REPORT

of the

AFRICAN PRE-CONFERENCE

"WATER FOR FOOD AND ECOSYSTEMS: MAKE IT HAPPEN!"

Addis Ababa, Ethiopia

4-6 November 2004

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Glossary

AU	=	African Union
CMF	=	Catchment Management Forum
CSD	=	Commission on Sustainable Development
EIA	=	Environmental Impact Assessment
FAO	=	Food and Agriculture Organization of the United Nations
FONI	=	Friends of Nomads International
IFR	=	In-stream Flow Requirements
IWRM	=	Integrated Water Resource Management
LHWP	=	Lesotho Highlands Water Project
MDG	=	Millennium Development Goals
NBI	=	Nile Basin Initiative
NEPAD	=	The New Partnership for Africa's Development
PRSP	=	Poverty Reduction Strategy Plan
UNEP	=	United Nations Environment Programme
WSSD	=	World Summit on Sustainable Development

1. Introduction

Sustainable use of water is of vital importance for our Planet. It is fundamental for both production functions and well functioning ecosystems. However, unsustainable water use is common. Population growth and expanding use of water per capita put an increasing pressure on the availability and quality of water resources and on the ecosystems which are key to regulation, supply and purification of water. The poor are the first to suffer from this. Often the satisfaction of basic food needs is obtained at the expense of the natural environment, which in turn threatens the very basis of future food production. This calls for an integrated approach to water resources and ecosystems at the river basin level.

International commitments to sustainable use of water and natural resources have been made. What is needed now is implementation of these commitments and identification of practical approaches. How can we effectively balance water for livelihoods and ecosystems while achieving equity, environmental sustainability and economic efficiency?

The Government of Ethiopia, the African Union, FAO and the Government of the Netherlands jointly organised the African pre-Conference as a major regional contribution to the upcoming FAO/Netherlands International Conference on "Water for Food and Ecosystems, Make it Happen" (from January 31 to February 5, 2005 in The Hague, The Netherlands).
The pre-Conference of approximately 130 participants from 34 countries aimed to formulate recommendations based on African experiences (7 case examples) with respect to promising approaches and necessary complementary actions in balancing water resource management for food and ecosystems. The conference provided a platform for participants to identify practical approaches on the basis of the analysis of real life experiences. The lessons learnt relate to field level implementation, innovative methodologies and the necessary enabling environments under the three broad themes:

1) *Fostering Implementation: Know-How for Action*, addressing consultation processes and dialogues to involve stakeholders effectively, and integration and application of knowledge of the complex relations between water, food and ecosystems at the water basin level;
2) *New Economy of Water for Food and Ecosystems*, dealing with valuation principles and methodologies and decision support systems that lead to new prospects, and addressing how these valuation models work in practice;
3) *Enabling Environment*, focusing on promising institutional arrangements and successful actions at all levels by all stakeholders to provide opportunities for effective implementation of water management.

The analysis of practical experiences offered insights into opportunities and constraints with the implementation of integrated water resources management and assisted in the formulation of recommendations for the African region that should help both practitioners as well as policy-makers in water management with an integrated view on.

The results will be a major input to the FAO/Netherlands International Conference on "Water for Food and Ecosystems, Make it Happen". This conference will focus on the implementation in a coherent manner of international commitments relevant to water for food and ecosystems. It aims at identifying successful processes that lead to best practices for achieving land and water development through Integrated Water Resource Management (IWRM) with an ecosystem approach. It also seeks to assist governments and organisations in implementing programmes on water for food and ecosystems.
It is expected that insights and experiences shared at the Conference will find their application in improved actions aimed at implementation at the national and local level and will reinforce and establish national and international partnerships in Water for Food and Ecosystems.

2. Context and Themes

2.1 Context

During the opening session the conference was addressed by H.E. Rob Vermaas, Ambassador of the Netherlands in Ethiopia, Dr. Ahmadou Babagana, on behalf of the African Union Commission, Dr Louise O. Fresco, Assistant Director General of the FAO and Deputy Prime Minister and Minister of Agriculture and Rural Development of Ethiopia, H.E. Mr. Addisu Legesse.
H.E. Prof Dr. Tekalign Mamo, State Minister of the Ethiopian Ministry of Agriculture and Rural Development and H.E. Mr. Mesfin Tegene, Vice Minister of the Ethiopian Ministry of Water Resources, chaired the plenary sessions of the conference.

a. Statement of H.E. Rob Vermaas, Ambassador of The Netherlands in Ethiopia

Ambassador Vermaas sketched the background and context of the FAO/Netherlands International Conference "Water For Food and Ecosystems, Make it Happen" and the Pre-Conference with the same title for the African Region.
During the FAO-conference in December 2003 the Government of The Netherlands concluded in consultation with the FAO that in order to push the concept of sustainable integrated water management to practice, it would be of help to organise a conference focusing on water, taking into account both productive and ecosystem functions. Because of the persistent and severe nature of the water problems in Africa due attention should be given to this region. So, a strong African message could be given to the International Conference in The Hague.

The importance The Netherlands is giving to water issues is well underlined by the active role and the strong commitment of the Dutch Crown Prince of Orange, H.E. Willem Alexander. To make a difference, it makes sense to have water engineers, food producers and nature people together to discuss real life examples, the Ambassador stated. The Netherlands is committed to bring together African partners to mobilise the African experience.

He underlined the international commitments, which have been made at several Summits and international fora. Broad acceptance of the concept of Integrated Water Resource Management has emerged. The challenge is to move forward from this conceptual stage, to avoid remaining it a vision only. By discussing African cases we will be able to identify lessons learnt, which also will help to build trust and establish stimulating contacts.

The ambassador stressed the fact that demand for water is rapidly increasing both by higher consumption per capita and by a growing population. At the same time the natural resources base, which is crucial for the water cycle, is degrading and water is being polluted. In his opinion we should overcome the competition for water, for example

between agriculture and nature. Water use and a healthy resources base are very much interdependent. At the same time water and ecosystems are vital for all life on earth. The poorest are typically the first to suffer in case of water shortage and degradation of ecosystems.

Coming from different perspectives and guided by several international agreements, it is clear that mainstreaming is an important topic in this context. By bringing together all stakeholders we expect to enlighten these issues, based on practical experiences. Questions, which in his opinion should be addressed in the pre-conference, are:

- What is needed to have integrated water resource management becoming a part of their main programmes;
- How to link short term needs with long term sustainability and who is going to do that;
- Who is taking the decisions and on what basis at the national and local level; and
- What about the need for effective and practical institutions.

Ambassador Vermaas concluded by thanking the partners for their positive response to jointly organising the Pre-Conference and wishing the participant a successful message to The Hague.

b. Statement of Dr. Ahmadou Babagana on behalf of the African Union Commission

The importance of water for agriculture and ecosystems development, particularly in Africa, cannot be over-emphasised, Dr. Ahmadou Babagana stated. The sustenance of the African ecosystems and the biological diversity is provided by water. Much of Africa's suffering is linked to the insufficiency of water. Most of Africa's annual per capita water availability, while already below the world average, occurs in the high forest belt of DRC. As 80% of Africa's people depend on agriculture, sustainable water supply for food production and the sustenance of the agro-ecological systems is high on the development agenda. The cereal and livestock production rely on unpredictable rainfall patterns. Actual food production is amongst the lowest in the world. Insufficiency of strong intergovernmental water management institutions has constrained the development and distribution of water for food production and wetland ecosystems. Many of the continent's river and wetland ecosystems are deteriorating both in health and size.
The limited fresh water supply threatens to undermine the continent's potential to achieve food self-sufficiency and food security. The limited supply also threatens the ecological balance and biological diversity, which for millennia ensured relative security for the populations. As having the highest rate of urbanisation and population growth with widespread poverty and insufficient resource development Africa faces a serious challenge in meeting the Millennia Development Goals (MDG) by 2015.

The FAO/Netherlands International Conference "Water for Food and Ecosystems; Make it Happen" is an opportunity for Africa to make advances in the development and maintenance of the positive nexus between water, food production and ecosystem protection and development. International partnerships should enable the implementation of

the commitments of the MDG's and others for water, agriculture and ecosystems. Three of the MDG's have direct relevance to water food and ecosystems, namely the Goals to eradicate poverty, ensure environmental sustenance and global partnership for development.
The commissioner stated that this Pre-Conference should lay the foundation for the endeavour to implement and the renewed engagement of African civil society. The objectives are to identify best practices and lessons learnt aimed at the implementation and to formulate recommendations to enhance the implementation of international commitments based on African experiences, that balance water, food and ecosystems and that gives due attention to their mutual interdependence.
The outcome should go beyond sharing knowledge and experiences on practical tools. It should make concrete proposals for the implementation of the partnership arrangements for the realisation of the MDG's and the Plan of Implementation of the WSSD in the context of NEPAD. The AU has developed its comprehensive three years Programme Plan for the implementation of the strategies detailed in NEPAD and the commitments of the Sirte Declaration. It covers all three thematic areas of the Conference, i.e. it revitalises the integrated management of the Fouta Djallon highland, source of six major West-African rivers, based on the exploitation of the positive synergy between water, agriculture and ecosystems for social and economic development.
The AU will strive to ensure political and resources commitment by the Member States to the development of the resources concerned and recognises the important role of water as a catalytic agent for development of agriculture and protection of ecosystems for the ultimate development of Africa's people.

c. Statement of Dr. Louise O. Fresco, Assistant Director-General of the FAO

Although politics often oppose agriculture and ecosystems, they are inevitably linked. They use the same resources – land and water -- and are based on the same biological processes – photosynthesis and biomass production. Agriculture is nothing else but an ecosystem of which primary and secondary products are appropriated by humans. During the 20th century, this has enabled us – on a global scale – to meet the food demands of a more than tripled world population. Today, agricultural cropland consumes 13 percent of total global evapotranspiration – of which irrigation accounts for 1.5 percent. Humans now use approximately 20 percent of global biomass.
This achievement has not been realised without its costs. As has been increasingly stressed the advancements in agriculture are inevitably associated with disturbance of natural ecosystems.
At the same time, the public demand for a sustainable use of our natural resources has also been increasing. The need to harmonise future food production and ecosystems through sustainable water management has been adopted as a common goal in international agreements. In the intervening years, more emphasis has been placed on water and sanitation rather than on integrated water resource management. Finding new ways for agricultural water use and management to alleviate negative impacts is essential not only to maintain the integrity and productivity of our ecosystems, but also to sustain the conditions

under which agriculture can contribute to food security, poverty alleviation and economic growth.

So, how can agriculture produce food and other agricultural products and deliver environmental services such as protection of watersheds?
This question is particularly relevant in Africa, where food security and poverty reduction remain our immediate concerns. Recent research shows that growth in agriculture is the most beneficial for the poor: a one percent increase in yields results in a decrease of 0.6 to 1.2 percent of people living on less than $1 per day. Hence, Africa needs to continue to invest in unlocking the potential of its diversified agricultural systems – in rain fed agriculture, irrigation and mixed systems.
This challenge to agriculture has local and global implications. Food production can be used locally or be traded; environmental services benefit local people as well as the global environment. Local and global development need not be opposed but can be synergistic. We should identify win-win situations linking the local and the global levels through markets for agricultural products and environmental services. The recent NEPAD initiative, which has chosen agriculture, infrastructure and markets to address the specific concerns of Africa, should further help in meeting these challenges.

The mobilisation of water resources for agriculture in Africa is still well below the level of other regions. In Africa at present only 5 percent of total renewable fresh water resources are being used, compared with 20 percent for Asia. There is thus great potential to address the needs of Africa in food, poverty reduction and ecosystems. This requires investment in increasing the productivity of the multitude of irrigated and rain fed systems. As indicated by NEPAD, the level of investments required to further developing the water resources in Africa are considerable; amounting to US $ 37 billion till 2015.

FAO has gained experiences in developing an ecosystems approach to agriculture, and in applying a productive services approach to ecosystems. Applying an ecosystems approach to agriculture means focusing on its optimisation within its ecological surroundings. Realising this potential requires us to adopt a stronger focus in research and development on the specificities and richness of Africa, by for instance selecting and developing genetic treats in agricultural crops for the specific environmental and growing conditions in Africa. The new NERICA rice varieties that improve yields under upland and rain fed rice-growing conditions, as traditionally applied in parts of Africa, are a welcome example.
FAO also applies an integrated approach to natural resources management that focuses on the multiple services and purposes that are derived from natural ecosystems. In our livestock programmes, for example, we look for interdependencies between livestock keepers and wildlife reserves. Sustainable management plans for livestock and wildlife in the buffer zones are accompanied by ways for livestock keepers to share in the revenues of tourism for their sound management services, and by establishing direct marketing links with the tourism industry for local livestock products.

In the future we need to establish a better coherence in our policies and programmes. The need for coherence applies at national level, between ministries of agriculture and

environment, water and natural resources, but also in donor policy, and not least between the international institutions, the Conventions, and UNEP and FAO for example. Similarly, at national level, cross-sectoral policies need to become visible in national plans, especially in the PRSPs, where thus far environment and agriculture are often poorly reflected.
Finally, participants should be aware that FAO's member states have recently adopted the principles on the Right to Food. FAO considers the "theme" water for food and ecosystems of this conference a concrete step towards the realisation of the Right to Food, ADG Fresco stated. In fact, the right to water for food and ecosystems may become an integral part of the Right to Food.
The Assistant Director General concluded by saying that FAO is very pleased to co-operate with all its partners in this important conference, and would like to pay tribute to the Ethiopian government who has taken such an active role in the preparation and leading of this conference. FAO also would like to thank the Netherlands government for its generous contribution.

d. Statement of H.E. Mr. Addisu Legesse, Deputy Prime Minister and Minister of Agriculture and Rural Development of Ethiopia

Sustainable use of water is of vital importance for our planet. It is fundamental for both food production and well functioning of ecosystems. However unsustainable water use is very common, especially in our continent. Population growth and the expansion per capita put increasing pressure on the availability and quality of water resources and on the ecosystems which are key to regulation, supply and purification of water. The poor are the first to suffer from this.
The pre-conference should therefore provide the opportunity to identify practical approaches on the basis of the analysis of real experiences. A number of case studies would be discussed in this forum. The cases should therefore relate to practical implementation, promising methodologies and the necessary enabling environments. As the focus of the discussion is on water management for the harmonisation between food production and ecosystem functions, the conference should also build upon ongoing activities like the Dialogue on Water, Food & Environment and others.

Africa cannot realise its ambition for development unless it can feed itself. African governments must therefore rise to the challenge of ensuring food self-sufficiency. It is realised that both the Constitutive Act of the African Union and NEPAD provide the vision and programmes for the collective development of the continent.
At the country level, however, success would hinge on the kind of policies, programmes and resources as well as partnerships, which governments would be prepared to put in place to meet the challenges of food insecurity.
In this respect this pre-conference, which is a shared vision developed amongst different partners, namely the Netherlands government, the African Union, FAO and the Ethiopian Government, is prepared at the time when countries in Africa require partnership more than ever before to overcome the formidable challenges of food insecurity facing each country.

There must also be political will and commitment to implement the outcome of this pre-conference for accelerated but environmentally friendly and sustained development.

The outcomes and recommendations of this pre-conference will be presented at the FAO/Netherlands Conference "Water for Food and Ecosystems; Make it Happen". The outcome the Conference should therefore help implement the various commitments and conventions such as the Convention on Biological Diversity, The Ramsar Convention as well as the Plan of Implementation of the WSSD. It is therefore, with deep satisfaction that the Deputy Prime Minister wished to reiterate his appreciation to all those who have been involved in this process. It is his hope that this meeting will bring the participants nearer to the realisation of the noble cause for the achievement of food security in Africa.

e. Statement of Dr. Prem S. Bindraban on behalf on the Inter Academy Council

The report "Realizing the promise and potential of African Agriculture" made on the request of the Secretary General of the United Nations, Mr. Kofi Annan, to the Inter Academy Council was also an important input to the pre-conference. Mr. Bindraban introduced the report on behalf of the Inter Academy Council.

The main issues mentioned in the report were highlighted. The report states that the potential for agricultural development in Africa is vast. Agricultural development is essential for overall economic development and for reducing poverty and hunger. The diversity of African agriculture, which has evolved to cope with natural stresses, is a powerful asset for Africa's future development that should be exploited. Africa is at the crossroad of making strategic choices regarding the pathways for agricultural development. The three possibilities for agriculture are dealt with in depth in the report.

Specialisation in agriculture is in line with global systems of effective and efficient production of food, complying with existing economic concepts. Specialisation forms a promising pathway in enhancing productivity. An alternative to this form is upgrading mixed systems, which have certainly for the coming one to two generations of poor farmers great potential to ensure food security. Through technological innovations and a socially inclusive process food security can be achieved, both in terms of increased production and productivity and in terms of income generation for poor farmer families. In addition to these options, an array of development pathways should be pursued that meet (local) food and income needs while fulfilling social and cultural desires. Instead of one Green Revolution, many Rainbow Evolutions across the many farming systems are required which will allow targeting developments that account for location specific natural, social and economic conditions.

To exploit the potentials there is a great need to pay attention to a number of processes. One of these is the need to stimulate the integration of bottom-up and top-down approaches to interactively identify opportunities for development. Building South-South and South-North partnerships to mobilise global knowledge and resources for Africa's development is

a necessity. Investment in agricultural research and development, building science institutions and creating a new generation of scientists is most vital for future productivity. Technologies that are appropriate to the selected systems to enhance the productivity of land, labour, capital and other inputs, including water and biodiversity need to be developed. Productivity of these factors has remained virtually stagnant over the past decades and has to be improved. Creating a stimulating economic and institutional environment for proper market functioning will more and more become a prerequisite. Furthermore, we need to ensure a socially inclusive process that will more evenly distribute the benefits from the developments, including the poor. Lastly, it is important for African governments to influence global development processes to place Africa's priorities high on the international agenda.

2.2 Themes

The FAO/Netherlands conference on "Water for Food and Ecosystems; Make it Happen", will focus on three main themes:

1. Fostering implementation: know-how for action;
2. The "new economy" of water for food and ecosystems;
3. The enabling environment.

The pre-conference discussed these themes in the context of the African Region. Prof. Dr. Lekan Oyebande, Mr. Ben Ampomah and Prof. Dr. Eric Odada introduced the three themes.

a. Introduction of theme 1 by Prof. Dr. Lekan Oyebande, University of Lagos Akoka-Yaba, Nigeria

Mr Oyebande stated that integrated water resources management takes into account downstream and upstream interests, quantity and quality aspects, ecosystem requirements, socio-economic subsystems with its sectors as well as the drainage basins. Water demands are fast approaching the limits of the recourses in some regions, for example in the Sahel. This can be due to a number of factors among which climate variability and change, population growth and changes in the industrial sector can play an important role. But water is a fundamental resource for agriculture, which is a large consumptive user of water. Arid regions have the highest level of water withdrawal for agriculture due to irrigation practices. However we should note that irrigated agriculture tends to be more productive than rain-fed agriculture.
Research into environmental flows shows that on average 30% of the annual river flows are needed to maintain ecosystem services and a reasonable level of environmental quality. Balancing and reconciling food and ecosystems as competing users of water entails recognising both as subset ecosystems and managing them as such while reconciling needs and services for both systems. Food systems have attached services while ecosystems also have capacity to produce foods. Both generate incomes that also help to alleviate poverty

and hunger. We are faced with a paradigm shift, from land productivity to water productivity.

At farm and field level, improved crop varieties and improved soil fertility boost yields and water productivity. More precise irrigation application using sprinkler or drip technologies can make an invaluable contribution. But in addition to technological solutions, strong supporting policies are needed. Mobilising existing groups and networks to contribute the further development and implementation of an integrated approach to the management of water, land and biodiversity is necessary. Co-managing water for agriculture and the ecosystems can minimise the impacts of reduction in the amounts of available water, water pollution, river flow patterns alteration and habitat connectivity reduction. Reorienting irrigation planners and managers to appreciate the needs of multiple water users, not just farmers, can both lessen environmental impacts and improve the productivity of irrigation systems.
By improving irrigation efficiency, increasing water productivity on both rain-fed and irrigated lands and upgrading rain-fed systems we can meet both the needs of agriculture and of ecosystems. But we need to keep in mind that the concept of environmental flow requirements needs to be further worked out and applied at the basin level to provide a basis for balancing water for food security and ecosystem integrity.

b. Introduction of theme 2 by Mr. Ben Ampomah, Water Resource Commission, Ghana

Mr. Ben Ampomah introduced the multi-dimensional value of water and the outlook for a new paradigm of a new economy of water for food and ecosystems.

The concept of value derives its meaning in relation to scarcity, which means that water values are significant in cases where water is scarce, either in terms of quantity, quality or timing. In these situations, valuation of water resources and uses is needed to make well-informed, transparent and fair choices.

The value of water has multiple dimensions, which commonly are categorised into environmental, social and economic values. Environmental values focus on the value of water as an essential requirement for sustainable ecosystems. Social values are related to the concept of human right to water, and they involve issues of social equity and fairness. Economic values relate to the economic efficiency of water use, and here market and non-market values can be distinguished. Several techniques are available to assess these different water values. The applications of these techniques abound in Africa, although some important challenges remain to be solved for empirical valuation, such as the need for improved knowledge about the relations between different water uses and the chain of consequences in ecosystems.

Challenges that are possibly even more important arise in the incorporation of the different values in decision-making processes. Consensus across vastly different value perspectives can only be achieved when people with different values agree to governance processes

under which their perspectives can co-exist. Stakeholders, especially those without a strong voice, should be able to express their water values in decision-making processes.
A "new economy" should aim at improving the economic productivity and distributional or allocation equity of water for food and ecosystems. In moving towards such a new economy, Mr. Ampomah stated that the following main issues should be examined during the Pre-Conference:

1. Taking account of different aspects of ecosystem services that are currently not accounted for or underestimated;
2. Identifying methodologies and approaches to valuation that work well in practice for different agro-ecosystems;
3. Support stakeholder to express and voice their values, using formal political processes, market processes and multi-stakeholder dialogues.

c. Introduction to theme 3 by Prof. Dr. Eric Odada, Pan-African START Secretariat, University of Nairobi, Kenya

Sustainable use of water for food and ecosystems is a complex issue. Aquatic ecosystems provide a wide range of benefits to people. As efforts to improve water productivity intensifies, there is growing recognition that future investments in water management need to consider how to sustain these ecosystems as well as the benefits these provide. This is particularly so where aquatic resources are used intensively by poor communities and sustain rural livelihoods. In order to maintain the productivity of aquatic ecosystems and improve dependent livelihoods, policies, institutions and governance arrangements that foster sustainable use of these resources need to be developed.

A problem is that the management of water for food and ecosystems in an integrated and sustainable manner receives very little attention in the national development programmes. The structures of different sectors that characterise most existing institutions in countries are often ill situated to provide an effective mechanism for local stakeholders.
The poor are more often than not the first to suffer from deficiencies in institutions and from extreme events. Climate change is expected to increase both the severity and duration of these extreme events, threatening water availability and food security for millions of poor people. Hence, there is an urgent need to adopt promising institutional and managerial arrangements at local and national/cross country levels to enable sustainable water management for food and ecosystems, equitable representation of all stakeholders in the decision making process and consistency at all levels.

Key questions to achieve sustainable water management include what form of institutional arrangement best ensures stakeholder participation and how these arrangements can offer a platform for joint decision making involving fishers, pastoralists, rain-fed agriculturalists, industrialists and include the specific needs for nature and environment. There is clearly no universal blueprint. We need to learn from individual cases and derive from them best practices that can be used in another situation. Only then can we strike the right balance between exploitation of the resources and conserving them. Where localised indigenous

knowledge and interventions exist that can be used in managing agricultural systems, dependable and sustainable production systems still elude many scientists and agricultural managers.

3. Cases, discussion and recommendations

3.1 Theme 1: Fostering implementation: know-how for action: Senegal River Basin, with special emphasis on Diawling, Mauritania, Mr. Amadou Jam Ba

a. Case presentation

Termination of natural seasonal flooding as a result of the construction of the Diama dam impoverished communities residing in and around the Diawling floodplain. Areas that were subject to regular flooding became drier, villages were deserted and the social and economic fabric of the area collapsed. This situation became increasingly unsustainable so a comprehensive plan was set up, with funding from the Dutch government, to try to reconcile the seemingly conflicting interests. The plan was designed to keep the benefits of the dam while paying as much attention as possible to the interests of all the other stakeholders. Regular floods were reinstalled at times when the demand for electricity was less than average. Apart from benefits to stakeholders, environmental recovery down stream was spectacular. Mangroves flourished again which provides for spawning grounds for fishes. Because of the inextricable linkages between ecosystems and rural communities' livelihoods systems, the restoration of the floodplain meant both revival of biological functions of the ecosystem and a spectacular recovery of traditional productive activities: fishing, livestock, handicraft activities, etc. This shows that the allocation of water for natural ecosystem or for poverty reduction is not always a zero-sum game. In the case of the Diawling floodplain, it is observed that water requirements for the natural ecosystem and water demands for food production and income generation are broadly synchronised. One of the main features of the process was that because of a lack of data, the results were achieved using the knowledge from local farmers who remembered the initial situation. On the basis of this convergence of interests between local communities and the natural ecosystems a vital partnership or coalition can be built to promote sustainable water use in stakeholder negotiations. The local community kept supporting the long term process of restoring the river flow because income-generating activities were a part of the project from the very start.

b. Discussion and recommendations

The working group was lead by Mr. Koure Jackou Abou (Niger); Mr. Larbi Baghdali (Algeria) was rapporteur. During a lively discussion the following lessons learnt were derived and analysed:

- Proper management of dams can generate win-win situations for different users of water and land, whereas inefficient management destroys not only stakeholder participation but also environmental assets;
- Dams are not necessarily a problem for the environment; they can also restore ground water levels;
- A common pattern of data collection is necessary in order to compare between (riperian) states. However, the problem of gathering data cannot be used as an excuse to postpone action;

- Local knowledge forms an excellent basis for implementation of projects. This is especially true when a project aims to restore a beneficial situation;
- Interchange between formal knowledge and local/traditional knowledge vastly improves not only the success in economic turns but also ensures adequate stakeholder participation;
- It is important to determine the ecological value of water when designing a project. The loss of this value should be considered as alternative costs. Correcting or redesigning a bad situation often costs far more than taking time to develop a well-considered plan;
- The long-term success of a project depends not only on a successful start but also on the involvement of stakeholders in the new management of the area and the fulfilment of their expectations;
- Support of the concerned adjoining states is crucial in the development of transboundary river basin management;
- Ecosystems are the basis of all activities taking place in a river basin. Economic viability and environmental sustainability need to and can go hand in hand.

3.2 The New Economy for Water and Food: Lesotho Highland Water Project, Mr. Obed M. Letsela, Thabang C. Tsehlo

a. Case presentation

The Lesotho Highlands Water Project (LHWP) is a bi-national inter-basin water transfer scheme established by a 1986 Treaty between Lesotho and South Africa. Aim of the project was augmentation of the Vaal River basin water supply to Gauteng, the industrial heartland of South Africa; and for hydropower generation in Lesotho. The Treaty stipulated environmental and social obligations for mitigation of project-caused impacts, which included ecological and social impacts due to regulated flows of downstream rivers.

In response to these downstream impacts, the LHDA (the project implementing statutory body) instituted In-stream Flow Requirements (IFR) studies, which identified potential downstream impacts, both biophysical impacts on ecosystems as well as socio-economic impacts for the riparian communities. These impacts were assessed based on selected sites that were representative for a larger homogeneous area. Impacts of four different scenarios were studied, one of which was the flow scenario stipulated in the Treaty.

As a result of these studies, one scenario was selected, in consultation with local stakeholders, on the basis of which an IFR policy and management strategy was developed for the operation and management of dam releases. The policy and management strategy is guided by principles and practices to ensure the ecological needs are met, through the right quantities, quality and frequency of water releases from the dam structures. The principles and practices also put in place communal compensation through development programmes, to offset permanent loss of livelihood resources, as assessed in the studies.

In conducting the studies, it became clear that various complexities are involved in assessing impacts and causal chains between dam releases and impacts on ecosystems and

downstream communities. Therefore, adaptive management and regular monitoring are used to cope with the levels of uncertainties associated with effects of flow modifications as revealed by the studies.
In case of scarcity, the first priority is given to IFR releases to meet ecosystem requirements. Community involvement was secured in the adoption of IFR Policy and management strategy, and in the formulation of community compensation projects, while at the same time communities are continuously being informed of planned dam releases, including the periodic floods needed to meet ecosystem requirements.

Notwithstanding various apparent benefits, some challenges remain. One of those is the development of socio-economic indicators to monitor impacts of flow releases on downstream communities and to assess effectiveness of compensation programmes. Another challenge is to address the water quality requirements of ecosystems through the flood releases, in addition to the water quantity requirements.

b. Discussion and recommendations

The working group was lead by Mr. Jean-Pierre Bidjocka (Cameroon); Mr. Hamulonge G. Tulinabo (DRC) was rapporteur. Good practices/lessons for action emerged from various experiences in different countries. Experiences from among others Lesotho, Kenya, Tanzania, South-Africa, Cameroon, Ghana and Tunisia were shared. Important experiences focused on the need and mechanisms through which to share costs and benefits among upstream and downstream communities and water uses. The entire process of water valuation and translating this into management and sharing practices is a process of continuous learning.

Some of the resulting lessons for more specific actions were:

- Careful study of affected values and impacts, such as Environmental Impact Assessment (EIA), can help to adjust design in ways that better account for these values – example of dam-outlets in Lesotho;
- Adaptive management and continued monitoring helps to deal with uncertainties and difficulties involved in assessing values;
- Payment for environmental services is one way to translate economic values into financial transactions, but there still are few African experiences with this practice – there are negotiated financial agreements, but little agreements that link economic values to financial transactions. An additional challenge here are free-rider problems, ensuring the right people pay and that the right people benefit from those payments;
- One way to value environmental services is through using replacement values – values of replacing lost ecosystem functions and services such as fish and wood material;
- In dealing with periodic scarcity, a mind shift is needed from water allocation to establishing assurance levels. This means that irrigation is used when water is available, but that small-scale local measures such as in-situ storage and water harvesting are used to increase insurance levels of water availability also in dry periods;
- The ‘polluter pays’ principle and transfer payments from downstream users who benefit from upstream conservation practices both provide a means to address valuation of water quality;

- Applying progressive block-tariffs in water pricing can help to safe water and share costs and benefits;
- Stakeholder involvement combined with scientific studies can facilitate conflict management, even though in the end this requires political choices and win-win solutions are not always possible.

Conditions that are likely to affect the success or failures of implementing such actions:
- Do national actions fit in the global context;
- Do local actions fit in the basin wide context;
- Availability of money contributes to prevention of failure;
- Skilled, and trained human resources contribute to success;
- Step by step approach, 2-3 years time span;
- Small projects can have big impacts;
- Learning by doing;
- While implementing, building communities of practice;
- Spread risk by a multitude of small and diversified projects;
- Be aware and communicate interlinkages between local and national/basin level decision-making;
- Learn and disseminate success actions;
- Adopt the precautionary principle;
- Adopt the polluter pays principle;
- Introduce adaptive management processes;
- Reduce, mitigate and compensate negative impacts;
- Continuously raise awareness and build capacities, it's a never ending job;
- Promote local community organisation development;
- Promote saving of water and preventing water pollution at any time;
- Look beyond water as a national property;
- Participation means to prepare communities able to participate;
- Learn from failure, its what we don't want;
- Make citizens aware of their responsibility for water for food and ecosystems in rural areas;
- Guarantee traditional rights to access to water;
- Demand management by a billing system, the more consumed the higher the cost per unit;
- Conflict management;
- Availability of decision support systems, multiple decision processes;
- Women participation is a prerequisite.

Finally, some of the other issues that came up and merit attention:
- Local communities in forest areas and around nature reserves and national parks need to be compensated for their role in preserving these ecosystem and water services;
- In placing economic values at the forefront, we should not forget that ecosystems also have intrinsic values and that people depend on and benefit from these ecosystems;

- Valuation methodologies can be quite complex and demanding in terms of human capacity of experts using them; it requires training and capacity building in institutions as well as development of more straightforward valuation tools.

3.3. Enabling environment: Nile Basin Initiative, water governance at transboundary level, Mr. Musa Mohammed

a. Case presentation

Formally launched in February 1999 by the Council of Ministers of Water affairs of the Nile Basin States, the Nile Basin Initiative (NBI) includes all Nile countries and provides an agreed basin-wide framework to fight poverty and promote socio-economic development in the region. The Nile countries seek to realise their Shared Vision through a strategic action programme, comprising basin wide projects as well as sub-basin investment projects.

The primary objective of the NBI has been to come to a shared vision among the 10 riparian countries about the sharing and utilisation of the water resources of the Nile basin. In the initial phase, emphasis has been laid on reaching a treaty on the water resources utilisation, comprising of legal and institutional framework. This proved to be a difficult task, which was encountering delays in reaching a common agreement. However, a potential deadlock situation has been avoided by:

- The realisation, that a treaty on the water sharing and utilisation of the Nile Basin does not necessarily have to be restricted to the issues concerning water quotas, but can also be approached by emphasising the sharing of benefits derived by riparian countries from water utilisation.
- The gradual awareness that the absence of a treaty should not impede the riparian countries from engaging in concrete water resources development programmes and projects that will result in increased benefits for the local stakeholders, national states, and the Nile basin as a whole. The Council of Ministers and Technical Advisory Committee now deal with such initiatives (but also conflicts) on a case-by-case basis.

This has resulted in two important related lessons:

1. In Integrated Water Resources Management, we have to look beyond the river alone. Achieving economic and political integration is at least as important as achieving integration of water management. Achieving a shared view becomes then a source of co-operation and of political and economic stability; establishing a shared view is a process of continuous dialogue, which needs to be enabled in the institutional set-up;
2. In implementing integrated water resources management in transboundary river basins, a multiple strategy has to be applied, wherein the policy, legal and institutional aspects on the one side, are accompanied by concrete water resources development projects that result in concrete benefits at the local, national and basin level.

The NBI has now established a wide and multipurpose portfolio of concrete water resources development programmes, ranging from power, and watershed conservation to

irrigation that are based on the shared vision. Agreement has now been reached on their implementation. This in turn has enabled the NBI to restart the treaty negotiations, which are now well under way.

b. Discussion and recommendations

The working group was lead by Mr. Hermenegildo K. Dos Santos (Angola); Mr. L. Kongola (Tanzania) was rapporteur. The discussion was opened by giving the participants the opportunity to raise some issues and questions relation to the NBI case, of which they felt to be of particular relevance for theme 3 on establishing an enabling environment.

From the initial discussion the following issues where extracted for further elaboration that were deemed important for water governance:

- How can we reach an equitable sharing and utilisation of transboundary water resources, and what type of mechanism can we adopt for implementation.
- What mechanisms can be used to ensure compliance with treaties and water allocation agreements?
- How can we reach coherence in development of water resources, in accordance to a joint vision on sharing water resources? For example, national development plans and strategies, as reflected in national policies, will have to be coherent with arrangements made in a treaty and at international level.
- Creating high expectations is easy; delivering results on the ground is more difficult. How can we facilitate concrete results at the local level to keep stakeholders and public engaged? The first and easiest part of transboundary water governance programmes is the sharing of information. Reaching the required level of technical competency for implementation is more difficult to achieve. Capacity building in water management is thus very important. We have to keep in mind, that positive effects are achieved on the condition that the necessary means follow the planning.

On the issue of equity the group came to the following conclusions and recommendations:

1. Develop a Common Vision on the use and sharing of the common water resource;
2. Need for harmonisation in policies, which can be achieved in two ways:
   a. From the national level, which will clearly recognise the international and transboundary agreements;
   b. Negotiation of an international treaty, which is applied/ translated into national policies;
3. Institutional framework: there is a need for co-ordination at the regional, national and local level, to be achieved by establishing co-ordination bodies at these three levels.
4. Treaties are needed at river basin level that provide a definition of how the water resources are shared and used; treaties can then become the source of coordination, cooperation, and harmonisation.
5. A legal framework that recognises and respects treaty obligations. This cannot be achieved in a short time span, and will have to be developed over time.
6. Raise public awareness.
7. Development of common strategy for development of water resources use, at basin scale, as part of treaty.

8. Negotiations on treaty and reaching common understanding can be very difficult, but it is possible; this is process is facilitated when accompanied by other pathways, such as concrete development programmes.
9. Equity in water resources in not only access to water itself, but also in the benefits and values derived from its use. Benefits and values should also be part of the common vision and strategy.
10. Poverty reduction should be targeted in water resources management, and be part of the equitable sharing of benefits of water use.
11. Process of water governance has to start from local institutions, such as basin water management offices; only when countries are engaged in practical water management institutions with their stakeholders they are enabled and stronger to partake in the negotiations. This has two advantages: i) it creates a sense of ownership among local stakeholders; ii) it will facilitate the accruing of benefits at the local level.
12. Countries need to have a strong political will to make transboundary water arrangements work.
13. Benefits come with responsibilities, and thus require commitments of partners to fulfil their responsibilities.

3.4 Fostering implementation; know how for action. Competing claims, establishment of catchment organisations for water resources management in Tanzania, Mr. Mwaruvanda (presented by Mr. Kongola) and Supporting traditional institutions in managing river based resources: the case of pastoralist Borans along Ewaso Ngiro River, Kenya, Mr. Daoud Tali Abkula

a. Case presentations

Rufiji

Integrated Water Resource Management principles have started to be implemented in Tanzania since 2002 with the launch of the National Water Policy. The policy addresses participatory, multi-sectoral, multidisciplinary river basin management. The new approach reflects three major shifts:

1. Comprehensiveness (holistic basin approach)
2. Subsidiarity (decentralising decision-making and devolving to the lowest practicable level)
3. Economic (use of water should reflect the scarcity value of water)

The IWRM have been applied to all the basins in Tanzania. The Rufiji Basin consists of three principal sub-basins, the Great Ruaha being the largest sub-basin. Most of the water is extracted for irrigated agriculture, used to supplement rainfall in the wet season in the upper catchment and to be applied in the lower catchment during the dry season in order to produce high-prized rice. Other uses include domestic, fishing and hydropower generation purposes.

The Rufiji Basin Water Office, with assistance of several programmes, has been practising the principles of the new approach in order to solve the conflicts due to competing water use: irrigation, hydropower, livestock, upstream and downstream irrigation schemes, environmental functions, in-stream fishing.

Active participation of stakeholders resulted into:

- Establishment of water user entities;
- Minimisation of conflicts;
- Strengthened working relations between water managers and communities;
- Vision of restoring flows in the drying part of the Great Ruaha River is becoming real every day;
- Realisation that involvement of stakeholders with various interests can be time consuming and expensive but quite rewarding;
- The issues of IWRM in the Great Ruaha Subbasin are by themselves integrating factors. Both food security and biodiversity concerns are obvious in the basin.

Ewaso Ngiro river

Just as the Nile is to Egypt the river Ewaso Ngiro is the lifeline around which everything depended for the Boran pastoralists of Isiolo District in Kenya. Over the years the water of the river has been constantly reducing to the extent that the river is no longer a permanent water source. The reduced water level has also impacted negatively on the wetland on which the pastoralists depend during times of drought and famine. The reasons for this depletion of the riverine resources are:

a. Increased water use by commercial ranchers and international flower farmers who live upstream of the river.
b. Establishment of irrigation agriculture in the upper, middle and even the lower part of the river system, disregarding pastoralists living down stream.
c. Establishment of industries in the upper part that use vast amounts of water.
d. Huge increase in population living along the river, especially in the upper part, and consequently increase of agriculture, thereby putting pressure on water demand from the river.

The organisation FONI is working closely with the community, government agencies, NGOs, River Development Authority and other partners and facilitated a multiple process to address these issues. Events, community meetings and several workshops were organised for the stakeholders. The authorities at first were suspicious and not giving a lot of support but after it was clear to them what the intent of the initiative was, they were at the forefront in giving their support. This is true for those authorities that are based at local level.

The following achievements were realised:

a. The traditional Dedha council used by the Borans to manage resources is now a vibrant and revitalised institution managing not only the wetland but engaged in all aspects of community affairs.

b. There is a well defined internal rules and mechanism of water use governed by the traditional Abba Hirega. There are also clear rules of engagement with other external pastoralists. This has reduced incidences of conflict.
c. The formation of the Ewaso Water Users Association consisting of representatives from both sides of the riverbank has given the community a legitimate organ with which to engage other stakeholders.
d. A collaborative effort between FONI and Ewaso River Development Authority have given the management of the Ewaso Ngiro River a high profile; the parastatal is now in the process of undertaking development programmes in the area.
e. The issue of equitable water use of the river has taken a national dimension.

b. Discussion and recommendations

The working group was lead by Mr. Guero Abdou (Niger); Mr. Hussam El-Din Safwat Abbas Fahmy (Egypt) was rapporteur. The group first addressed the conclusions of the first session, which were based on the Senegal River Basin. Additions were made to the lessons learnt, including the lessons from the Tanzanian and Kenyan case.

It was concluded that harmonising water for agriculture production and ecosystem functioning requires:

1. Participation (the assumption is that participation leads to a better management)
   - Legal and institutional frameworks;
   - Improved capacity building;
   - Wider definition of stakeholders (including ecosystems);
   - Realism is needed that it is a long-term process.
2. Information
   - Need for better information on e.g. hydrology, ecosystem requirements, carrying capacity, environmental flows, model simulation as decision-support tools, climate variables;
   - Sharing information (transparency and building trust);
   - Respect and include indigenous knowledge.
3. Demand management
   - Cropping patterns;
   - Species and varieties;
   - Losses control.
4. Utilisation of other resources
   - Rainwater harvesting;
   - Groundwater management;
   - Aquaculture;
   - Treated wastewater re-use.
5. Integrated river basin planning
   - Grassroot approach in planning and design – all levels involved;
   - Strategic environmental assessment with vision on maintenance of ecosystem integrity;

- Better information for monitoring, evaluation and appraisal with ecological aspects included
- Priorities setting for river basin, address water requirements and comprehensive planning

3.5 The new economy for Water for Food and Ecosystems: Waza Logone floodplain in Cameroon, mr. Paul Noupa

a. Case presentation

The Waza-Logone area comprises 800,000 hectares in the Extreme-North province of Cameroon, within the lake Chad basin. It contains a vast flood plain known as the *yaéré*, which is an important wetland in this part of the country. The Waza-Logone area contains two National Parks, Waza and Kalamaloue. The area is predominantly rural, despite the existence of some important country towns. The population is primarily involved in agriculture, fishing, trading, and cattle breeding. Population growth and the presence of nomadic and transhumant populations during the dry season, mainly nomadic pastoralists and fishermen, contribute to increasing pressures on the area during the dry season.

The construction of the Maga dam and its embankments in 1979, and the droughts in the 1980s have reduced the extent of flooding over the flood plain, and resulted in a major reduction in dry-season grazing and surface water availability. Fishing activities and livestock rearing decreased drastically, large numbers of people left the area, wildlife numbers fell, over-exploitation of the fisheries and the grazing lands occurred, and the migration of many animals outside the parks during the dry season increased the susceptibility to poaching.

To offset the negative impacts of the Maga dam, the Waza-Logone Project has been initiated in the 1990s. The hydrological condition of the wetland has been improved by the opening of two seasonal watercourses connecting the Logone River to the Logomatya River, from whence significant flows spread onto the floodplain. Furthermore, the project has facilitated a number of steps in the process of involving local and indigenous communities in wetland management. The traditional chiefs, administrative and municipal authorities and provincial heads of technical services sit on a regional committee, the committee for management of the Waza-Logone Region, while other stakeholders are being put together in management structures on lower levels by the project to remain in charge of the management of natural resources.

The cost-benefit analysis for the project indicates that the benefits of the project's measures greatly outweigh its costs. Direct benefits are obtained from increased pasture for cattle holders, more fish in the streams, more river transport and use of herbs. Furthermore, the restoration of the floodplains yielded indirect benefits for instance through the growth of fish stock, increased production opportunities for fish and crops and providing an environment that supports the growth of wildlife and bird populations. Finally, also optional and cultural benefits were obtained. An estimation of the costs and benefits shows

that net benefits before the dam construction in 1979 amounted to an annual 11.0 million euros, were reduced to 8.4 million euros during the 1980s, while after the Waza-Logone Project, they have been restored to an even higher level than before 1979, i.e. 11.8 million euros. Studies show that further restoration of floodplains, from the current 20% to 50, 71 or 90% of their original levels would yield even greater net benefits, up to 24.7 million euro per year.

Future steps in improving the conditions in the Waza-Logone area would require:
1. Integrated approach, across both disciplines and interests;
2. Scientific information for sound decision making, from economic, hydrologic and social perspectives;
3. Creation and strengthening capacities for decision making and management both within state government organisations as well as among local communities and local institutions;
4. Addressing short-term, medium-term and long-term needs simultaneously.

b. Discussion and recommendations

The working group was lead by Mr. Jean-Pierre Bidjocka (Cameroon); Mr. Kwabena Boateng (Ghana) was rapporteur. The discussion in the working group led to the following conclusions:

- Impacts should not only be measured downstream, but also upstream; we should implement IWRM principles and take the whole catchment as unit for development
- Systematic EIA for all projects are needed. These should multi-dimensional, including economic, environmental and social aspects. Indicators are needed for this.
- Projects should take into account different dimensions to fight poverty, including health and environmental aspects
- Awareness building among political leaders and populations needs to be carried out.
- The emphasis should be on mobilizing local financial resources, rather than depend on external resources:
    - Use local structures that have shown their viability in the past to ensure projects become sustainable
    - Utilize private sector more and more; public-private partnerships to support local level development.
- Involve the local population in the decision making, design and management
- Capacity building for beneficiaries is needed to ensure they can sustain projects over time
- Local projects cannot solve all problems without appropriate support from national level
- Gender approach is needed: this refers to attention for women, young, old, marginalized persons, etc.
- Use a roadmap for projects: open to everybody involved, stating objectives and how to realizing them, as well as monitoring throughout

The shared experiences showed that governments and stakeholders do learn from past failures, providing an optimistic outlook for future improvements. Furthermore,

experiences to implement the above recommendations are already available within the African context and therefore the challenge now really is to “Make it Happen”.

3.6 The enabling environment; multi-stakeholder platforms and implementation of water law, Mr. Eliab Simpungwe

a. Case presentation

Multi Stakeholder participation in the planning and management of water resources has emerged as an interesting concept. The new water law of South Africa (1998) did integrate this concept. This case illustrates how stakeholders responded to this opportunity to manage their own river basin resources.

Stakeholders, per definition, are coming from different socio-economic backgrounds and may have diverging interests. This inevitably results in a complex process. To take its own policy and regulations serious, the government of South Africa is aware of the fact that it has a crucial role to play in enabling this process. Two issues are of utmost important for this: empowerment of all stakeholders and tangible results, specifically for the poor.

The basic unit for water management in South Africa is the basin or sub-basin, so defined by hydrological parameters. The government supported the establishment of both statuary and non-statuary bodies to be able to deal with the complexity of the process. Especially the non-statuary body (Catchment Management Forum) was set up quickly and started effectively with the participation process, whereas the statuary bodies apparently were having limited capacity to handle this.

However, the work of a particular CMF (in this case Mtata, governmental initiated) is not always easy. Different expectations seem to be at the basis of this. The clear commitment and active support of the government appeared to be essential at such difficult moments. At this moment there is a risk of dwindling attention from stakeholders. Another CMF (Kat, non-governmental initiated) started very much from a programme of local empowerment. The increased capacity appeared to be very effective in tackling the bigger issue of river basin management as well. Government officials tend to see participation as a dialogue, and are very hesitant to hand over decision-making power. If we want CMFs to play their roles effectively and for a long time, local stakeholders need to see a direct result from their input. Stakeholders need to own the participation process, so it will be the best when its start is based on local initiatives.

b. Discussion and recommendations

The working group was lead by Mr. A. Lwakuba (Uganda); Mr. W. Lipita (Mali) was rapporteur. The working group discussed the institutional structure needed for local level water institutions to be effective and sustainable and came to the following conclusions:

- Government should invest in awareness campaigns;
- Community stakeholders should be allowed to drive the river basin forum;
- Structures should be geared towards maintaining gender balance;

- Governments and NGO stakeholders should also participate in capacity building activities (in negotiation and co-operation);
- River basin forums should yield tangible benefits to catchments residents;
- All stakeholders within the catchments must actively participate in the forum;
- River basin forums should maintain "open door" policy for any stakeholder to join or leave as they please;
- River basin forums should be economically and financially viable;
- River basin forums require a permanent administrative core staff. Core institutional staff should assist in establishing river basin forums;
- Establish water institutions at local, regional and national level with legal backing and equal sharing of resources;
- Establish institutions in partnership with public, private and communities and spell out various roles and responsibilities;
- Resource allocation depends on prevailing circumstances and needs, but should address critical needs: potable water, food security and ecosystems; Build onto existing local structures or initiatives to fit into national policy frameworks.

3.7 Plenary discussions

The audience reacted on the presentations of the working group findings by raising several issues. A reflection of the discussion is given hereafter:

With respect to transboundary rivers lack of data and/or lack of exchange of data lead to poor project design and ill-informed decisions regarding the management of the water resources. In response to this situation there is a need for increased investments in the collection and analysis of decision-support data as well as promotion of transboundary co-operation in information collection and management in shared river basins. For the latter, the existence of a river basin organisation that would co-ordinate data collection efforts and be custodian of relevant river basin databases is an advantage. The Nile Basin Initiative is currently a transitional institutional arrangement, and for this reason does not play yet that role of co-ordination in data collection/analysis efforts.

Some felt that even if sufficient information is not available on the various values and functions of ecosystems, we need to take into consideration these values and functions by applying where necessary the precautionary principle. However, caveat is placed on how fees and taxation are applied as not to restrict water users.

With regard to allocation of water for food and ecosystems in transboundary contexts, it has been noted that the very fact that basin countries agree on a shared vision, as is the case for the Nile Basin countries through the NBI, contributes to attenuating differences in national institutional arrangements and policies. It also helps to better address the challenge of achieving efficient and sustainable allocation of water for food and ecosystem.

When actions are identified it is necessary to define who is responsible at what level (basin, country and within-country) and how to finance these. Some actions specified at basin level cannot be taken by countries, or within countries. The notion of (limited) financial capacity has to be included in this discussion.

The organisations through which some stakeholder groups participate in water-management decisions are often weak, and this weakness often hinders effective participation. There is therefore a need for targeted institutional capacity building as part of interventions in the water, agriculture and environmental sectors.

Governments can facilitate, catalyse and educate local communities to define the benefits of water and the disadvantages they can face when they do not properly manage their water resources. When focusing on top-down government mandate only, we will not succeed.

There is a need for legislative instruments to ensure that small but important catchment areas are protected in order to maintain ecological processes that are vital for water quality and quantity.
Another participant stated that various pieces of legislation are in place at national level, but how are the elements of governance interacting? Is local community prevailing over national legislative restrictions? The management structures we are now putting in place at local level has to fit with legal instruments.
The example of Uganda's new system was mentioned, of which the main principle is decentralisation of management. Structures at lower level can formulate by-laws or regulations by which to regulate. But these structures cannot be entirely delineated from national legal provisions. There is a need to form partnerships between government, private sector and primary stakeholders, but within existing legal provisions – local, national, international.

Proper valuation of benefits of natural resources by all stakeholders is needed otherwise policies cannot be successfully implemented. The plenary recognised the important potential and contribution of wetlands towards food security and raised wetland conservation as a key benefit.

Water quality is greatly influenced by land use within the watershed and special attention on drainage water quality is needed in the preservation of ecosystems. Development of water quality standards and monitoring are recommended in effective planning especially with respect to the increase in peri-urban agriculture.

4. Recommendations and Conclusions

4.1 African Pre-Conference Recommendations and Conclusions

On the basis of the presentation of the cases, exchange of participants' experiences and discussions in the working groups the African Pre-Conference highlighted the following lessons learnt and recommendations for a better approach to the implementation of commitments in the area of water for food and ecosystems.

Theme 1: Fostering implementation, know-how for action

a. Capacity and institution building
Capacity and institution building is a key element for a sustainable future. Capacities have been built, but continuous improvements are needed for beneficiaries so that they can ensure sustainable programmes over time. Diversity and diversification allows agricultural producers to increase productivity within the niches of its natural and socio-economic surroundings. Realising this potential requires adaptation of a stronger focus in research and development. We require an institutional context that fully embraces the objectives of sustainability and equity. An enabling environment is necessary to achieve coherence in national and international policies as well as in local natural resources management arrangements. Create and strengthen capacities for decision making both with government and local communities. An institutional and legal framework adapted to local circumstances is crucial.

b. Knowledge development
There is a need to acquire broader knowledge of water use related to food production, as well as the interactions and interdependencies between agriculture and the carrying capacity of ecosystems. In Africa agriculture puts relatively low pressure on water resources. Climate change and electricity demand are more pressing. Agriculture, however, can contribute to lessen the pressure on water resources and adapt to changing circumstances. Improved efficiency of irrigation, water harvesting, diversification, the integration of sectoral and disciplinary knowledge and more environmental sound practices are important aspects. Available technologies for efficient water use and new technologies to be developed and also utilisation of alternative resources can be implemented, e.g. rainwater harvesting, groundwater use, wastewater recycling and efficient cropping systems. Quality standards for drainage water and other water uses need to be developed and applied. Good management plans are often undermined by pollutant practices e.g. the use of persistent pesticides. Base implementation on local experiences and knowledge: formal knowledge and local, traditional and indigenous knowledge could be fruitfully exchanged and linked to improve the sustainability and appropriateness of management practices. For sound decision-making there should be a scientific approach from economic, hydrologic and social perspective.

c. Exchange of experiences
It is important to share best practices and success stories across the continent. This could happen by a forum for networking and information exchange. We could profit from the exchange of experiences of irrigated agriculture between nations, on-farm management and new irrigation systems. Water scarce countries have specific IWRM experience to offer because they have learnt how to deal with water scarcity.

d. Data collection and sharing
Management of water resources needs to be scientific and based on reliable data; there is a need for data collection platforms and networks in African countries. Data collection and sharing and continuous monitoring are needed to develop sound decision support tools as well as to assess environmental changes and develop simulation models. However, lack of data should not be a reason to refrain from starting integrated water resource management, as it is a continuous learning by doing process. Sharing of information and harmonisation of procedures is crucial.

e. Multiple stakeholder involvement
Allow and foster the involvement of all stakeholders, including the involvement of local communities right from the planning process and throughout implementation. One of the challenges will be how to define the stakeholders. To enable the process, community training and awareness building is important, as well as other means to empower stakeholders. Participation and demand of services implies also duties and responsibilities for communities. We need to recognise that stakeholder involvement is a long term and a step-by-step process. Gender and equity aspects need to be incorporated to ensure the representation of women, young, old and marginalised groups.

f. Awareness raising:
Involve the local population and other stakeholders in the development process and base know how for action on local knowledge and experiences; skilled, well-informed and well-trained human resources contribute to the success. Develop capacity on valuation methodologies. Learn from and disseminate success actions.

Theme 2: The "New Economy" of Water for Food and Ecosystems

a. Valuing multiple services
The allocation of water resources in integrated water management approaches that have to account for agriculture and environment should be based on sound valuing principles. However, attributing values to the different and multiple uses of water has proven a very complex and difficult issue to resolve. Nonetheless, the conference recognises the importance of this issue, and the challenge ahead. In discussing this topic, the following approaches have been forwarded:

- Careful study of the multiple values of, and impacts on, water, food and ecosystems, (for example through systematic Environmental Impact Assessments), can help to design programmes that can better accommodate these values.

- Payment for environmental services is one way of translating economic values into financial transactions. However there exist few agreements that link economic values to financial transactions.
- The values of environmental services should be assessed in appropriate ways, taking into account impacts on social, economic and environmental dimensions. Participatory decisions need to be taken on prioritisation between different uses of water.
- In dealing with periodic scarcity, a mind-shift is needed from water allocation to ensure reliability of water resources in dry periods.
- Financial mechanisms for water (tax, levees, fees) need to be worked out carefully in order not to exclude the resource poor from access to water.
- Polluter pays and transfer payment from downstream users who benefit from upstream conservation practices provide means to address different values of water quality and quantity.
- Stimulate public – private partnerships to support local level development.
- Water management institutions should become financially self sufficient, rather than depend on external financing. This can be achieved through mechanisms such as fees collections and taxations.
- The benefits of sound water management are not only in economic terms, but have also clear benefits in terms of social and political stability.

b. More values per drop

Given the diversity of benefits generated by ecosystems when properly managed, the question is whether we should not be concerned more by generating more values per drop. This means that in the allocation of available water priority should be given to uses that generate per each drop allocated more benefits and values at the lowest economic, social and environmental costs. Under this paradigm shift ecosystems compete more favourably.

c. *Resource mobilisation and benefit sharing*

Develop African experiences with agreements arranging payment for ecological services linking economic values to financial transactions. Implementation can be more successful if we could value multiple services in an economic way, applying principles like the “Polluter Pays” and the “ Precautionary Approach”. Enhance the alternative storage and water harvesting capacities to increase reliability of water availability. Target poverty reduction water resources management and make it part of the equitable sharing of the benefits. Enhance private sector participation and develop public-private partnerships to support local level development.

d. Protection and conservation

In addition to the values of ecosystem services, protection and conservation of the resource base is of major importance. Looking at river basins implies attention to considering specific ecosystems like wetlands and forests. Rehabilitation of degraded ecosystems e.g. wetland systems is also important, as well as pro-active ecosystem protection. Non-conventional water use, like using salt water, will become increasingly important in future. Therefore, protection of marine environment should be high on the agenda.

Theme 3: Enabling Environment

a. Enhance cooperation and coordination: common vision
Establishing adequate water management institutions at the (transboundary) basin level requires development of a common vision on the use and sharing of the water resources, and the need for harmonisation in policies. The development of such a common vision requires a strong political commitment of riparian states to make transboundary water arrangements work. Sustainable solutions to conflicts other than international agreements need to be considered as well, since these could be more efficient and effective. Laws, treaties and projects that currently prohibit effective implementation of Integrated Water Resource Management approaches in transboundary basins need to be made explicit. The establishment and institutionalisation of coordination bodies at the local, national and regional levels should follow this.

b. Program design
Several issues were tabled: Establish and communicate linkages between local actions, basin-wide actions, national actions and international legal frameworks. Guarantee traditional rights to water. Fit local actions in a basin wide context and national actions in the global context. Look beyond water as a national property. Sometimes there is an artificial dichotomy between agricultural and industrial water use; in the case of peri-urban agriculture, industrial water recycling is linking these two.

c. Demand and supply management
Water management does not only imply management of the supply side, but should also include economising and management of water demand. In order to manage the increasing demand for water, e.g. due to a growing population in future, we need a significant scientific breakthrough, including among others aspects which may influence our diets. There is a strong relation between water, food, ecosystems and health.

d. Coherence in policy development
The need for coherence applies at national level, between ministries of agriculture and environment, water and natural resources, but also in donor policy, and last but not least between international institutions and organisations. Increased consistency within sectoral policies is necessary as well.

e. Institutional reform
At the same time it is necessary to make expectations and needs between different stakeholders and between stakeholders and government stakeholders clear. A coherent legal framework is necessary that respects treaty obligations in water resources sharing and utilisation and that provide local management institutions with a legal mandate. Poverty reduction should be targeted in water resources management and be part of equitable sharing of benefits of water use. Institutional reform should start from basin level institutions and answer to the aspirations of the different stakeholders. Capacity building for stakeholders and government organisations is needed to support the process of institutional reform.

f. Public-private partnerships
A growing problem is financing and mobilisation of resources. The global liberalisation process will result in a decrease of the availability of public resources. Innovative public-private partnerships could play a key role in overcoming this problem. The private sector should be encouraged to invest in water resource management.

4.2. Closing Session

a. Statement by His Royal Highness the Prince of Orange of The Netherlands

His Royal Highness joined the closure of the deliberations on balancing water for daily life linked to the importance of food and ecosystems. He stated that four years ago the countries of the United Nations committed themselves to achieve the Millennium Development Goals.
One of these goals includes the target to halve the proportion of the world's people who suffer from poverty and hunger and to ensure that current trends in the loss of natural resources are effectively reversed at both global and national levels by 2015.
Another Millennium Goal targets to halve the people who have no access to safe and reliable drinking water. To produce food and to sustain agricultural production it needs to be understood that solutions have to be found for water provision, not only for drinking water but also for use in agriculture to ensure self-sufficiency in food production.
Changes are needed in the use of water in the agricultural sector. More effective and efficient use of water, more diversification in crops and better environmental adaptation are possible. In that way one of the goals of the second World Water Forum: " More crop per drop" can be reached.

Farmers have an obligation to manage the water they need as carefully as possible. Not only the quantity they use but also the quality of the water they depose of after use is important.
Sometimes, simple solutions can generate substantial results. One should make better use of existing knowledge, expertise and infrastructure. Local communities have to be in charge of development. They possess the know-how for action that truly leads to implementation. Moreover, the efforts to eradicate poverty must increase. In this context the challenge of food production has local and global implications. Produced food can be used locally or be traded; environmental services benefit local people while protecting the global environment. It should not be forgotten that agriculture is in most of the developing countries the cornerstone for economic and social development and therefore in poverty alleviation. Recent research shows that growth in agriculture is most beneficial for the poor: a one percent increase in yields results in a decrease of 0.6 to 1.2 percent of people living on less than $ 1 per day.

Economically healthy rural areas provide the best guarantee for sustainable development. Trade can be one of the driving forces of prosperity and therefore the private sector and

other stakeholders should be involved in this, taking into account the recent WTO agreement.
At this conference the focus was on the inter linkages between these priority needs and the challenge was taken to discuss the implementation of actions with impact on the ground. Sustainable development is only feasible if all stakeholders are involved. This will ensure an integrated approach between all relevant sectors being agriculture, fisheries, sustainable use of biodiversity and natural resources and sustainable water management.
Key for ensuring full involvement of all stakeholders in all relevant sectors is the concept of integrated water resource management. Within this concept lies the challenge of stabilising the use of water at the level of the year 2000, while increasing food production to cope with growing demand.
In the context of the MDG's it was agreed to have in place in 2005 an integrated water resource management plan in all countries. His Royal Highness complimented the government of Ethiopia as they launched their first Water Resources Management Policy in July 2000. This was followed by a Water Sector Development Programme for the period 2002 – 2016.
At the 12th session of the Commission on Sustainable Development the importance of ensuring integrated planning in each country was again underlined as a challenge, which needs to be overcome without delay.
As agreed in Johannesburg this conference has reaffirmed the need to overcome the following:
The first of them is 'Meeting Basic Needs'. It recognises that access to safe and sufficient water and sanitation are basic human needs, essential to health and well-being, and urges us to empower people through a participatory approach towards water management.
The second is 'Securing the Food Supply'. It supports the belief that enhancing food security, particularly of the poor and vulnerable, is to be done through a more efficient mobilisation and use of water for food production.

The third is "Protecting Ecosystems", and refers to the need to ensure the integrity of ecosystems through sustainable water resources management practices and the role of ecosystems for the water cycle.
A balance has to be found between water for people, food production and water for healthy ecosystems. One way to achieve this balance is through enhancing water storage, which is essential to mitigate the effects of unpredictable rainfall.

His Royal Highness was impressed by the practical results presented. He highlighted the involvement of local communities in the implementation process, building on local knowledge, resources and experiences. Implementation can be more successful if we could value ecological and environmental services in an economic way, applying broad accepted principles like the "Polluter Pays" and the " Precautionary Approach". It is evident that the implementation will benefit from stronger cooperation and coordination between national and local levels, building on more coherent policies.

His Royal Highness paid tribute to the Ethiopian government who has taken such an active role in the preparation and leading of this conference. He also thanked the African Union

and the FAO for their strong contribution.

Now the next step needs to be made to translate this success into action to be agreed at the Ministerial Conference in The Hague, which will take place in February 2005. From The Hague the next steps will be to New York for the 13th session of the Commission for Sustainable Development and the 4th World Water Forum in Mexico City in 2006 to reach further consensus on implementation of policy measures which accelerates the agenda of alleviating poverty, providing food for all and ensures the provision of safe drinking water. His Royal Highness expressed the hope to welcome the participants in The Hague next year and added one small suggestion. Before travelling to The Hague, participants should contact colleagues in charge of water resources, who convened in Entebbe, Uganda as African Ministers Council on Water (or AMCOW), who are discussing exactly the concerns brought up this morning.

b. Closing statement by Dr. Louise O. Fresco, Assistant Director-General of the FAO

The Assistant Director-General stated that the discussions and contributions during this Conference were of an impressive quality. The high quality outcomes show that Africa is leading the way in thinking about water for food and ecosystems. This Pre-Conference testifies to an important new step in our thinking, formulating a new paradigm of Water for Food and Ecosystems. This paradigm articulates a dual approach: regarding agriculture as part of the ecosystems, while recognising the productive services approach to ecosystems.

The Pre-Conference rightly recognised the importance of issues such as data collection and sharing, the complexity of translating water values into financial flows and the need to simultaneously act on local, national and international levels. However, for each of the Pre-Conference themes, some additional issues also require particular attention:

1. Building interdisciplinary teams of professionals across organisations and sectors, to develop the capacity to address the interdisciplinary questions that are at the core of water for food and ecosystems.
2. Exploring innovative paths to incorporate water values in management practices, while safeguarding the accessibility of water resources for the poor. Carbon emission trades could not have been envisioned ten years ago, and similar innovative thinking is needed in water resources management.
3. Establishing regional governance structures. Most problems occur on the regional level, either across states or across provinces in the larger countries. These regional problems require regional solutions and the corresponding regional governance structures.

The follow up of this Pre-Conference will of course be the The Hague Conference, and after that the CSD-13 and the fourth World Water Forum. The Assistant Director-General expressed the hope that in preparing the The Hague Conference, more case studies to document best practices can be collected, especially in the area of establishing public-private partnerships. Furthermore, this process can help to mobilise the political commitment and the donor commitment that are needed to implement the new paradigm of

water for food and ecosystems. In the African countries, the participants in this Pre-Conference can promote the new paradigm by establishing cross-disciplinary meetings, meeting with colleagues in other departments, local farmers and NGOs, and by reflecting the existing planning and policy structures. The environmental NGOs have put the issue of ecosystems on the map, and the next step for them could be to link with farmers' organisations, to transcend the historic gap. FAO itself will take the outcomes of this Pre-Conference seriously and will translate them into specific programmes on the field level, as well as reflect them in its next programme and budget.

The Assistant Director-General concluded by saying that one important group has been absent in the Pre-Conference. Consumers are the main driving force behind today's dynamics and developments and profoundly affect both agriculture and ecosystems. Awareness building is crucial. When consuming food, tourism, drinking water, and when enjoying the beauty of a landscape or the birds flying over their heads, they should realise that all of this is only possible because of the proper management of water resources.

c. Closing Statement by H.E. Mr. Mesfin Tegene, vice minister for Water Resources, on behalf of H.E. Mr Shefaraw Jarso, minister for Water Resources of the Government of Ethiopia.

The Vice Minister, on behalf of the Minister, introduced his statement by saying that it was a great pleasure and honour for him to make a closing remark on the occasion of the African Pre-Conference on Water for Food and Ecosystems; Make it Happen!

He noted that the participants came up with important recommendations that will guide Africa's future water resource management, giving due attention to sustainable integration of water, food and ecosystems.

Water, food and ecosystems are a highly interconnected environmental phenomenon. This close interaction among water, food and ecosystems has not been given due attention in the process of natural resource development activities. Several water resources and other development schemes were planned and implemented without giving enough consideration for the environment and its ecosystem.

As a consequence, loss of valuable ecosystems, particularly loss of high forest, vegetation cover, and wetlands has been observed in many parts of Africa and else where in developing countries.

Unwise use of Africa's forest resources has reduced the vegetation cover tremendously. As a consequence, siltation of reservoirs, soil erosion, land degradation, desertification, water quality deterioration and reduction of flow in major river and springs have been witnessed.

Lack of environmental awareness, over population, limited finance and low level of institutional capacities contributed a lot for the current state of environmental degradation.

This calls for an integrated approach to water resources and ecosystem management at the river basin level and overall co-operation at a global level.

In pursuit of this imperative some countries promote river basin as a unit of development and management. Basin institutions have been established to follow up water resources management at the lowest community level. Through such arrangements it has now become possible to involve all stakeholders in all levels of management and planning of water resources have established a good political and economic integration. Through such efforts information, data, and knowledge sharing is now possible between communities. Joint management of the resources has not only enable sustainable development but also economic and political integration unthinkable otherwise.

The Vice Minister stated that similar initiatives currently underway in the Senegal River Basin and the evolving Nile Basin Initiative need our support to achieve the level of joint management of the water resources by the riparian countries which could ultimately bring about economic and political integration between the countries. In could also contribute to the synergy of peace and prosperity of the continent at large.

On the other hand, water, being the most important resource of our continent is not adequately harnessed for food production. The majority of African farmers are dependent on rain-fed agriculture. However, rains are becoming too unreliable in their availability, onset and distribution throughout the continent. In fact every citizen has become a victim of such phenomena and recurrence of drought. Today most of Africa is a net importer of food. This situation is making our sovereignty questionable. We have to break away with this dilemma.

Neither time nor nature leave us with any other option but to develop our waters for the benefit of our people for food production. We have to develop our water resources by keeping environment and development in balance, by learning from the good examples elsewhere in the world, and adapting it to local conditions in this continent.

We have to bear in mind that water is a scarce resource as such we have to make use of it efficiently. Wastage of abuse must be avoided. It is only through efficient practices that we can avail to all those who depend on it for their food production. We have to ensure sensible use of every drop.

In this conference, valuable discussions have been made on how we can effectively balance water for livelihoods and for ecosystem functions in order to achieve equity, environmental sustainability and economic efficiency. The Vice Minister expressed the hope that the recommendations and conclusions formulated at this conference will be an important input to The Hague International Conference on Water for Food and Ecosystems; Make it Happen!, to be held from January 31 – February 4, 2005.

The Vice Minister concluded by congratulating all the participants for their achievements in putting together the important recommendations and officially closed the conference.

Annexes

Please Note, that all the annexes will be posted in a separate PDF file on the website, in order to reduce the overall size of the document.