address human needs by means of transparent and participatory processes. Enormous changes have taken place in water governance systems across the world as a result of the acceptance of the need to manage water resources sustainably - basically through the adoption of IWRM principles. This has huge capacity development implications. As stressed in IWRM or water for development, this demands an integrated approach that

builds on technology but also on management, social sciences, economics and financial management

The role of civil society. Capacity development should also include the civil society. If we want to promote good water governance, civil society is part of the system of checks and balances which ensure that governance is indeed taken seriously. It can exert pressure where governance should be improved, or sound the alarm on issues overlooked. This is a self-fulfilling prophecy - as members of the civil society learn and participate they are further empowered to reflect, make informed choices and take charge of the quality of life decisions affecting them and their children. It also requires the availability of appropriate skills and tools and the right attitude of e.g. local government officials and technicians to enable the involvement of civil society in local decision taking, monitoring and evaluation. It also requires the availability of appropriate skills and tools and the right attitude of e.g. local government officials and technicians to enable the involvement of civil society in local decision taking, monitoring and evaluation.

Empowerment. Users (from different sectors), local authorities, catchment management agencies, water committees and other stakeholders can only meaningfully engage in their negotiations when they have access to information and are able to analyze and use this information in these negotiations. Therefore, capacity development and knowledge management are essential to strengthening negotiation capacities, especially of previously marginalized groups.

Shift towards more participative and collaborative mechanisms for learning

Learning together. Joint action learning, teamwork, role-playing, communities of practice and production all help address multi-sectoral problems and multi-criteria decision-making. The more actors are learning and developing their skills together, the better they will understand other issues that prevail over the sector and the more they will synchronize their information and focus. Meaningful partnerships that engage in an ongoing consultation process are key.

Documentation of successful and not successful experiences is very often not done. Dissemination of those experiences is therefore hampered. In addition, impact of most CD interventions is often very limited since most of the capacity development interventions are carried out in an isolated way without the appropriate follow-up.

Networks for capacity development. Some innovative networks of capacity development institutions have been created as well as initiatives with a long-term focus and oriented towards bringing different capacities together by networking and partnerships, such as the development of Resource Centers with capacity development in its mandate. The advantages of networking for scaling up capacity development to reach the Millennium Development Goals (MDGs) are gaining recognition in the international water community.

The advantages are predominantly in providing a more coherent and coordinated approach to capacity development, increased impact, relevance and sustainability from working with local institutions, improved sharing of knowledge and expertise and a platform for cross-disciplinary and cross-regional discussions.

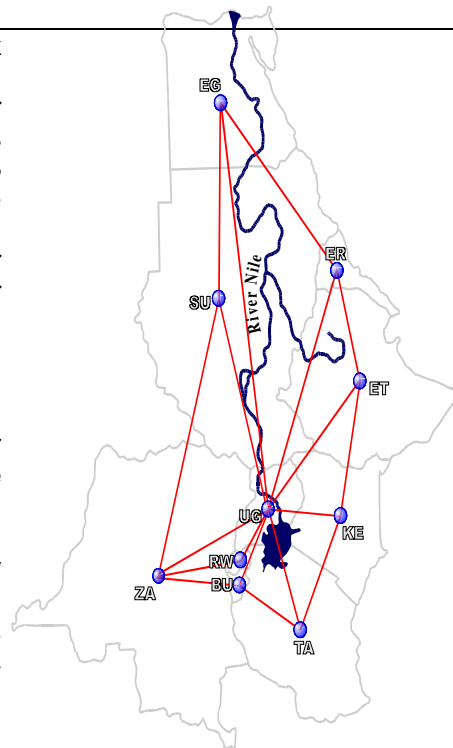
The relevance and potential of capacity development networks is found in the experience, level of activities, outreach, and knowledge of its members. The element of success in such alliances is the ability to combine all of these values and resources and invigorating the capacity of each member and the network as a whole. Networks are not just formal statements or intentions, but the operationalization of an active process of knowledge generation, adapting, sharing, and transferring. This process will result in long-term impact as it is built on the wealth of local knowledge and capacities. As knowledge is made available and significant to local needs, anchored in local institutions and transferred to target groups, capacity is being developed. This capacity is not just isolated intervention, but an effective enhancement of local players, institutions, and the management system; this is what leads for development (LA-WETnet, 2005).

Box 2. Nile Basin Capacity Building Network (NBCBN)

The Nile Basin Capacity Building Network for River Engineering (NBCBN-RE), established in 2002 counts over 200 water professionals collaborating in 13 Communities of Practice. It is a regional knowledge network to strengthen the human and institutional capacity of the Nilotic States to manage the water resources in the Basin. Members are water sector individuals and institutions from all 10 Nile Basin countries.

Emphasis is on creating an environment for stimulating and supporting collaborative applied research. Together with the node (in-country) development activities, the network supports the development of joint regional research clusters in which in principle professionals from all 10 Nile basin countries are participating. Six country nodes act as the host institution for a particular regional research cluster: Egypt (GIS and Modeling), Ethiopia (River Structures), Sudan (River Morphology), Tanzania (Hydropower), Uganda (Environmental aspects) and Kenya (Flood Management).

Research cluster events are regularly organized in each of these countries. In between these face-to-face events, researchers continue to interact over a custom-designed platform; (<http://www.nbcbn.com>), that allows them to work collaboratively regardless of their work place.



Source: Luijendijk *et al* (2005).

ICT for training and education. Formerly training and education were mainly carried out by self standing institutions of learning such as vocational training centers, polytechnics and universities. Over the years, a plethora of other forms of training has been developed, through inter-institutional mechanisms such as partnerships, network arrangements, etc. These have been limited by the issue of accreditation and certification of quality, when tuned to national standards. More recently, web-based initiatives have been developed. In view of the accelerated development of information and communication technologies, there are new potentially powerful tools needing further exploration and use. However, the problem is still the limited access to people mostly under unprivileged conditions in developing countries, although this is changing rapidly.

VI. Capacity development and social learning issues and challenges per Framework Theme

Since the 90s, a number of issues have arisen regarding capacity development and social learning. Of special interest are the ones presented below. The order of the major issues is in compliance with the framework themes of the 4th World Water Forum.

1. Water for Growth and Development

The role of water in the growth and development of countries

Capacity development is as important factor to achieve economic development. In effect, capacities and infrastructure are equally important partners. Infrastructure has proved to be one of the crucial factors when achieving development. Nevertheless, its sole application has often resulted in failure. Capacities are required to manage and govern the infrastructure, but capacities standing alone are not sufficient to overcome the deficiencies faced in the water sector in developing countries. In particular, effective institutional capacity to address water-related problems has increasingly been recognized as a key driver for sustainable development (Luijendijk *et al*, 2005).

When analyzing the role that water plays in the growth and development of countries and regions, it is important to realize that there is not one simple answer. It varies with specific parameters related to the physical, socio-economic and political conditions.

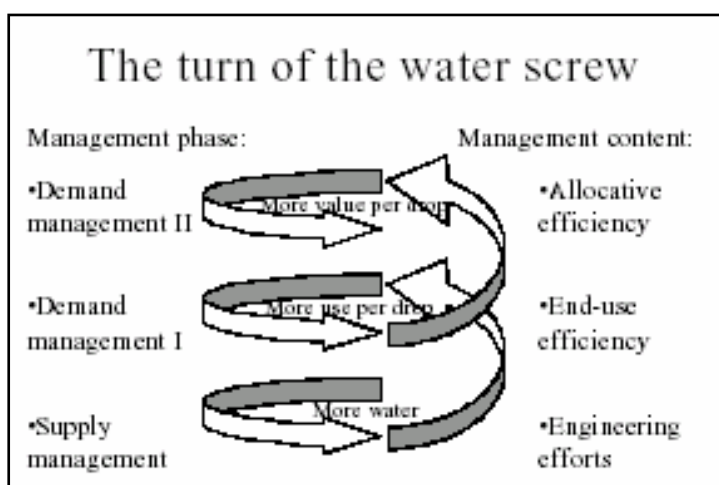
From a hydrological point of view we see that most of the developing countries have to cope with extreme hydrological conditions where floods and droughts create unpredictable risks to people. In contrast, most of the developed countries are blessed with relatively “easy” hydrological circumstances with low rainfall variability in their temperate climates. When countries are part of trans-boundary rivers the situation may become even more complex directly affecting the potential for managing and developing their water resources (World Bank, 2005).

From a socio-economic point of view, it seems relevant to make a distinction between water resources development and management in industrial countries, intermediate economies and least-developed economies.

In almost all industrial countries, the flow of water has been harnessed through balanced investments in both hydraulic infrastructure and institutions, including the human capacity required to operate and maintain these investments and so to become the basis for sustained and broad-based growth and development. In intermediate economies much investment has typically taken place in water infrastructure. Here, it is crucial to get the right balance between investments in infrastructure, institutions and human capacity to manage water resources properly.

At the society-water interface, it is important to make a distinction between the quantity of water *naturally available* and the quantity that can be made *accessible* for use by society as a result of technical and institutional arrangements. In this context, there is a growing understanding that water challenges have to be dealt with in terms of change and adaptation: both in the society itself and in the society's relationship with nature. For example, in case of water scarcity, different stages of adaptation to life can be distinguished conditioned by limiting water resources (see figure 2) (FAO, 2000).

Figure 2. Different phases of water management and stages of social adaptation



These stages can be envisaged as the turns of a screw. At each stage of social adaptation to water scarcity, the need for input of social resources is higher. These stages are characterized by (i) "getting more water" through engineering efforts, followed by (ii) "end-use efficiency" through demand management measures (producing more with less water) and (iii) "allocative efficiency" with the aim to produce higher economic values from available water resources (more value per drop). With the turning of the "water screw" the need for large-scale social restructuring is increasing largely. This may imply even a complete reform of the water sector as we see taking place in various countries. The management of these processes requires strong institutions and capable people dealing with it. Given the fact that these factors are the least developed in most developing countries, the highest priority should be given there to building the appropriate institutional and human capacity and to promote and facilitate social learning.

Message 2: Capacity development requires a holistic and integrated approach.

With the notion that effective capacity is also very much context related (specific physical, socio-economic, legal, political and cultural context), it is crucial that individual countries

undertake their *own capacity development needs assessment* to ensure the inclusion of the relevant local knowledge.

Investments

Investments in water infrastructure in the last thirty years have reached approximately USD 600 billion. However, no corresponding investment in the capacity to manage such infrastructure. Up to one quarter of the investments made in the water sector by developing countries has been ineffective due to lack of governance and management capacity (Alaerts, 1999). Large investments in capacity development and other forms of education are not typical characteristics of countries particularly in the developing world.

Box 3. Enhancing capacity: an economic analysis

Conventional financial analysis of investment projects tends to calculate the rate of return only on the investment in the physical assets. The capacity development component is typically treated as an appendix to which no economic relevance is allocated. However, difficulties in separating out the correlation between enhanced capacity and institutional performance are not proof that there is no return.

A good example of the effect of capacity development can be taken from recent experiences with a pilot project in Indonesia, where Water User Associations (WUAs) were empowered through capacity development and where appropriate regulatory changes were made (enabling environment). Also the local staff of the Irrigation Services were trained as “facilitators”. Where conventional rehabilitation projects traditionally have had an Economic Rate of Return (ERR) of 10-18%, an economic analysis showed that, when an enhanced capacity of the WUAs was realized, the ERR rose to 30-40%. The conclusion seems to be justified that the social capital of the water sector is the “heart of the matter” while the works are the “vehicle” through which the capacity is built.

Source: World Bank (2003) and Luijendijk *et al* (2005).

Message 3: Investing in capacity will pay off in the long-term.

2. Integrated Water Resources Management

IWRM implementation².

Capacity development in the form of creating a favorable policy environment on Integrated Water Resources Management (IWRM) for sustainable water resource management is relatively new. Capacity development requirements differ from country to country. Access to knowledge on IWRM is generally required at three main levels: the policy level where decisions will affect the overall planning and development of the country’s water resources; the management level where water resources management and development personnel would require an in-depth knowledge of the interactions of the components of water resources to perform their work effectively; and the academic level where future water

² Based on an analysis of LA-WETnet for Latin America (LA-WETnet, 2005).

professions would need to learn IWRM skills (Low, 2005) (See Annex 4 for a description of the challenges faced in South Asia).

Box 4. Capacity development for IWRM in Latin America

Most countries in Latin America are showing commitment and high level of activity in various processes towards implementation of IWRM. These are mostly seen in the development of new water laws, as well as national water resources management plans. Other development areas as the creation of river basin committees, and multi-stakeholder platforms are seen throughout the region. However, in many cases, efforts in such directions are taking place since many years and the achievement of concrete results appears more as an ideal than as a feasible output. Capacity development support may play a significant role in supporting and sustaining such efforts. The region offers both a good momentum and an available critical mass for enhanced capacity development delivery.

Source: LA-WETnet (2005)

Improving horizontal and vertical partnerships

The key issue is incorporating capacity development as part of water management practices and decision making. Partnerships amongst capacity development institutions are an effective strategy to share experience and skills to address the demanding requirements of reform towards sustainable management of water resources. At the same time as partnerships are being built horizontally between capacity development institutions, it is important to ensure that requirements of water management implementers as well as policy makers are being taken into account, also by means of vertical partnerships.

As much as there have been significant progress in these areas, it is recommended that there should be enhanced cooperation and joint planning and implementation of actions, ensuring that capacity development is effectively incorporated at all levels. Initiatives as Cap-Net, GWP, IDB, UNESCO-IHP, IWRN, GEF, UNEP, and others, have strong potential to complement their activities and expertise and identifying the immediate needs and demands of society and responding to those. Such collaboration will ensure continuous and sustained delivery of capacity development, especially at the governance levels, but also working closely with NGOs and base organizations.

Incorporating IWRM knowledge within multi-disciplinary schemes

Capacity development delivery in various forms needs to be enhanced and supported: training of trainers' courses, short courses, workshops, technical courses, and awareness raising meetings are typical examples of activities that are being implemented.

Working closely with journalists and social communicators is a key factor to facilitate dialogue and large public involvement. Incorporation of IWRM knowledge and practices is not very common in resource centers others than those which are typical from the water sector. Some universities such as the *Universidad Externado de Colombia* have incorporated IWRM as a regular topic in their Master Degree in water law. Similarly, IWRM

should be incorporated in other studies: economics, management, health, agriculture, conflict resolution, etc.

Develop capacity development indicators and capacity benchmarks

Without adequately disaggregating capacity and finding indicators and benchmarks to measure capacity development through its different analytic dimensions, it is difficult to assess what aspects of the process are failing, where additional support is required, and whether capacity development is even realistic or feasible. The identification of adequate instruments to measure, monitor and evaluate capacity development is critical.

Even if capacity development is delivered in two different regions (for example for the design of national water plans), specific capacity development indicators are needed for each case, given that external and internal influences will never be the same. Existing capacities, stakeholders, processes, culture, institutions, and other active elements will be different at the ground level.

Conflict management and negotiation

Conflict management and negotiation are and will be key to enable IWRM implementation. Therefore, capacities to empower stakeholders (including decision makers) in dealing with different situations are considered cross-cutting and driving elements for any development strategy.

By the year 2000 the implementation of new paradigms as IWRM was hindered by its extreme complexity. There are new requirements as multi-stakeholders platforms, better interaction between the public and private sector and the enhancement of learning alliances. An integrated management of water resources requires an integrated society, and the recognition that negotiation capacities are essential to drive the process.

Scaling up capacity development at country levels

Capacity development needs to be scaled up at country level. The implementation of IWRM, through the establishment of better management and institutional systems, appropriate laws, resolution of conflicts, and the capacity for participatory planning, will be in direct response to the capacities of our societies.

Message 4. Capacity development actions in the water sector need to be scaled up.

There are still many actions to be done. Capacity development networks are a good basis from where to begin, linking specialists groups, combining existent knowledge, working with cost-effective arrangements and facilitating scaling-up of activities.

Box 5. A Collaborative Knowledge Network for Capacity Development in Indonesia (CKNet-INA)

The Collaborative Knowledge Network is a network consisting of 10 universities in Indonesia and is concerned with the human resources capacity development in the field of Infrastructure, Water and Environmental Management (IWEM). The overall objective of the network is to strengthen the performance of the water sector in Indonesia and to support the Water Sector Reform activities. The particular focus is on developing the capacity of Indonesian universities to deliver demand-oriented training courses in the management of water resources and irrigation at national, regional and local level. Capacity development programs are implemented to enable the CKNet-INA partners to deliver demand responsive programs to strengthen the capacity of both professionals and institutions active in the water sector. It has established a communication network among network partners to mediate and facilitate the knowledge sharing activities in order to create and maintain an enhanced and up-to-date knowledge base in the field of IWEM in Indonesia. In the long-term it will expand the network by the creation of linked networks in every province in Indonesia.

During the development process, the main constraints faced include: the resistance of the participants to adopt a demand driven approach, the lack of team working, communication in the English language, understanding the financial sustainability for operating and managing the knowledge network and leadership in networking being a new experience.

Source: Luijendijk *et al.* (2005) and Yap (2005).

Implementation target plan on IWRM

Water governance in many countries is undergoing major change. This is driven by recognition of the need for a more sustainable approach to the utilization and development of water resources. A survey undertaken by the Global Water Partnership (GWP, 2004) has shown that around 90% of countries in Africa, Asia, Latin America and the Caribbean are still at an early stage of addressing the management of water resources in a sustainable manner. However, at the World Summit on Sustainable Development (WSSD) held in Johannesburg in 2002, a goal was set that by 2005 all countries would have plans in place for the implementation of Integrated Water Resource Management. Among the main challenges in the future is the countries' readiness to meet this goal. Governments of some countries such as Brazil, Egypt, South Africa and Uganda have taken a positive first step in performing preliminary assessments of needs to make operational IWRM and their foresight should be recognized in global country comparisons.

3. Water Supply and Sanitation for All

In recent years, there has been a shift from water supply (provision of technical solutions; systems, pumps; taps etc) to the importance of provision of sustainable services at the local level, which requires the adequate capacity in all stakeholders involved (e.g. technical knowledge, management knowledge, financial sustainability, facilitation skills etc). The importance of the existence of the right capacities in the representatives of the end users (e.g. empowerment of civil society) is increasingly acknowledged. Civil society plays an important role in developing the enabling environment. Well-informed civil groups, and the press, can enhance the awareness of the public at large of the need for particular actions, and can at the same time provide the information that empowers and motivates them to change their attitudes (social learning).

Capacities and the Millennium Development Goals

The Millennium Development Goals are an appealing call for action and a broadly supported framework for achieving results. It has been underlined by different organizations that the actual key to poverty reduction is Human Development (through capacity strengthening). The MDGs are a strategic force in this direction, but should be seen as a tool and not the end. Considering them as a goal in itself risks promoting ineffective top-down approaches. In addition, they do not pay enough attention to the structural causes of poverty. This is associated with the fact that the less tangible but also relevant aspects of development, such as good governance and power relations are only addressed indirectly (SNV, 2005).

Among the main aspects to be considered in relation to the MDGs is the implicit assumption that countries have the “ability to implement”. To achieve this, political will and sufficient funds are important pre-conditions. However, without an idea on how to make optimal use of them, little progress will be made (SNV, 2005). This situation often occurs in developing countries.

So far capacity development has often been focused at the level of utility management, communities or basin and water users associations. However, the decentralization and management transfer policies in many countries add a new dimension to capacity development. Policies require the development of new regulatory and governance systems at the decentralized levels. Yet the changing roles of government are not always accompanied by the required capacity development and incentive systems to realize the change. There is often a need to improve the knowledge on the implementation of these new roles, promote innovation and appreciation of local capacity, knowledge and experience.

While different experiences with successful capacity development programs have been obtained, due to lack of appropriate information sharing and knowledge management systems and practices, those experiences have failed to be brought to scale. On the other hand, there are some successful cases where communities promote mutual learning as the case of Aquacol in Colombia (see Box 6).

Box 6. The case of Aquacol in Colombia

Aquacol is a Colombian association of community-based organizations (CBOs) working in water and sanitation with the aim to represent the interests of community water committees' vis-à-vis government entities, share information, and build each other's capacities in community water management, promoting mutual learning. It gathers 24 CBOs serving 111 communities. They have their own agenda for local problems and aim to have an effect on public policy. One of their initiatives is the Community Learning Centers where water committees are strong in developing capacities of colleagues from other communities. The Community Learning Centers approach recuperates the knowledge that exists in communities and their

years of experience of working with conventional and non-conventional technologies in order to support Aquacol's members.

The overall objective is to improve the local conditions on infrastructure, management, capacity development and communication at municipal, departmental and national levels as well as contributing to empower civil society.

Source: CINARA *et al* (2005).

Gender mainstreaming

Women are important sources for change that need to be further strengthened. Recognizing and stimulating their capacities by gender mainstreaming is important to enable, for both men and women, more gender-balanced decision-making processes for water management in the future and ensure that their needs are properly addressed. Capacity development for gender mainstreaming also means gender awareness for women and men for policy formulation, program development and implementation in the water sector.

Message 5: Gender mainstreaming is of particular relevance in capacity development programs.

Box 7. A gender case: relevance of the gender approach in water, sanitation and hygiene in Latin America

Women have always played a key role in water management, sanitation and hygiene education. However, in many cases women's involvement has been neglected in many water and sanitation projects. There is a trend to consider men as community leaders. This vision contrast with the situation of some communities, especially Afro-American communities like El Hormiguero (rural area of Cali city in Colombia) where women have taken the leadership in their community. Women are the ones who have driven a large number of the development projects in their community.

In Latin America, there is a tendency to consider that there is a balance between men and women, which makes unnecessary to take into account the gender issue in the water and sanitation sector. However, the statistics on women's employment in the sector mean other conclusions can be reached. There is also a tendency to consider that the gender approach is about equaling numbers, and therefore the solution is a quantitative change. However, qualitative changes on gender relationships and ending women's subordination are needed. It is also thought that gender is a language problem or that it only refers to women, when in reality the aim is to reconstruct masculine and feminine identities.

It is necessary and relevant to work for gender equity and gender mainstreaming. It is common to see women's under-representation in the various decision-making structures of society. Key issues that have a negative impact on women are poverty, low levels of education and the fact that traditionally boys are given preference over girls in many areas. Latin American aims are to lobby in government and financial entities to overcome neutral language, generate political goodwill, promote gender approach among men, and influence the education centers in social and technical disciplines. Also, create advisory focus groups in Latin America for supporting and monitoring gender mainstreaming at different levels in the region, generate incentives and reiterate that men and women have different needs, have developed different skills and alliance is indispensable for the MDGs to

be met.

Source: Latin America Consultation results – Global WASH Forum 2004. Bogotá, Colombia, 30th September and 1st October 2004. Prepared by M. García, Universidad del Valle/Cinara.

Decentralization

With decentralization in water management being advocated and implemented, new actors are entering the stage and capacity development needs are being articulated in the areas of institutional strengthening and capacitating local authorities. In particular, new responsibilities to the decentralized (intermediate) levels have emerged. However, many of those actors such as local government struggle with its newly assigned roles for which they are not fully “equipped” in terms of financial resources, knowledge, methodologies, tools and experiences. Local staff (including decisions makers, politicians, councilors and technical staff) needs to acquire the right skills, experience and organizational/institutional capacity to take up their new tasks.

In the past, both top down and bottom up approaches have taught the water and sanitation sector crucial lessons, but have failed to guarantee indefinite sustainability and universal coverage. Both approaches have left a gap at the intermediate level while supply driven service provision from the national level has proven to be problematic, so to have the response to this: management by communities and end users.

Participation and decentralization brings a large potential development for water management. All actors, jointly and individually may contribute to the development and diffusion of more sustainable ways to use, develop and manage water. Therefore, actions should be taken to facilitate capacity exchange and diffusion

Message 6: Capacity development actions require knowledge management systems to encourage exchange and dissemination.

The need for strengthening capacities of actors at the intermediate levels.

Unsupported management of service delivery by the lowest levels is unsustainable. Therefore, strong institutions at the intermediate levels are essential to achieving MDGs because without the required support mechanisms there can be no sustainability of local actions. This means developing the capacity at the intermediate level to support communities in their governance and provision functions. The regional consultation conducted in Africa came out strongly with this recommendation (see Annex 3).

The actors at the intermediate levels consist of a broad range of different players including actors from the public and private sector as well as from civil society. Examples are local governments (district levels or municipality), de-concentrated offices from line ministries; private consultants and contractors; local NGO's; associations of municipalities;

associations of water users (committees); private water service providers; training institutions; professional associations and others.

Their most important function is to operate as intermediary between the national level and communities and end users. Actors at the intermediate levels have their specific role to play, on one hand complementary to that of national organizations and institutions and on the other hand complementary to that of communities and end users. The task, therefore, is to strengthen those intermediate actors in performing this role effectively and honestly.

Message 7: Capacity development actions need to support emerging actors in water management with particular regard to the local and intermediate levels.

New approaches for capacity development are being developed. With an increasing emphasis on national accountability and local ownership of development processes, the role of support organizations, traditionally responsible for technical cooperation or assistance is shifting from “implementers” and “advisors” providing “solutions” towards “enablers” facilitating locally steered processes. This shift implies a change in approach in which capacity development entails an ongoing process of support in which “participatory approaches” and “joint learning” play a central role.

It is more and more recognized that country/basin capacity assessments are urgently needed to set priorities, identify capacity needs, and improve the effectiveness with which a nation can respond to external uncertainties of the changing enabling environment. It is essential that these assessments be entirely country driven, undertaken by national institutions and experts to the fullest feasible extent, responding to national situations and priorities.

Capacity development efforts must acknowledge country specific policies and institutional progress. Approaches usually applied are often not sufficiently adjusted to the specific local contexts. A shift in focus is needed, emphasizing on ownership, leadership and empowerment of the local stakeholders. This must be considered in the design of strategies to develop the knowledge and local capacities in a sustainable way.

Message 8: Capacity development actions should shift to more locally owned and implemented actions.

4. Water Management for food and environment

Water management for food

Water for agriculture and the environment, to create a world of healthy people with adequate nutrition, secured livelihoods and a healthy natural environment (3rd World Water Forum, 2003), consists of a wide spectrum of actors, actions and schemes. The

characteristics of individuals, organizations and institutions that require the attention for capacity development for food and the environment at local level, and the organizations and institutions that build capacity, must be correctly understood in all their aspects.

In many developing countries, agriculture is the main water user and the majority of the population living in provinces or rural areas rely on agriculture as its main source of income. The drop in international prices for agricultural products, have affected the standard of life of the farmers, those who work in the agricultural and other economic sectors, and the households who buy their food. In addition, poor farmers often start looking for cheap short term solutions to produce and maintain their income, hereby directly or indirectly exploring and affecting their natural resources (i.e. groundwater quantity and quality) and the environment (i.e. forest cut, salinization, dried-up lakes).

Different organizations have implemented actions to reduce poverty and thereby restore the natural environment. Based on crop diversification, rehabilitation and development of irrigation and drainage systems, improvement of systems performance, farmer's incomes might improve and reduce food insecurity. In many cases, difficulties were encountered in the technical design of new irrigation systems, difficulties which often reside on the availability of water resources and its ownership.

Farmers need additional capacities to be responsible for water, environment and food production. As responsibilities are shifting towards the local actors, their capacities have to be developed. This also includes the capacity of farmer groups, water users associations and water management agencies and their enabling working environment, which should be developed accordingly. Some examples of capacity development for food management are presented in boxes 9 and 10.

Message 9: Developing the adequate incentives and institutional and human capacity among farmers is essential

Box 9. Capacity Development for food security in Nicaragua

With a population of around 134,000 inhabitants, the province of Madriz relies on agriculture as its main source of income. Since 2002, Action Against Hunger (ACF) has been implementing actions to reduce poverty, based on crop diversification and alternative solutions to improve farmers' incomes and reduce food insecurity.

The main objective was to strengthen food security in the poorest municipalities by improving producers' purchasing power. Interventions focused on productivity levels and diversifying agricultural production. To increase the production per surface unit, communal and individual systems were implemented

An external evaluation demonstrated that the impact of the productive diversification activities with irrigation systems is real on beneficiaries but still limited in terms of food security. As part of the second phase market aspects and commercialization will be developed.

The topic of sustainability and the organizational capacity is therefore an even greater challenge given the lack of public structures capable of giving occasional technical assistance. In order to improve this situation, several capacity development activities are undertaken.

The main lessons learnt are: alternatives of production offered with an irrigation system allowed increasing the production during drought season, diversifying production and diet and consequently have an impact on the reduction of food insecurity. A constraint can be raised as for the sustainability of the system and the organization of beneficiaries when ACF leaves the community; how firm and effective are agreements ?

Source: UNESCO-IHE.

Box 10. Revitalization of Smallholder Rainfed and Irrigated Agriculture in South Africa

The Limpopo Province is one of the nine provinces in South Africa, located in the North Eastern corner of the country. The previous (apartheid) government established 171 smallholder irrigation schemes with the objective of improving the livelihood of smallholder farmers. These schemes were administered in a top-down manner with emphasis on food self-sufficiency. However, most of these irrigation schemes are not performing optimally. Through the establishment of a Water Research Commission (WRC), guidelines were developed and tested as a means of increasing the accessibility of meaningful training and capacity development where small-scale irrigation forms part of integrated sustainable rural development initiatives. Farmers requested training to be broadened from basic agricultural production to business and marketing skills and water management. The ongoing training and capacity development is now extended throughout the province within the so called RESIS program by IWMI, South Africa.

The Agricultural Colleges in the Limpopo Province has taken a basic decision to provide training at the Further Education and Training level. One of the challenges associated with offering farmer training is to further develop the Agricultural Colleges' capacity to offer on-farm training. The "Limpopo Farmer Training Task Team" was established to improve smallholders' access to agricultural training in the Limpopo Province. Through appropriate training, organization and improved self-confidence, farmers considerably improved their yields from an average of 3,5 bags per typical 1.2 hectare holding, to a new average of 40 bags.

The main findings of the 'Provincial Report on Education and Training for Agriculture and Rural Development in Limpopo Province' are the lack of capacity of farmers as serious factor as well as the unavailability of infrastructure, finances and accessible markets in creating an environment conducive for effective farming, and the illiteracy of the farmers.

Source: UNESCO-IHE.

Decentralization on infrastructure for agriculture

As in many other segments of the water sector, there is an ongoing process of shifting more and more responsibilities for development and management of water management infrastructure for agriculture to the farmers and water users associations. Also the pressure for more environmental friendly production systems is on the farmers. If such responsibilities are to be shifted successfully towards the local actors, and the farming practices have to become more environmentally sustainable, the capacities of farmers as food producers, water managers and custodians of the environment have to be developed accordingly. This also includes the capacity of farmer groups, water users associations and

water management agencies and their enabling working environment which should be developed accordingly as well.

In this process, decentralization and transparency, public participation, access to finance and empowerment should be accompanied by significant efforts to develop institutions which are tailored to their specific conditions and responsibilities depending on social context, and the scale and complexity of the facilities to be managed (rainfed, water harvesting small or large scale irrigation and drainage).

Water and the Environment

Agriculture depends on water, irrigation and drainage are therefore convinced necessary ingredients for the global food production (2nd World Water Forum, 2000). Irrigated agriculture has significant positive impacts on the environment and on down-stream water users i.e. land-saving by concentrating agricultural production, erosion control for irrigated terraces. However, besides to work on the food demands to 2025, at the same time we are obliged to make these irrigation and drainage systems more effectively and more efficiently, and try to mitigate as well their negative (environmentally) consequences.

Competition for available water resources among different users, as well as among human, economic (i.e. industry, hydropower) and ecosystems needs and regions is strong. An estimated 47 countries (with roughly one-third of the world's population) are already classified as suffering from medium-high or high water stress. Of these, 17 already extract more water annually than is recharged through their natural water cycle. Significant water scarcity in quite some areas is restricting human use of water resources. However, meeting these basic human needs is only part of the challenge.

Growing awareness of the importance of natural ecosystems to planetary health is generating pressure to improve the quality of return flows to rivers from all uses as well. Concerning irrigation, already residues of agricultural chemicals wind up in surface runoff and groundwater, contaminating them for other users and for agriculture itself. The use of water by plants leads to higher concentrations of salts in return flows to groundwater, surface streams and rivers, and naturally-occurring toxic elements may be leached into surface and ground waters.

In the developing world, 90% of all wastewater still goes untreated into local rivers/streams. The increasing pollution of some water bodies further restricts available water supplies, and degrades water-dependent ecosystems and the services they provide (OECD, 2003). This all is leading to demands of larger and sufficient water flows in the environment (i.e. rivers, streams, wetlands) to support essential ecosystem services.

Many of the above foreseen changes will be accomplished through regulation and enforcement, especially for agriculture related to use of agro-chemicals and use of genetically modified seeds.

5. Risk management

Conventional water management and water systems are planned, designed and operated on the basis of historical data on precipitation probabilities and forecasted demand projections for services. Extreme events are by definition falling outside the boundaries of water management. Risks related to the impacts of extreme water-related events have to be borne by citizens themselves, entrepreneurs, relief organizations, insurance companies, governments and solidarity.

With climate change, extreme events (such as floods and droughts and storms) are expected to increase in frequency and intensity.

Such changes in the hydrological cycle and increases in hazards like extreme events give rise to enormous increase in human, economic and environmental risks. For example, the tsunami of 26 December 2004, which hit Sumatra of Indonesia, Thailand, Sri Lanka, India and many other countries, brought home that our societies; marine and terrestrial ecosystems and our water systems are very vulnerable to the impacts of extreme events. Water systems were literally wiped out in the affected areas.

A hazard does not automatically cause a disaster. Floods can be beneficial for ecosystems, fish and farmers. It is only when a flood, drought or storm endangers livelihoods, economies or ecosystems that they pose a risk. Risk refers to the expected number of lives lost, persons injured, property damaged and economic activity disrupted due to a particular phenomenon (UNDRO/UNDP, 1991).

The increase in water related risks cannot be ignored by the water sector any longer. The good news is indeed that over the last few years several water related risk management options have been developed ranging from vulnerability assessments, to improved weather forecasting, adaptive planning methodologies, insurance options and indeed communication tools. Water sector professionals, in particular in developing countries, are scarcely aware of these tools and methodologies. Some pilot initiatives in capacity development and curricula development are starting up, often in awareness raising. Comprehensive capacity development programs to prevent risks in the water sector do not yet exist.

A key issue for social learning and capacity development is the notion that risk is a social construction. The level of risk can be predicted or measured to a certain degree. Doing something about it, however, does not always relate to the actual risk. It depends on what is perceived as risk and the choices available to reduce it. There is no doubt that it is time

to build capacity to prepare water managers and the public towards reducing the risks of future extreme events.

Message 10: Capacities to reduce the exposure to risks in the future must be built now, involving both specialists and the public.

Enhancing Adaptation Capacity under Changing Water Management Conditions³: an example.

Need for capacity development specifically related to water and climate

A quick survey of Cap-Net members revealed that very few capacity development organizations have a training program specifically related to water and climate. From several hundred email inquiries, just one response – from Sri Lanka – reported on a specific course being conducted on Water and Climate.

Though meteorology and even hydrology are standard subjects for civil engineers, and also climate change is often paid attention to, comprehensive training and education materials on Water and Climate do not exist.

Scope for capacity development packages in water and climate

The publication *Climate Changes the Water Rules* (Kabat & van Schaik, 2003 <http://www.waterandclimate.org>) identifies the main issues in water and climate capacity needs in three categories: impact assessments, vulnerability assessments and coping strategies and actions

Under the Dialogue on Water and Climate, the UNESCO-IHE Institute for Water Education together with the University of Kassel, Germany, and the University of Natal, South Africa, developed an initial training package on water and climate. The training package contains three modules: *Understanding Climate Change, Climate Variability and Climate Change in Water Resources and Coping with Climatic Variability and Change*.

The training package was presented at the World Water Forum 3 in Kyoto, Japan.

Demand for capacity development

The demand for capacity development activities in Water and Climate is not so often expressed. However, the Pan African Ministerial Conference on Water held in Addis Ababa

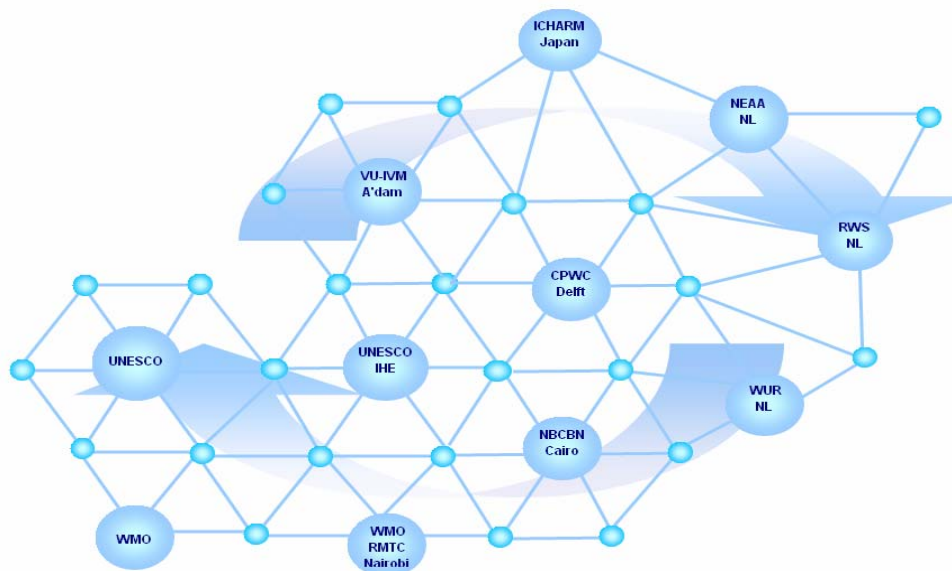
³ Two documents are of interest for water sector professionals:

1. The thematic document on Risk Management prepared by the beacons of the theme risk management <http://www.worldwaterforum4.org.mx/>
2. A document under preparation and to be discussed in a dialogue session at the 4th World Water Forum entitled 'Water, Climate, Risk and Adaptation'.

in December 2004 identified the need for capacity development and training programs on Water and Climate in East Africa. Since December 2004, several initiatives followed up on this call. A joint proposal was developed between UNESCO-IHE and the IMTR and partners on a capacity development and applied research activity. A dialogue between the NileSec and the Newater project discussed the development of a position paper on climate impacts and vulnerabilities in the Nile region. UNESCO-IHE held a well attended refresher workshop including the development of a Community of Practice on Adaptation for its alumni in Africa.

Expanding network

To enhance the capacity of water managers to cope with changing climate conditions, UNESCO-IHE and the Co-operative Programme on Water and Climate (CPWC) with an extending number of partners including the Netherlands Ministry of Transport, Public Works and Water Management (RWS), Netherlands Environmental Assessment Agency (NEAA), Wageningen University and Research Centre (WUR), Free University-Institute for Environmental Studies (VU-IVM), World Meteorological Organization (WMO), WMO Regional Meteorological Training Centre Nairobi (WMO-RMTC), the Nile Basin Capacity Building Network (NBCBN) and the International Centre for Water Hazard and Risk Management (ICHARM) continue developing their capacity development network to facilitate: the establishing Communities of Practice, development of training packages and modules, organization of short courses and Interdisciplinary research projects.



Source: van Schaik and de Ruyter van Steveninck (2005).

VII. Making capacity development more effective

This section identifies issues to be considered to improve the actual systems of capacity development and social learning:

Need for adequate funding for capacity development

- *Investing in capacity.* Large investments in capacity development and other forms of education are not typical characteristics of countries particularly in the developing world. Also donors (funding agencies) usually allocate a relatively small amount of the total funding for larger projects to capacity development activities usually limited to some training. Funding is a critical obstacle for continuous capacity development delivery. It is not only about increasing the total amount available for capacity development, it has also to do with a relatively increase of project funds for capacity development within the framework of a project or program or a better (more equitable) distribution of the total budget for infrastructural and capacity development interventions. In other words: to find the right balance between funds allocated for infrastructure (hardware) and capacity development (soft- and orgware⁴) in all projects. Efforts should be obtained to be able to make proper estimates of medium and long-term investment requirements.
- *Promotion of investments in infrastructures and policies.* Investment programs should be directed towards improvement of the productivity of water and sustainability of water resources based on participation of all stakeholders (CINARA *et al*, 2005).
- *To ensure sustainable interventions,* strong institutions and organizations at all levels are required. For this, capacity development and social learning should be addressed in a more explicit way. Ad hoc not structured and stand-alone interventions will not contribute to a long lasting impact and should be overcome.

Capacity development interventions that respond to the real demand and link up with existing capacities and knowledge

- *Identifying capacity needs.* Greater efforts are required to understand the complex processes of change within all levels of development. Little data is available to allow the identification of national capacities to address development problems specific to water. Comprehensive cross-country comparisons of existing knowledge and capacity are not available but these regional, national and/or basin-wide assessments are critical to understanding how to best enhance local capacities. Significant contributions may be generated by the analysis of capacity development initiatives undertaken in the past. Case studies, working papers, reports, manuals, best practices, guidelines, and the like are all valuable sources of knowledge, but the related knowledge base must grow in parallel with the increasing need to implement capacity development. Many countries

⁴ Orgware has to do with the organizational part of the business(structure, systems, procedures).

are finding that they have capacity development needs associated with aspects of the strategy development process, decentralization, as well as implementation of integrated approaches. Clearly, capacities are required in a number of technical specialized areas, but, also in decision-making, management, communications skills, negotiation, conflict resolution, facilitation, consensus building, community mobilization and empowerment of both men and women particularly in poor areas.

- *To identify potential stakeholders* able to place the water related development issues in a broader context. These are to be found at the Ministries of Home Affairs, Planning agencies, national reform and development committees, development scientists, NGO's, consumer associations, journalists, local authorities and local communities.
- *Water education at all levels.* Increased access to education at all levels (primary through to higher education) is a cornerstone to development and efforts to broaden individual capacities through education should be actively pursued. Support water education at school and community levels is also important, understanding the type and qualitative water knowledge which is needed for each level. This is one of the main challenges particularly in Africa (see Annex 3). At the same time, work on awareness raising on wise water use is essential.
- *To scale-up existing capacity development activities.* Moving decision-making authority to lower levels of society creates opportunities for larger segments of the population to participate in decision making but, in turn implies the strengthening of individual capacities since so many more people must be identified, trained and mobilized.
- *To make optimal use of existing capacities to ensure local action* by all stakeholders at all levels of society. However, it is also important not to concentrate only at the local level. Even though it is important, one should not concentrate all efforts on it. It is necessary to enhance capacities at all required level (i.e. local, regional, national, etc.). This was one of the main recommendations that came from the regional consultation in Latin America (see Annex 2).
- *To make use of formal and informal networks and knowledge communities* as an empowering tool of capacity development through facilitating collaboration and knowledge and information sharing.
- *Use of local and indigenous knowledge.* Local and indigenous knowledge refers to the cumulative and complex bodies of knowledge, know-how, practices and representations that are maintained and developed by peoples with extended histories of interaction with their natural environment. Such knowledge and habits (constituting the 'social capital' of a community) can relate to an understanding the nature of the water cycle, of local seasonal effects and of their relationship with nature and agriculture. It can often be very effective to address water problems, but is typically dismissed by planners. Worse still, the drive for commercialism have all but extinguished these indigenous practices despite the vital role they could play in providing solutions for the global community's water crisis. Overall, there remains a serious challenge to properly understand and appreciate the value of such traditional

approaches, and to turn them into local tools to achieve better water management (UNESCO, 2006 forthcoming).

New approaches based on a more holistic view in which processes and partnership building are central elements

- *Address capacity development by means of a “process” and “partnership” approach* in which, through long-term interaction and counseling with partner organizations in the South their ability to impact the water sector will be improved. In this approach intersectional ways and methods as well as integration of efforts and actors at the different levels in the national context become key elements. Such a strategy should face the necessary enhancement of the culture of knowledge sharing and learning as well as the improvement of the existing capacities to facilitate the information flows and knowledge development. To date, the provision of capacity development assistance has generally been based on a flow of services from North to South, without encouraging the active involvement of regional, sub-regional and national institutions in their design and delivery. This has entailed lost opportunities for enhancing South-South cooperation (Bos, 2006).
- *Improving staff turn over and incentives.* As in other sectors, the water sector often encounters an inability to keep the trained staff in the institutions. This problem becomes even more prevalent at the decentralized levels and in rural areas.

Need for appropriate monitoring and evaluation systems for CD

- *Capacity development requires time and appropriate measurement:* Capacity development as a continuous improvement process for the achievement of objectives is a difficult concept which many still do not fully embrace. In addition, there are precise difficulties in measuring capacity development which should be considered and explain why efforts in this direction at an early development. While methods for assessing change in service coverage, access and quality are well advanced and widely accepted, many practitioners have found it considerably more difficult to capture the interim state or process known as “capacity” that reflects local ability to achieve given objectives (Mizrahi, 2004).
- *To develop indicators to measure impact of capacity development initiatives.* The impact on the poor of water reforms is difficult to measure and long-term. The lack of indicators for effectiveness and impact of capacity development hampers the valuation of its contribution.

Find effective methodologies and tools for CD making use of new technologies and opportunities provided by trend towards globalization

- *To explore new ways and channels for capacity development e.g. via the web and Internet.* Information and communication technologies (ICTs) can contribute to this through online learning and establishing and cultivating global networks and professional associations, but the value of face-to-face education and mentorship is

also important. The disadvantage of this approach is the limited access of people in developing countries, although this does not apply anymore to most universities.

- *Language barrier.* One barrier is that information and knowledge on water management and water use often uses terminology that only academicians, theoreticians and technical people can understand, or worse, in a language foreign to the end user. Language barriers constitute a critical obstacle in helping to capture and leverage local information for literacy and education and for creating a level playing field in the global digital knowledge economy.
- *Creation of awareness and incentives.* When knowledge and opportunity to influence decision-making are vested among stakeholders, a virtuous cycle of social learning can be triggered. Finding incentives and mechanisms to implement field level communication and constant interaction among stakeholders is important to increase the capacity of society to engage in successful local actions.

VIII. The Way Forward

With the growing challenges for water management, including decentralization, urbanization and climate change, new capacities are required as well as a change in attitudes. To face these complex challenges, there is need to build and develop capacities of local and national actors.

Capacity development of the stakeholders at all levels and at all three dimensions (institutional, organizational and human resources) must be the backbone of all interventions. These efforts only make sense when they have national ownership. The approach therefore needs leadership based in the countries. With the notion that effective capacity is also very much context-related (the specific physical, socio-economic, legal, political and cultural context), it is crucial that individual countries undertake their *own capacity development needs assessment* to ensure the inclusion of the relevant local knowledge.

Wise water management has the potential to reduce poverty, reduce health risks and secure sustainable livelihoods. Achievement of these benefits is possible through training, education, skills development, and information dissemination. Capacity development and social learning can make the difference between an effective and efficient program, and failure.

There are innovative opportunities under way. The access and use of the benefits from remote sensing and ICTs for water development (through online learning and initiating and cultivating global networks and professional associations) should be fast-tracked in line with the Millennium Development Goals, particularly in Africa and rural areas of low-income countries.

Technological and communication developments offer new in particular computer based opportunities to transfer and share knowledge. In all cases, capacity development is an ongoing process that implies long-term investment, the implementation of formal capacity development programs and commitment and readiness to change by all stakeholders involved. even if offered through virtual means, these programs are required to meet standards, thus necessitating accreditation and validation.

Increased investments in capacity are required as well as in the basic hydrological data network to establish and provide hydrological information to preclude any gross mistakes in water resources decision-making in an unanticipated future (particularly with climate change).

Following resolutions at WSSD and the 3rd World Water Forum, particular emphasis should be given to developing capacities to initiate and conduct a planning process for IWRM implementation. In the process, due attention has to be paid to the specific capacity development needs in sub-sectors such as water supply and sanitation, risk management in connection with climate variability and change, ecosystem approaches, and their relations with IWRM as well as interactions between them.

As capacities for IWRM implementation may vary from region to region, much can be gained from a learning process and exchange between regions. A challenge is to overcome technological and communication constraints and to take benefit of the opportunities offered by new methods and techniques.

Networks for capacity development and social learning are instrumental in this learning process. They are: cost-effective options to leverage funds through network members at the local level and respond to local capacity development demands; operational and active partnerships which facilitate scaling up capacity development, specifically through the training of trainers strategy and its cascade effect; ideal when dealing with IWRM as they provide frameworks for multi-disciplinary and multi-sector outreach.

Development of Resource Centers and improved Knowledge Management can be very instrumental in the development of a culture and practice of sharing of information and lessons learnt. The role of Resource Centers is to act as such a "collective memory bank" and knowledge base, capable of documenting information and sharing it directly with individuals, or through networks, and to be responsive to local needs and new opportunities.

Empowerment of local stakeholders is needed to achieve the MDGs and the implementation of IWRM plans. Empowerment usually means supporting and enhancing the capacity of stakeholders to act in a sustainable way, allowing them to have a greater degree of influence over their choices and their local reality. The empowered participation of local stakeholders is necessary to expand and improve access to water supply and sanitation services and for the implementation of IWRM. Local organizational innovation should be considered by decision-makers as an important driver of policy reform and social change. In this way, empowerment leads to social learning.

To change, improve or modify the water management activities to sustain water for food and the environment needs, a continuous dialogue to create a common awareness and understanding among primarily current and future decision-makers around the world is required. This must be done in schools, in the media, and in workshops, meetings and conferences. Then those affected must make the choices and appropriate actions must be taken in the areas of policy and trade, investment, infrastructure, institutional reform, research, and capacity development.

Existing organizations need to be strengthened, some new institutions need to be established, including both organizations and regulatory and legal frameworks. Sufficient qualified and skilled people are needed that bring about the changes and improvements within existing organizations but also the development and management of new organizations and institutions. Moreover, the envisaged people and foreseen capacities may require changes in attitudes and skills of staff and management processes.

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Cross-Cutting Perspective C: Capacity Development and Social Learning
Thematic document

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Annex 1 Process of Consultation

In order to obtain regional inputs on capacity development and social learning in the sector, several regional consultations were carried out from August to December 2005.

The general outline for the regional consultations is presented below:

General Outline for regional consultation workshops	
Objective	Obtain regional inputs (experiences/views and suggestions) on capacity development and social learning in the sector.
Outcome	<ul style="list-style-type: none"> • Identification of some interesting cases (successful and unsuccessful) with an integrated approach⁵ towards CD and SL • Identification of the main issues in the region regarding capacity building and social learning • Identification of main bottlenecks and opportunities for capacity development and social learning in the region • Recommendations for strengthening capacity development and social learning in the region
Methodology	<p>The proposed methodology was only meant to be indicative. The methodology applied depended on the organizers' own creativity and the time available for the consultation:</p> <ul style="list-style-type: none"> • Presentation of the baseline paper • Presentation of cases from the region (whenever possible) • Group work⁶. <i>Possible key questions</i> to focus the group discussions were: <ul style="list-style-type: none"> ○ How valid are the key issues identified in the baseline document for your region? ○ Prioritize the most important challenges or add other whenever considered appropriate for your region ○ What are the existing opportunities in the region to address the main challenges? • Plenary and conclusions. Are there any key messages for the Ministerial Meeting? In other words: What would you expect your national governments to do in order to promote Capacity Development and Social Learning in your country?
Participants	Representatives of actors/players in the sector and with special

⁵ Considering elements of the three CD components: Human Resources Development, Enabling Environment and Institutional Development.

⁶ The groups might be compiled around the five framework themes of the Forum.

	interest or experience in capacity building and social learning.
Reporting	Reporting of the feedback on the above mentioned Key Questions as well as the recommendations, including the updated contact addresses of the identified cases.

Among the questions that were brought up during the regional consultation process are:

- What are the key success factors for strengthening local actions?
- How to identify capacity development gaps adequately and timely?
- What are the experiences with differentiated approaches for capacity development and different target groups?
- What are the priorities for capacity development to enable and strengthen local stakeholders and their actions?
- Who are the local capacity builders and do they have enough capacity themselves? Do they have the knowledge, skills, motivation and facilities to do effective capacity development?
- Are politicians aware and supportive of the need for capacity development? If not, how can this awareness and support effectively be raised?
- Is there enough capacity at all levels to make informed decisions on certain water allocation scenarios to the different users and to understand the related impacts?
- To what extent does local-oriented research and dissemination of the results exist on technology and management practices?
- What are the experiences with empowerment of local water user groups and farmer collectivities in decentralization processes?
- What innovative financing mechanisms can be reported that stimulate local stakeholders to invest in development or modernization of infrastructure and training?
- What monitoring is done to learn from past processes and what mechanisms could be introduced for effective monitoring and synthesis?

Answers to all of these questions cannot be straightforward but depend on local conditions, situations, enabling environment, etc. These questions however served as a guide to be able to start discussions in different directions, but understanding the same issues. These questions formed the basics to all stakeholders to identify the problem.

Regional Consultations where the baseline document was presented

- South East Asia meeting, including a special day devoted to capacity development issues (31 August). Bali, Indonesia. 28 August – 2 September 2005.
- 19th Congress of the International Commission on Irrigation and Drainage (ICID). Special Working Group on Capacity Development Training and Education (14 September). and preparation and distribution of a survey on our baseline document International Workshop Beijing, China 12-14 August 2005

- First Regional Technical Preparatory Meeting to the 4th World Water Forum. Tunis, Tunisia 28-29 September 2005
- Agua 2005: From Local Action to Global Challenges, including a Working group on Capacity Development. Santiago de Cali, Colombia, 30 October to 4 November, including a regional meeting on Capacity Development and Social Learning on 30th October 2005
- Regional workshop on Microfinance and innovative mechanisms to achieve the MDGs in water and sanitation in Sub-Saharan Africa. Dakar, Senegal. 12-15th December 2005.

Several people from the Consortium on Capacity Development and Social Learning and their partners in the South participated in the regional consultations that took place all over the world. The main ideas brought forward in these sessions were abstracted and a draft baseline paper was prepared, that also included inputs in each one of the Framework themes from the different Consortium members. Comments were collected and were included in the present paper that constitutes the Thematic Paper for the crosscutting perspective on Capacity Development and Social Learning. This document was submitted for discussion at the 4th World Water Forum in Mexico.

List of organizations who contributed:

Cap-Net	: www.cap-net.org
CINARA	: http://cinara.univalle.edu.co/
Consejo Consultivo del Agua	: www.aguas.org.mx
CPWC	: www.waterandclimate.org
CREPA	: http://www.reseaucrepa.org/
ICID	: www.icid.org
IPTRID	: http://www.fao.org/landandwater/iptrid
IRC	: www.irc.nl
LA-WETnet	: www.la-wetnet.org
Streams of Knowledge	: www.streams.net
UNESCO-IHE Institute for Water Education	: www.unesco-ihe.org

Annex 2 The Latin America region

Challenges for the Region of Latin America towards Capacity Strengthening (Cinara *et al*, 2005).

- To strengthen capacities for intersectoral work both at national and local levels. Two examples are:
 - The intersectoral work might overcome problems of accessibility in isolated areas (the health sector reaches all the regions in Latin American countries while the water and sanitation sector does not).
 - In the United States, financial resources for clearing-houses come from the agriculture sector.
- To strengthen capacities in the elements stated as the challenges of the sector: equity, quality of services and protection of water resources.
- To agree on a minimum common language as similar problems and themes have different visions in different regions in the continent.
- To develop indicators to measure progress.
- To provide services to the displaced population in countries under conflict such as Colombia. These people have lost the dignity they had in the countryside when they were forced to emigrate to cities.
- To be prepared for natural disasters.
- To work under a violent environment in strengthening capacities at community level making the field work difficult.
- To raise awareness about solid waste and its disposal.

Challenges (A SWOT analysis)

Strengths

- Good experiences of community participation and better cooperation at horizontal level. Aquacol is a good example of this. Actions have been taken between communities and governments.
- Strategic alliances among international organizations, government agencies and social organizations.

Weaknesses

- Not easy to replicate previous experiences in other regions due to the different levels of decentralization and development.
- Legislation is complex, sometimes contradictory and poorly enforced.
- The water and sanitation sector is not articulated making it difficult to have coordination at higher government level (ministries).
- Investments are mostly made in urban settings leaving rural areas deprived.
- Lack of professionalism in the sector and high alternation of civil servants causing a lack of continuity in government programs.

- When project budgets are adjusted, non-technological components are normally cut. In practice, programs and projects are not integrated.

Opportunities

- There is a legal framework some public policies intending to achieve social participation in water management.
- Community social service of last year students in secondary school can be used as a tool.
- There are networks for technologies exchange and experiences to solve problems.

Threats

- Low investments in science and technology.
- Poverty and lack of opportunities for rural population endanger the protection of water resources from the source.

Key messages for governments suggested during the Regional Consultation in Cali, Colombia

- To generate long-term public policy beyond governmental periods.
- To apply the existing policy to foster capacity development and social learning, while monitoring and evaluating progress.
- To invest in the implementation of integrated projects keeping close relationship between the technological, social and educational components.
- To strengthen capacities at all levels who have a say in the program/project cycle.
- To strengthen the linkages among the different actors who participate in the sector.
- To strengthen the concept of public services. Even though in some cases the private sector provides the services, they are still public.
- To promote the development of a framework for research to generate room for analyzing how universities may contribute to strengthen capacities while keeping its social function.
- To promote changes in the curricula at different educational levels, adapting them to reality. To include practical activities of universities directly with communities.
- To analyze the conditions given by the international banking regarding the strengthening of capacities.
- To promote the formation of mediators to socialize information, particularly in a context of minimization of the role of the State. An interesting alternative for this area are the community learning centers.

Capacity development for IWRM in Latin America: framework of progress (LAWETnet, 2005).

Measuring capacity and capacity development is a difficult endeavor which needs to be put into context. Capacity development is a multidimensional and dynamic process; it may be then described in terms of its elements, or benchmarks. An indicative framework of progress for the achievements and pending needs in terms of regional capacity development for IWRM was prepared by LAWETnet and is presented below.

Capacity development benchmark	Status	Indicators / Opportunities and needs
Existence of a critical mass for the development and strengthening of capacity development.	Accomplished and active.	There are throughout the region valuable, active, and committed institutions and programs (regional and country level) with IWRM knowledge and a proper understanding of the local schemes. This situation presents a positive horizon for the planning of new actions, building on local capacities.
Network and partnership development for resource optimization.	Accomplished and active.	Various capacity development networks and other forms of partnerships are active at the regional, sub-regional, and national levels. This brings huge opportunities for capacity development as networking facilitates knowledge sharing, scaling up of actions, resource optimization (in terms of IWRM content and financial contributions), and better possibilities of reaching target groups.
IWRM knowledge and subject coverage.	Available at the level of the critical mass.	IWRM knowledge broadly covered at this top level, including related subjects as water law, gender, flood management, economic instruments, institutional arrangements, and negotiation.

Capacity development benchmark	Status	Indicators / Opportunities and needs
<p>Training materials and curricular development adequate for local users.</p>	<p>Pending, with good conditions and opportunities.</p>	<p>Although there is access to valuable resource materials, these do not constitute adequate and fully developed training materials or curricular modules to be used at different university levels and targeted to different groups.</p> <p>Existent materials constitute an excellent basis, but need to be enhanced and perfection. Interaction with global level programs and institutions is active and presents an opportunity for such work. Development of training materials should consider local knowledge and applicability.</p>
<p>IWRM knowledge included in various disciplines and professional sectors.</p>	<p>Pending, with good conditions and opportunities.</p>	<p>The opportunities are given by the existence of the critical mass. The example of Universidad Externado de Colombia, incorporating IWRM in their water law programs should be followed.</p> <p>Development of training materials is needed. Strengthening and expanding networks will be a conductive strategy.</p> <p>Further funding support will be needed for an increased level of action. Networks present an opportunity in their capacity to leverage local funds and in-kind contributions.</p>
<p>Capacity development programs active in supporting policy making and reform processes.</p>	<p>In process, with opportunities for better results and increased activity.</p>	<p>Efforts from GWP, GEF Programs, WB and IDB present good opportunities to work further and strengthen the relevance of capacity building. Links with capacity development networks are established and could facilitate more action if strengthened and joint action considered.</p> <p>Capacity development indicators are needed for the adequate recognition of the value and relevance of capacity development.</p>

Capacity development benchmark	Status	Indicators / Opportunities and needs
Stakeholders and society reached.	Mostly pending, isolated good activities.	<p>Most capacity development actions are still seen amongst the “water” sector. Reaching communities, users, and school level education is constantly mentioned and funds are needed to accomplish this.</p> <p>The existent critical mass and some ongoing activities as the WET (Water Education for Teachers) Program and others present good basis and opportunities for more action.</p>
Research: IWRM on the ground.	Pending, with good conditions and opportunities.	<p>Applied research following on the ground IWRM practices is strongly need for better understanding of the real challenges and difficulties in implementing IWRM in Latin America.</p> <p>Networks offer a good environment to encourage research as they combine different members which bring their own programs of actions which involve on the ground processes and stakeholders.</p>
Access to information	In process.	<p>The Inter-American Water Resources Network (IWRN) through its Delta America project has recently launched several sub-regional information platforms.</p> <p>Other initiatives are given strong importance to sharing and making information accessible.</p>

Source: LA-WETnet (2005).

Annex 3 The Africa Region (CREPA *et al*, 2005).

During the Dakar regional consultation the following challenges and opportunities for Capacity Development and Social Learning in Francophone West Africa were identified:

Challenges:

- Involving private sector in capacity development since most of the time it is ignored.
- Action sustainability: program sustainability depends on capacities that are performing the action and how well people are
- How people can individually cover the costs of their own capacity development; most of the time people are waiting for donors or grant
- Improvement water and sanitation coverage
- Reinforcing advocacy at local level
- Mobilizing local financial resources for capacity development
- Accompanying decentralization process in the countries
- Reinforcing information in communities in regard to health water and environment
- Improving awareness building at government level
- How to address skills needs at local;
- Absence of skilled staff at local level in sanitation;

Those challenges need to be properly addressed in order to empower communities, local authorities to take into account water and sanitation in their agenda.

Opportunities

Participants have identified some opportunities for the capacity development in the region. Among them are:

- Water and sanitation is still a major worry to the poor
- Existing projects and program that train people
- Existing training centers in the region as well as resources centers in the region
- Existing people to be trained in the sector (local government, NGO, technical, etc.)
- Decentralization process (new responsibility to Mayors and new needs)
- Political will in most of the countries
- Donors commitment to support the sector (for example: in Burkina, Danida commits itself to train 20 engineers per year for 5 years to fill the gap in administration)
- Achieving the water-related MDGs
- Appropriate policies and orientation

After identifying the challenges and opportunities, some actions have been listed in order to enhance capacity development in the sector.

Recommendations for the region from the regional consultation:

- Identify the needs for resource centers
- Include water, sanitation and hygiene modules in primary schools
- Use school as change vector
- Where people are not trained, resource centers should take the initiative to train them
- Having skilled trainers in the water and sanitation sector
- Looking at motivated staff in resource centers
- Develop appropriate tools for each communities
- Think about knowledge transfer at all level
- Set up track record of good training module and successful social learning experience and share it among stakeholders
- Assess the existing modules and adapt them
- Monitor capacity development and social learning programs
- Increase training resource centers and support tem financially and technically in order to play their role
- Development of strategic learning alliances at local level
- Transfer financial resources to the local level
- Develop awareness building at all levels

Annex 4 The South Asia Region (based on Cap-Net South Asia, 2005).

The following conclusions regarding tertiary education in South Asia emerged from the studies conducted:

Weaknesses:

- Poor infrastructural and financial support for maintaining professional practice for WRD capacity development in universities and colleges
- Most WRD education focuses on designing for heavy irrigation projects that support irrigated agriculture while water management in low rainfall areas is neglected
- Formal database for capacity development for IWRM is weak.
- Social context of technological choices for specific areas is not duly recognized and WRD graduates are trained to decide purely on technical considerations
- Weak research base for WRD teaching– no incentives, facilities and funds- that in turn leads to weak teaching program.
- The WRD course content and training is gender blind
- There is no awareness of water policy and water history issues
- A study and appreciation of traditional water management knowledge base and practice by the various communities is conspicuous by its absence but needs to be tapped.

Opportunities

- Some innovative attempts to broaden the scope of WRD education in water focused institutes are in evidence and they are potential points for locating pilot experiments to initiate IWRM capacity development programs

Threats:

- There is heavy bias in the higher education of WRD towards engineering and other technical disciplines to the exclusion of social science disciplines.
- There is hardly any link of the course content with live problems from the field areas.
- Declining interest in the WRD subject as a professional discipline
- Lack of upgrading of teacher's skills, teaching programs and methodologies in most universities
- Brain drain of the better skilled in WRD because of lack of opportunities within the country
- All teaching is formal and class room based. This means that graduates of WRD have to be retrained for any job that they do.
- State ownership of water resources and 'National Water Policies' controlled by the government- as opposed to people oriented water issues and concerns that

emerge from below - has geared the WRD and its education for serving the 'government needs'.

- The plethora of 'trainings' through fragmented and isolated programs creates an illusion of capacity development as it is difficult to train the students that are the output of a system of education (based on colonial origins) that is based on drilling of information through rote. In the name of discipline any creative and questioning spirit is discouraged. The minds are trained to execute what is taught and not to 'think' with originality and freedom.

Lessons learnt from capacity development IWRM projects in the Southeast Asia region (Low, 2005).

1) It is very difficult for formal education in institutions of higher education to change their curriculum and syllabus to suit the new scenarios, because these have evolved over a long period of time, based on national educational demands. Changes need time. However, if there is a demand for IWRM courses, then it is not too difficult to convince the right group of lecturers who is really interested, to contribute to the course, so that they can carry forward the change required in the syllabus.

2) All IWRM training and capacity development projects have to be inclusive, and should not be the possession of any person or any individual university, which is one of the reasons for putting the Masters Course in Malaysia to the Open University, which has as its signatory, all the public universities in the country. This provides recognition and an acceptance of the Masters degree by everyone, and an opportunity to carry forward the IWRM initiatives in the country.

3) The national government must create an enabling environment subscribing to and endorsing the IWRM principles and concepts in the development of water resources in their country. This will create a market for capacity development and training needs required to operate.

4) There is a need for international agencies subscribing to IWRM to actively participate in all national and regional programs to provide the leadership.

5) There is a need for recognition of the good work of NGOs by the government and the region on IWRM.

List of abbreviations and acronyms

ACF	: Action Against Hunger
Cap-Net	: Capacity Building Network for Integrated Water Resources Management
CBO	: Community-based Organization
CD	: Capacity Development
CINARA	: CINARA Instituto de Investigación y Desarrollo en Agua Potable, Saneamiento Básico y Conservación del Recurso Hídrico (Institute on Research and Development for Potable Water, Basic Sanitation and Water Resources Conservation)
CKNet-INA	: Collaborative Knowledge Network for Capacity Development in Indonesia
CPWC	: Cooperative Programme on Water and Climate
CREPA:	Regional Center for Potable Water and Sanitation at low cost (Centre Regional pour l'Eau Potable et l'Assainissement à faible coût)
ENDA:	: Environmental development action in the Third World
GEF	: Global Environmental Facility
GWP	: Global Water Partnership
ICID	: International Commission on Irrigation and Drainage
ICT	: Information and Communication Technologies
IDB	: Inter-American Development Bank
IMTR	: Institute for Meteorological Training and Research
IRC	: International Water and Sanitation Centre
IWEM	: Infrastructure, Water and Environmental Management
IWRM	: Integrated Water Resources Management
MDG	: Millennium Development Goals
NBCBN-RE	: Nile Basin Capacity Building Network for River Engineering
RC:	: Resource Center
SL	: Social Learning
STREAMS	: Streams of Knowledge
UNESCO	: United Nations Educational, Scientific and Cultural Organization
UNESCO-IHP:	UNESCO International Hydrological Programme
UNEP	: United Nations Environment Programme
WASH	: Water and Sanitation, Hygiene
WB	: World Bank
WRD	: Water Resource Development
WSSD	: World Summit on Sustainable Development
WUA	: Water User Association

