

# **ENVIRONMENTAL FLOWS NETWORK**

## **Deliverable 2.3.4**

**Report of the NeWater project -  
New Approaches to Adaptive Water Management under Uncertainty**

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## Policy Summary

Environmental flows refers to water provided within a river, wetland or coastal zone to maintain ecosystems and the benefits they provide for people and the environment. A useful way of understanding environmental flows is thinking of it as the ‘ecological water demand’, in just the same way as there is agricultural or industrial water demand. Thus, environmental flows are effectively a balance between water resources development and the need to protect freshwater-dependent ecosystems.

NeWater outputs are a stepping stone in the process of moving from current water management concepts to more flexible and adaptive regimes. This process can be pictured as a value chain for water management, which aims to provide a bridge between conceptual ideas developed through research and concrete standards that are embedded in practice and policy. The aim of NeWater task 2.3.4 is to establish a network of experts to support application of methods of balancing water management for quantity, quality and ecosystems. A number of organisations within and outside of NeWater are developing the Environmental Flows Network, which connects water managers, NGOs, local communities, governmental and intergovernmental agencies, and scientists and researchers that are interested in sharing knowledge on environmental flows.

Networks are a useful component of creating, sharing and disseminating information and tools dealing with river basin management. Furthermore, networks provide a space for people from multiple disciplines interested in a common area to interact and build new relationships. The Environmental Flows Network connects NeWater to a portal for communicating the importance of adaptive water management in river basins. Organisations involved in NeWater are encouraged to join the network as it will provide opportunities to communicate their research and ideas to a global forum. Furthermore, the network will provide one means of building the sustainability and encouraging widespread dissemination of the NeWater project.

### Policy recommendations

An environmental flows network can be considered as part of a larger value change that aims to move environmental flows beyond a discourse that is contained in technocratic and academic circles and incorporate it into public policy and consciousness. Disseminating environmental flows information through establishment of a network will broaden the environmental flows discourse and promote integration of the idea into daily management and use of river basins. The network would therefore benefit from participation by policymakers from a range of sectors. For example, those who shape legislation on water allocation to industry or agriculture can benefit from using the network to build better understanding of environmental flows and experiences in other jurisdictions of how it has been incorporated into regulatory frameworks for water allocation. Participation by other stakeholders is also vital, especially those who rely on water allocation and on ecosystem services from for example rivers and wetlands, such as fishers whose livelihoods are dependent on sufficient flows to support fishery stocks. The network is a key step in accelerating the adaptation and uptake of environmental flows in water resources management. Its success will therefore be valuable support to restoration of river basins and their maintenance in a manner that serves environmental needs as well as livelihoods (agriculture, electricity, fisheries, recreation, etc).

As a first step, decision and policymakers should support the establishment of the network and participation by a wide variety of stakeholders groups. Policymakers themselves can strengthen learning and sharing of experiences in the network through their participation and contributions. Use of the network should be encouraged and promoted, to accelerate learning about environmental flows and the uptake and expansion of the application of environmental flows in water allocation in river basin management. In the European context, the network can be used to better understand and derive information on environmental flows in support of application of the Water Framework Directive to river basins. More specifically, the network will be well-positioned to provide guidance on moving



from environmental flows assessment, which has been conducted in a number of river basins, to actual implementation.

## Table of contents

Policy Summary .....	i
1 Introduction.....	5
1.1 The need for environmental flows knowledge sharing .....	6
2 Application of Environmental Flows.....	7
2.1 How has the concept of environmental flows been put into practice? .....	7
2.2 How the Environmental Flows Network can aid implementation .....	8
3 Why Establish a Global Network on Environmental Flows? .....	10
3.1 How does the environmental flows network fit into the bigger picture? .....	10
3.2 What is the demand for an environmental flows network?.....	11
3.3 What will an environmental flows network accomplish? .....	12
3.4 Who will the network involve and benefit? .....	12
3.5 How can an environmental flows network reach stakeholders? .....	14
4 Environmental Flows Network Structure and Outputs.....	15
4.1 How is the network being developed? .....	15
4.2 Inception activities .....	18
4.2.1 Seminar .....	18
4.2.2 Survey .....	19
4.2.3 Database.....	19
4.2.4 Newsletter and email listserv .....	20
4.3 Future activities.....	20
4.3.1 Newsletter plans.....	20
4.3.2 Website .....	21
4.3.3 Conferences .....	22
4.4 Management structure.....	23
4.5 How will the network be funded?.....	24
5 Role of NeWater in the Environmental Flows Network.....	25
5.1 Major deliverable – Network database .....	25
5.2 Role of NeWater in the Network – Current and Future .....	25
6 Conclusions.....	26
7 List of references .....	27
Appendix 1 – Website requirements and structure.....	28
Website requirements.....	28
Website structure.....	30
Appendix 2 - Environmental Flows Newsletter and Updates .....	33
Newsletter .....	33
Appendix 3 – Environmental Flows Seminar.....	37

Programme - Environmental Flows: Creating Benefits for Ecosystems and People? .....	37
Guiding questions used .....	37
Summaries of seminar groups.....	38
Appendix 4 – Environmental Flows Survey.....	45
Appendix 5 – Database of Contacts .....	52
Appendix 6 - Summary of Environmental Flows Network steering group meeting – August 21 <sup>st</sup> , 2006 .....	53
Appendix 7 – Environmental Flows Concept Note.....	55



## 1 Introduction

Networks help open knowledge of adaptive water management to new audiences by offering readily-available access to up-to-date thinking and methodologies. By opening new concepts and practice to audiences – such as consultants or policy-makers - that are well-placed to rapidly scale-up application within IWRM, networks will help to drive the establishment of adaptive management as a standard for river basin management that is expected and demanded by broad constituencies of stakeholders. Furthermore, knowledge sharing within a network and dissemination to other networks can be a way to incorporate adaptation strategies into wider policy and management practices.

The aim of NeWater task 2.3.4 is to establish a network of experts to support application of methods of balancing water management for quantity, quality and ecosystems. A number of organisations within and outside of NeWater are developing the Environmental Flows Network, which connects water managers, NGOs, local communities, governmental and intergovernmental agencies, and scientists and researchers who are interested in sharing knowledge on environmental flows. The Environmental Flows Network connects NeWater to a portal for communicating the importance of adaptive water management in river basins. Organisations involved in NeWater are encouraged to join the network as it will provide opportunities to communicate their research and ideas to a global forum. Furthermore, the network will help to ensure the sustainability and widespread dissemination of knowledge and tools from the NeWater project. To date, involvement in development of the network by the World Conservation Union (IUCN), Delft Hydraulics, DHI Water and Environment, The Nature Conservancy (TNC), Centre for Ecology and Hydrology (CEH), the International Water Management Institute (IWMI), Stockholm International Water Institute (SIWI) and Swedish Water House has introduced a broad range of views and expertise in the area of water management.

The focus of the network being established is on environmental flows, which refers to water provided within a river or wetland to maintain ecosystems and the benefits they provide for people. A useful and simple way of thinking about environmental flows is that of ‘ecological water demand’, which is similar in concept to agricultural or industrial water demand. Environmental flows are effectively a balance between water resources development and the need to protect freshwater-dependent ecosystems. Focusing on environmental flows puts forward the concept that river basin management needs to incorporate allocation of water resources to the environment to support the provision of benefits to people by ecosystem services. (MEA, 2005).

Ecosystem services can be categorised as provisioning, regulating, cultural and supporting services. A provisioning service is defined as “products obtained from ecosystems” (MEA, 2005, p.40). For example, environmental flows provide water to ecosystems, as well as providing enough water flow in a river to be used as a source of energy. Regulating services are defined as “benefits obtained from the regulation of ecosystem processes” (MEA, 2005, p.40). Environmental flows influence regulating services such as water regulation, as changes in the flows in a river due to a variety of upstream impacts such as dams, irrigation, changes in land use and extraction for domestic use can influence the timing and magnitude of runoff, flooding and aquifer recharge. Supporting services are defined as “services which are necessary for the production of all other ecosystem services. They differ from provisioning, regulating, and cultural services in that their impacts on people are often indirect or occur over a very long time, whereas changes in the other categories have relatively direct and short-term impacts on people” (MEA, 2005, p.40). Environmental flows as supporting services are essential to water cycling as sufficient flow is needed in a river to reach downstream ecosystems. Cultural services are defined as “nonmaterial benefits that people obtain from ecosystems through spiritual enrichment, cognitive development, reflection, recreation, and aesthetic experiences” (MEA, 2005, p.40). For example, environmental flows in a river basin can impact water recreation and ecotourism activities, such as kayaking, sport fishing, and rafting. A reduction in downstream flows will reduce the viability of these water sports and recreational activities.



## 1.1 The need for environmental flows knowledge sharing

Environmental flows assessments can be carried out as a component of river basin planning. Assessing environment flows requires a holistic approach that makes use of multi-disciplinary teams of experts and involves stakeholders. After the assessment, environmental flows can be implemented using both new and existing infrastructure. Dams can be used as the most significant and direct modifiers of natural river flows.

Environmental flows as a concept within water management has expanded rapidly throughout the world in terms of understanding and implementation over the last decade. An immense amount of information, knowledge and experience continues to be generated by scientists and researchers, water managers, NGOs, local communities and governmental and intergovernmental agencies on the theory and practice behind this concept. Currently, knowledge and information on environmental flows is spread throughout the world, and there is no central reference point where people can access or share information ranging from basic explanatory information to detailed scientific information on methods, as well as case studies, links, contacts or literature on environmental flows.

For this reason, a distinct need has been identified for creating a network on environmental flows to provide the means for people to access and share the latest state-of-the-art information, knowledge and experience. The main goal of the environmental flows network is to provide an entrance point for people and organisations to access and share information, knowledge and experience on environmental flows. In addition, environmental flows require the integration of a range of disciplines, including engineering, law, ecology, economy, hydrology, political science and communication. How to effectively bridge the interests of these disciplines and their stakeholders is an important issue that must be tackled if environmental flows are to be applied in a manner that benefits all water users (Dyson et al., 2003).

Covering the costs of environmental flows hinges on the acceptance of change in the status quo and recognition of the economic values derived from ecosystem protection and maintenance. A policy and legal framework is needed that recognizes that non-consumptive use of water is crucial for protecting ecosystems and the services they provide. Communicating that environmental flows are as much for the well-being of people as for nature, and participatory decision-making over flow options, is needed to drive the political momentum that is crucial to enabling implementation of environmental flows.



## 2 Application of Environmental Flows

### 2.1 How has the concept of environmental flows been put into practice?

From the results of a survey by Moore (2004), 42 out of 64 countries represented had seen some degree of application of environmental flows within at least one river basin. This survey along with a global review of methodologies used for assessing environmental flows (Tharme, 2003), demonstrates that the degree to which countries apply the concept of environmental flows varies considerably. In countries where the concept has been established for over a decade, such as South Africa, Australia and the USA, application has been extensive. In many other countries, application of the concept has only recently been initiated. When combined with the findings in Tharme (2003), at least 71 countries worldwide now have seen some level of application of the concept (see Table 1). Many countries listed in Table 1 had shown minimal recognition or application of the concept in the past, but are now moving towards wider application, demonstrating the emergence of the concept over the past several years.

Worldwide, there is an immense gap between assessment of environmental flows and on-the-ground implementation. For example, in South Africa, with some of the most advanced and comprehensive environmental water legislation in the world, there is an estimate of environmental flows requirements for most rivers in the country, but only partial implementation has happened in just two or three rivers.

Data from the survey by Moore (2004) emphasises the need to continue work on conceptual development and implementation of environmental flows as well as to develop new ways of informing, training and building capacity among water professionals and stakeholders on environmental flows assessment and implementation. Section 2 elaborates some of the challenges that remain for applying environmental flows and outlines some of the ways that a network can aid in overcoming these constraints.

**Table 1: Application of environmental flows across selected countries (Moore 2004, Tharme 2003)**

<b>Countries where EF work is well established, yet specific areas still lack attention</b>	<b>Countries where EFlows work has been initiated, yet it is still in its infancy</b>			<b>Countries where little evidence of EF work is found, but awareness exists</b>
Australia	Argentina	India	Puerto Rico	Afghanistan
Canada	Austria	Indonesia	Romania*	Bangladesh
Italy	Belgium	Ireland*	Russia	Bolivia
Japan	Botswana*	Israel*	Senegal	Jamaica
The Netherlands	Brazil	Jordan*	Slovakia*	Kazakhstan
New Zealand	Bulgaria	Latvia*	Slovenia	Libya
Norway	Cambodia	Kenya	Spain	Malawi
South Africa	Cameroon	Korea	Sri Lanka	Nepal
Spain	Chile	Laos	Swaziland	Peru
United Kingdom	China*	Lesotho	Sweden	Philippines
USA	Czech Republic	Malaysia*	Switzerland	United Arab Emirates
	Colombia*	Mali	Taiwan	Uzbekistan
	Costa Rica*	Mauritania	Tanzania	
	Denmark	Mexico	Thailand	
	Ecuador*	Moldova	Turkey	
	Egypt*	Mozambique	Uganda	
	Finland	Namibia	Ukraine	
	France	Nigeria	Vietnam	
	Germany	Pakistan	Zambia	
	Hungary	Portugal	Zimbabwe	

## 2.2 How the Environmental Flows Network can aid implementation

Implementation of environmental flows creates technical, social, economic and political challenges. From the social side these challenges include communicating and creating awareness of the importance and need for maintaining environmental flows. From the economic perspective, the need for financial incentives to maintain water flows to downstream environments and economic valuation of environmental flows are a few of the issues to be considered. In regards to the political element, motivating and educating policy makers, as well as catalysing political will to ensure that there are regulations and legislation to maintain environmental flows are some of the key challenges. Furthermore, there are overlapping challenges that include technical, political, social and economic factors, such as balancing the needs of environmental and people's well being, helping local authorities implement legislation on environmental flows, guaranteeing downstream water supply to the world's coastal cities, and ensuring provision of environmental flows to downstream ecosystem services.

An environmental flows network creates a forum where each of these challenges can be discussed among various stakeholders across the globe, enabling sharing of practical lessons learned by practitioners and ready access to support for problem solving. Sharing of resources, expertise and needs analysis is possible through such a network and will be discussed in further detail in the next section. Table 2 describes the



various constraints on the environmental flows discussion and application and how the network can help in moving the concept forward towards implementation.

**Table 2: Descriptions of how an environmental flows network would alleviate constraints on implementation**

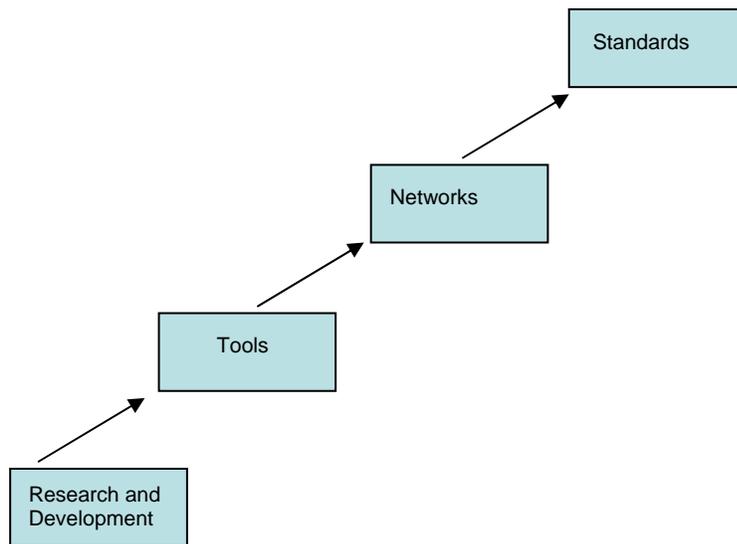
<b>Constraints on implementing environmental flows</b>	<b>How an environmental flows network helps</b>
<ul style="list-style-type: none"> <li>No central reference point where people can access or share information</li> </ul>	<ul style="list-style-type: none"> <li>A mechanisms for bringing together all information on environmental flows, capturing new information, encouraging discussions and planning ways forward in implementing environmental flows</li> </ul>
<ul style="list-style-type: none"> <li>Difficulties in coordinating interests of stakeholders involved in environmental flows from different disciplines (i.e. engineering, law, ecology, economy, hydrology, political science and communication)</li> </ul>	<ul style="list-style-type: none"> <li>Allows parties across disciplines to communicate in a forum where all information can be captured and disseminated to other users interested in environmental flows.</li> </ul>
<ul style="list-style-type: none"> <li>Lack of communication between stakeholders (experts, water basin managers, government, civil society, business) to exchange perspectives, ideas and experiences</li> </ul>	<ul style="list-style-type: none"> <li>A supporting mechanism to enhance communication between parties by providing opportunities to discuss and collaborate on environmental flows</li> </ul>
<ul style="list-style-type: none"> <li>Diverse terms and understanding of the meaning of environmental flows leading to inconsistency of application</li> </ul>	<ul style="list-style-type: none"> <li>Provides an opportunity to establish consistency within the concept of environmental flows as well as to communicate their importance.</li> </ul>
<ul style="list-style-type: none"> <li>Finding appropriate expertise to consult on applying environmental flows</li> </ul>	<ul style="list-style-type: none"> <li>Providing contacts on all areas of environmental flows.</li> <li>Providing support mechanisms from technical specialists and experts</li> </ul>
<ul style="list-style-type: none"> <li>Transferring environmental flows concepts into actual practice</li> </ul>	<ul style="list-style-type: none"> <li>Share experiences and case studies of application, as well as providing a forum where questions can be asked and answered on implementation.</li> </ul>
<ul style="list-style-type: none"> <li>Stakeholders are unaware or unconvinced of the associated social and economic costs and benefits</li> </ul>	<ul style="list-style-type: none"> <li>Case studies and opportunities for discussion on how environmental flows influence social and economic interests</li> </ul>
<ul style="list-style-type: none"> <li>The disjoint between policy and environmental flows requirements</li> </ul>	<ul style="list-style-type: none"> <li>A tool to allow policy makers to correctly assess what are actual ecosystem and livelihood needs in relation to environmental flows</li> </ul>



### 3 Why Establish a Global Network on Environmental Flows?

#### 3.1 How does the environmental flows network fit into the bigger picture?

NeWater outputs are a stepping stone in the process of moving from current water management concepts to more flexible and adaptive regimes. This process can be pictured as a value chain for water management, which aims to provide a bridge between conceptual ideas developed through research and concrete standards that are embedded in practice and policy. In part, progress is achieved by using R&D outputs to form tools that can be applied in case study river basins. Networks are used to expand the influence of and access to these tools.



The environmental flows network can be considered as part of a larger value change that aims to incorporate environmental flows beyond a discourse that is contained in technocratic and academic circles into the public consciousness. Environmental flows began as a research idea and the concept has been discussed at various conferences including the 4<sup>th</sup> International Hydraulics Symposium in 2002 in Cape Town, South Africa and will be a major focus of the upcoming conference on Environmental Flows in Brisbane in 2007. R&D outputs on environmental flows have been further developed into toolkits with user manuals, decision-support tools, distance learning, and compilation of case studies. An example of this is the guide by IUCN ‘Flows – the Essentials of Environmental Flows’, which offers practical advice for the implementation of environmental flows in the river basins of the world. The next step is to further disseminate environmental flows information through establishment of a network that can be used to broaden the environmental flows discourse and integrate the idea into daily management and use of river basins. This discourse applies to policymakers who shape legislation on water allocation to industry, or to fishers who rely on sufficient flows to support fishery stocks. The network is a key phase and its success is essential for river basins to be restored and maintained in a manner that serves environmental needs, as well as livelihoods, through for example agriculture, electricity, fisheries, recreation, etc.

Three elements constituting the environmental flows network need to be established before moving forward.

1. Clarity on what are environmental flows, what they achieve and the urgency in transferring this concept into practice
2. Who should be involved in the network



### 3. Creation of a common vision and strategy among stakeholders

Once environmental flows become a more engrained element in public discourse, it makes sense to move towards standardization. This means that there will be approved standards for implementing environmental flows to ensure sufficient allocation of water for downstream environmental, social and economic uses. These standards would be applicable to all levels of stakeholders from government to farmers. Such standards would have to be dynamic so to adapt to changes that occur on the global and local scale (i.e. climate change, natural disasters).

#### 3.2 What is the demand for an environmental flows network?

So far, the need for an environmental flows network has been identified based on discussions with experts in the field of environmental flows as well as with people (particularly those based in developing countries) who are interested in finding out more information about the concept. Experts have expressed their support for such an initiative as a way of bringing together information, case studies, references and organisations to a central point that allows a consolidation of methods and tools for developing and implementing environmental flows assessments. Furthermore, experts have indicated the need to be able to direct people to up-to-date, accurate information on environmental flows. However, experts' talking with experts does not give a full perspective of the need for an environmental flows network.

It is necessary to consider whether there is a demand for the environmental flows network beyond the realm of experts in governmental and non-governmental organizations, academia and consultancies. Despite the importance of environmental flows they are often not part of daily common language among stakeholders such as farmers, dam engineers, water treatment plant managers and fishers. The demand for environmental flows information must look at problems that occur in river basins. For example, downstream water users may not have sufficient water to maintain fish populations or continue the same rate of irrigation because of increased allocation upstream. In this case putting the concept of environmental flows into practice is essential for water basin managers to maintain a health river basin. It is also a tool which decision makers in government can use to take action, thus fulfilling their mandates for serving the needs of their national, regional or local population.

Specific questions on identifying the demand for an environmental flows network include:

- What is the market?
- How is demand expressed?
- What different actors are driving the demand?
- Who are the suppliers, middlemen, end users?

The network can act as a starting point for people who wish to find out information on environmental flows and how it applies to their ecological surroundings. Enquiries from people would be specific to their needs and could include questions such as:

- How much water does the mangrove need?
- What regime do we need to maintain in a community fishery?
- What water flow does a specific species of fish need to maintain a certain level of sport fishing?
- How can the environment be included in our dam operation plan?

People with these questions are often in areas where there may be limited information on the applicability of environmental flows to their situation. One function of the network would be to act as an open access portal for anyone interested in asking about environmental flows from the most basic concepts to specific technical questions. The aim the network is to facilitate communication, build capacity and education so as to expand the recognition and adoption of environmental flows around the world. The network will aim to ensure that environmental flows move beyond a concept into active practice.



### **3.3 What will an environmental flows network accomplish?**

An environmental flows network will allow people interested in all aspects of environmental flows from around the world to engage with one another and exchange experiences, ideas and solutions. Information from the network can then be taken by basin managers and applied to planning of flow regimes in their own regions.

Access to experts on environmental flows through a network will strengthen overall strategies used by organizations and individuals to enhance their knowledge management capabilities. Knowledge should not be accessible only where it is embodied in technologies and databases, but also through people's experience within river basins. Furthermore, as practices and policies for managing environmental flows change, the continuous and rapid exchange of knowledge and information is of the highest importance, to ensure that the community of environmental flows practitioners evolves at the same time. Direct contact means that the response from the expert individual is likely to be contextualized to the particular problem being addressed and personalized to the person or people addressing the question.

Once the environmental flows network is established, it will grow and adapt to meet the needs of its members and keep pace with the dynamic and expanding body of knowledge and experience around environmental flows. A network will also help open knowledge of environmental flows to new audiences by offering readily-available access to up-to-date thinking and methodologies. By opening environmental flows concepts and practice to audiences – such as consultants or policy-makers - that are well-placed to rapidly scale-up application within IWRM, a network will help to drive the establishment of environmental flows as a standard for river basin management that is expected by broad constituencies of stakeholders.

### **3.4 Who will the network involve and benefit?**

Access to a network on environmental flows would benefit water managers trying to find solutions to various problems. An easy and accessible interface that would provide contact information and even allow consultation with the necessary experts in the field would be indispensable. When for example a problem arises in application of environmental flows there may not be sufficient time to do extensive research to determine solutions, the network will make it easier to consult with someone who has knowledge in the field or who has dealt with a similar problem before.

A network that focuses on environmental flows would be a useful tool to a variety of stakeholders and is summarized in Table 3. Delivery to all stakeholders will be a challenge and creative methods of including people and organizations in the network need to be explored. For example, how can the environmental flows network be attractive to business? How will farmers find it applicable to answering their questions?



**Table 3: Uses of the environmental flows network for various stakeholders**

<b>Stakeholder</b>	<b>Use of Environmental Flows Network</b>
River basin organizations	<ul style="list-style-type: none"> <li>• Managers in river basin organizations will be able to access expert individuals with their knowledge requests.</li> <li>• Managers of infrastructure such as dams can obtain information on how to reoptimize dams to ensure sufficient environmental flows</li> <li>• Managers can find out about new tools that are available to enhance or improve environmental flows in their river basin</li> <li>• Managers can access case studies, and share experiences</li> </ul>
Technical experts	<ul style="list-style-type: none"> <li>• Forum to exchange information with other experts in the field</li> <li>• The gap between what is available and what is used in managing and maintaining environmental flows can be discussed, understood and breached</li> <li>• Experts can find out the tools needed by river basin managers and match the tools being developed to these needs</li> </ul>
Policy makers	<ul style="list-style-type: none"> <li>• Inform policy makers on the importance of environmental flows in river basin management.</li> <li>• Update government officials and experts on information regarding environmental flows</li> <li>• Policy makers can access case studies and share experience.</li> </ul>
Industry, business, agriculture	<ul style="list-style-type: none"> <li>• Farmer organizations can obtain information on why environmental flows are important for their livelihoods</li> <li>• Network can be used as an information tool for business interests (Corporate Social Responsibility)</li> <li>• Access case studies and share experience.</li> </ul>
Civil society/general public	<ul style="list-style-type: none"> <li>• Can use as an information tool to learn about environmental flows</li> <li>• Using the knowledge from the network, civil society can determine whether environmental flows are being implemented in their river basin, and question why or why not.</li> </ul>



### **3.5 How can an environmental flows network reach stakeholders?**

Reaching stakeholders interested in environmental flows and those that are needed to put the concept into further practice is essential to the success of the network. The main mode of access will be via the internet and email. However, there will also be regional and local workshops, where network participants can interact, strengthen their contacts and develop partnerships. A newsletter will be an important tool in summarizing activities of the network and keeping all members up to date. Frequent and regular but not overwhelming contact is important to ensure that participation in the network is strong and self sustaining.

Access to the network in major languages, such as French, Spanish, Arabic and Chinese will also widen its usefulness and spread across the globe. Furthermore, in areas where computer access is limited, it is essential that those with access act as a conduit to pass information to and from the network. For example, user groups such as farmer associations in less developed countries may have limited access to computers but still need to be involved. Representatives of the groups can participate in training or information workshops (i.e. agriculture officers) and bring questions or knowledge from the group as well as pass on information obtained from the network.



## 4 Environmental Flows Network Structure and Outputs

### 4.1 How is the network being developed?

Efficient and effective organization, administration and management of the environmental flows network are essential for it to be a useful tool now and in the future. As the network grows it will have specific nodes that are managed by core groups. The nodes may consist of people, groups or organizations that have expertise within a certain area. Each of these nodes will then have branches consisting of experts within more specific areas of knowledge (see Figure 1). There will be a deliberate effort to ensure crossover, so that the nodes of experts share information with other groups.

The management of the network nodes will be conducted via a website, which will be created as a dynamic platform where more than one person can administer the site. This will enable several organizations to be involved as well as relieve the burden of administration from falling on one person. However, there will be a coordinator to ensure that all information is up-to-date and relevant. Guidelines will be drawn up so that there is consistency between organizations that manage their nodes within the website. Further information on the suggested website structure is provided in section 4.3.

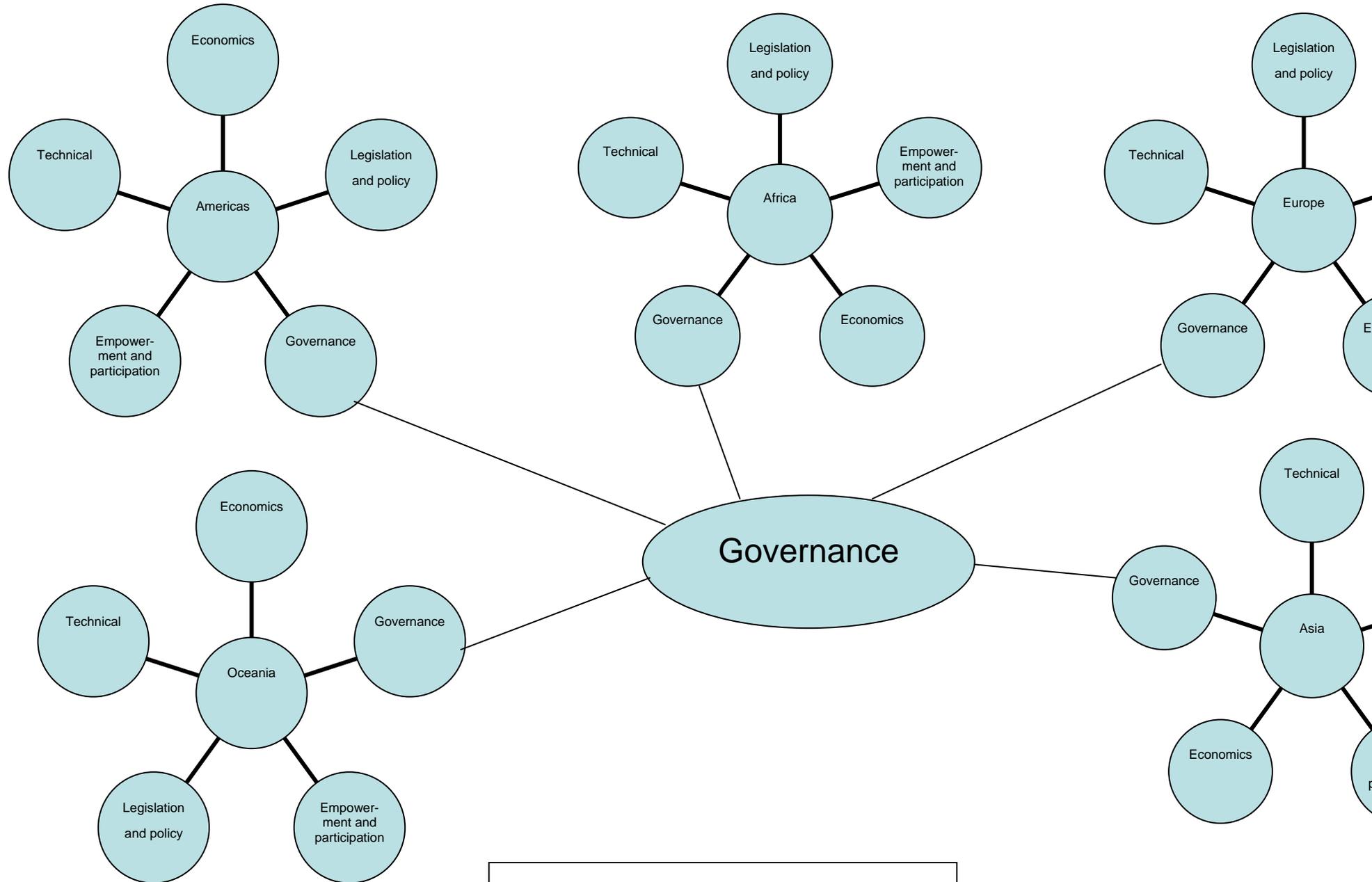
The Environmental Flows Network is currently on target for a formal launch at the International Environmental Flows Network in Brisbane in September 2007. The table below outlines the steps needed for network development and includes both inception activities that have already been achieved and future steps that need to be taken.

Objective	Action	Result
<ul style="list-style-type: none"> <li>• Discussion on agreement on rational of the network</li> <li>• Planning for August meeting in Stockholm</li> </ul>	Meeting on June 27 <sup>th</sup>	<ul style="list-style-type: none"> <li>• Decide preliminary structure of network</li> <li>• Plan format and facilitation of seminar in August</li> </ul>
<ul style="list-style-type: none"> <li>• Prepare background paper for seminar</li> </ul>	Discuss contents and structure on June 27 <sup>th</sup> – complete by the end of July	<ul style="list-style-type: none"> <li>• Ensure all participants are prepared for the seminar and have a clear indication of what will be achieved</li> </ul>
<ul style="list-style-type: none"> <li>• Determine interest in EF network</li> </ul>	Send out survey specifically targeted at those not attending seminar in August to get their input into the EF network (mid- June)	<ul style="list-style-type: none"> <li>• Collate feedback on EF network and use in seminar discussions</li> </ul>
<ul style="list-style-type: none"> <li>• Input from stakeholders on how to develop EF network</li> </ul>	Seminar on August 20 <sup>th</sup> in Stockholm at World Water Week	<ul style="list-style-type: none"> <li>• Compile discussions of stakeholders</li> <li>• Incorporate result of discussion into shaping and planning of network</li> </ul>
<ul style="list-style-type: none"> <li>• Start enrolling members</li> </ul>	Contact potential members and ask them to enlist in the network (August- September 2006)	<ul style="list-style-type: none"> <li>• Formalize network contact database</li> </ul>



<b>Objective</b>	<b>Action</b>	<b>Result</b>
<ul style="list-style-type: none"><li>Put together EF newsletter on progress of the network</li></ul>	Send out newsletter to network members (End of September)	<ul style="list-style-type: none"><li>Provide information to members on the progress of the EF network</li></ul>
<ul style="list-style-type: none"><li>Building structure of network</li></ul>	Building website for EF network, organizing workshops to keep up member participation (September 2006 - September 2007)	<ul style="list-style-type: none"><li>Central reference point for members to exchange information and discuss environmental flows</li></ul>
<ul style="list-style-type: none"><li>Official launch of network</li></ul>	<ul style="list-style-type: none"><li>Launch of network at the Brisbane Environmental Flows conference in September 2007</li></ul>	<ul style="list-style-type: none"><li>Formal launch of the network</li></ul>

When members join the network they have the option of completing a survey which gauges their probable level of involvement and the area in which they are interested. This is important for placing people in the appropriate nodes of the network and directing specific questions on environmental flows to the correct area of expertise.



**Figure 1. Proposed structure of nodes of the Environmental Flow Network**



## 4.2 Inception activities

The following inception activities of the Network have only been possible with the support of NeWater and the partners involved in NeWater. They provide a sound foundation for the network to flourish and grow beyond the NeWater project.

### 4.2.1 Seminar

A seminar was held during World Water Week in Stockholm, Sweden, which introduced the Environmental Flows Network. NeWater partners were invited to attend the seminar along with those interested in environmental flows. The seminar explored how a global network of local and national practitioners and experts on environmental flows can be developed. Revolving and active roundtable discussions focused on how such a network could be structured and function most effectively. A wide interdisciplinary range of stakeholders, including experts, practitioners, policy makers, local community representatives, end users and participants from all appropriate sectors, were encouraged to participate.

The aim of the seminar was to share ideas on how a network can address key concepts surrounding environmental flows and develop an initial framework for implementation. The roundtable discussion groups first examined the demand for such a network as well as the urgency needed to communicate environmental flows beyond the technical community, so that a wider audience is aware of the need to provide sufficient water to support ecosystems. The second part of the discussion focused on tangible deliverables that the network could provide as well as how to disseminate information and who should be involved in the network.

The roundtable discussions focused on the following topics:

1. Environmental flows generate benefits for people and ecosystems.
2. Environmental flows are essential for delivering the MDGs and for reducing poverty.
3. Environmental flows are an essential part of IWRM, River Basin Management and Environmental Impact Assessment.
4. Environmental flows needs technical, social, political and economic support for implementation.

An outline of the seminar programme is in Appendix 3, along with the results of the discussions.

Approximately 60 people participated in this seminar. Discussions revealed that there is a demand for a central reference point that could be provide by a network where knowledge on Environmental Flows could be shared and accessed. Participants identified that the network:

- could act as a clearinghouse where experts, practitioners, policy makers, civil society and other interested parties could find reliable and relevant information on implementation of environmental flows in river basins
- Can be a support tool to those responsible for watershed management and water allocation. Furthermore, the network can promote the ecosystem benefits from environmental flows; for example, provide case studies of economic valuation of ecosystem services that are supported by environmental flows.
- should evolve with the changing needs and demands of users
- Should integrate information on education, case studies, economic valuation, policy and legislation, community participation and technical advice.
- link members to organizations and individuals with similar interests and goals



#### 4.2.2 Survey

A survey was created and sent out to potential environmental flows network members. The survey was available at <http://www.surveymonkey.com/s.asp?u=645422451807> from August 2006 until July 2007. A word version of the survey is available in Appendix 4. The aim of the survey was to gather information from potential members. Lists of potentially interested members were gathered through the steering committee contacts. Results of the survey are in the process of being compiled and a summary will be made available through the Environmental Flows Network website. To date more than 300 people have answered the survey. This is expected to increase as a link to the survey has been made available on the International Environmental Flows Conference (Brisbane, September 2007) website.

In addition, the survey has been translated into Spanish and is currently being distributed in Latin American countries and Spain (<http://www.surveymonkey.com/s.asp?u=611433802338>).

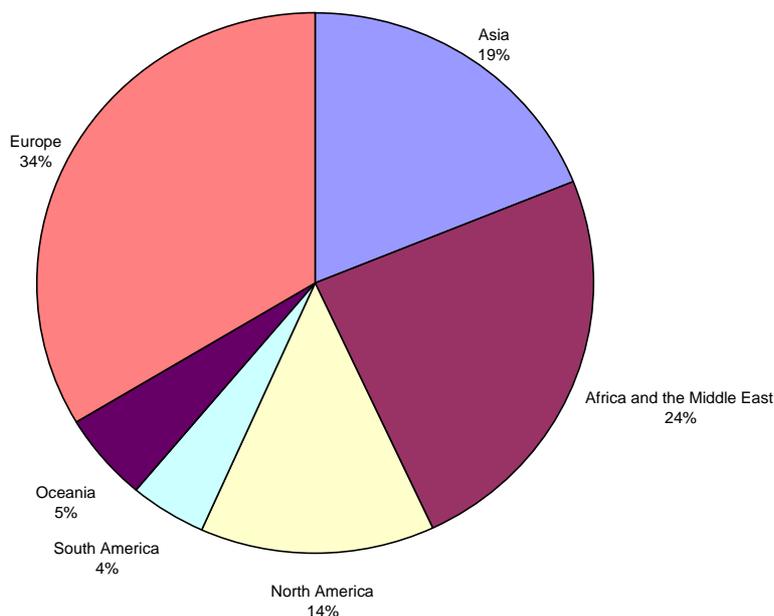
#### 4.2.3 Database

The Environmental Flows Network has a database of members and contacts with interests in environmental flows. As the network develops, these members will be encouraged to participate in specific nodes of the network (as described in section 4.1). Appendix 5 contains the current network database, which is constantly evolving as members join.

The database currently contains more than 800 members from across the globe. Figure 2 shows the distribution of membership that has joined since the inception in August 2006. A variety of practitioners are involved from government, NGOs, international governmental organisations such as the UN and World Bank, consulting companies, private companies, foundations, donors, river basin organisations, and other interested individuals from the general public. The network is multidisciplinary, and includes professionals in a number of areas including hydrology, hydrogeology, policy analysts, law, infrastructure, climate change and health. More complete results of the distribution of interests will be available as members provide information on their interests and professional expertise through the survey, email and face to face communication.

The database of members is a useful resource to find out who is involved in environmental flows in specific regions, as well as their area of expertise. As regional networks develop, the database is a useful starting point for pinpointing organisations and individuals in the region that can be involved in the network. For example, the Southern Africa Environmental Flows Network is in the process of being initiated and the database provides a useful starting point for populating the network. Through this initial base of contacts additional members can be informed.

The database is also useful in finding experts who are knowledgeable in specific areas related to environmental flows. For example, if someone in a region is working on environmental flows assessment methodologies, the database can be used to find experts in this area that may be in another region but can share their experiences.



**Figure 2. Geographical Distribution of Environmental Flows Network**

#### 4.2.4 Newsletter and email listserv

The network issues an Environmental Flows Newsletter that is sent by email to all members. The newsletter is being adapted from an existing Environmental Flows newsletter issued by IWMI (see [http://www.iwmi.cgiar.org/health/ef\\_news/index.htm](http://www.iwmi.cgiar.org/health/ef_news/index.htm)). The Environmental Flows Network distributed an issue in October 2006 and another in March 2007. See Appendix 2 for the newsletters. Email updates have been distributed via an environmental flows listserv ([env-Flows@indaba.iucn.org](mailto:env-Flows@indaba.iucn.org)) which is also being used for discussion on various issues relating to environmental flows. Archives for this discussion can be accessed by contacting [katharine.cross@iucn.org](mailto:katharine.cross@iucn.org). This discussion group will be integrated into the new website that is being developed as a web forum that will still allow people to send and receive message via email.

The development of regional networks is being explored. The Southern Africa Environmental Flows Network has been established and has an email listserv ([e-flows@indaba.iucn.org](mailto:e-flows@indaba.iucn.org)), however discussions still need to be initiated to increase activity and promote sharing of experiences.

The Newsletter and listserv can promote public events occurring within the NeWater partnership. In addition, the listserv can be used as a source of information on environmental flows, a forum to ask questions and learn about new initiatives.

### 4.3 Future activities

#### 4.3.1 Newsletter plans

The future proposed format of the newsletter will be interactive where recipients press on links to learn about more information. The newsletter will be published between two and six times a year and aims to keep people up-to-date on the latest news on environmental flows. The newsletter will also keep people aware of new information available on the website and encourage them to visit.

The newsletter will contain:



- Introduction of new members (if they have indicated they would like to be introduced in the newsletter)
- Short descriptions of ongoing studies
- Highlights of discussions
- Reports of workshops and events relating to the network
- Announcements of upcoming events
- Lists of new publications, documents, websites of interest

To produce the newsletter, input from members is required. There are regular requests for submissions of news and events via email and on the network website. Contributions from members can include:

- Experiences on water management that involves water allocation and environmental flows
- Case studies (i.e. Problems and solutions to water allocation and environmental flows in your region)
- Reports on ongoing or recently completed research
- Results of recent seminars, workshops and conferences involving environmental flows
- Upcoming events relating to environmental flows
- Announcements and awards
- Recent publications
- Tools and resources

#### 4.3.2 Website

Setting up and maintaining a website is a core and ongoing activity of the network. To date the network has a website address ([www.eflownet.org](http://www.eflownet.org)) but the design and information on the website still need to be finalized. The website will have information on environmental flows, highlighted case studies and tools. However, to take part in discussions, access documents and interact with other environmental flows stakeholders, it will be necessary to become a member of the network. This is to ensure that all those who are interested or involved in environmental flows are captured by the network. The website will allow members to access information on environmental flows as well as to submit information. The website will also rely on constant inputs from members to remain up-to-date and active.

The website will include the following information and elements:

- Structured forum for stakeholders to share information and ask questions
  - Questions will be directed to the node of expertise
  - Answers will be posted publicly and sent directly to the enquirer
- Background information on environmental flows
- Literature - Documents, papers, recommendations of publications
- Information and access to new tools and innovations relating to environmental flows
- Case studies
- Calendar of events within the network and other upcoming events
- Opportunities for members of the network to develop partnerships and new ideas
- Links to distance learning courses
- Links to other networks

The website will be a content management system (CMS) also referred to as dynamic database website. For the actual technical and graphic design as well as for the construction a consultant will be hired. Once the database structure is ready, all steering committee members will have access as administrators and can contribute to filling the database. In addition, once regional and thematic focal points are established they will be encouraged to administer environmental flows input in their region or area of interest. This will be an ongoing, dynamic process where focal points are encouraged to interact and share ideas across the network. Once the database has the basic content, the website will be published online. Further populating of the website will be through contributions from network members, although there will be screening for quality control by administrators).



Currently, IUCN has hired a designer and a content management consultant to design and set up the website. The proposed structure that the consultants are using to build the website is available in Appendix 1.

**Timeline**

- March 12<sup>th</sup> - Website Development Structure
- Week of March 27<sup>th</sup> – Proposals to be submitted by consultants
- April 12<sup>th</sup> - discussion of proposal by steering committee member present at Environmental Flows & Human Well-Being mini-symposium in Delft.
- Week of April 17<sup>th</sup> - Selection of consultant
- May 7<sup>th</sup> - Contract signed; start development of website by consultant
- June 31<sup>st</sup> - Website available, information can be added
- August 1<sup>st</sup> - Website online

**4.3.3 Conferences**

Conferences, workshops and meetings are an important component of the network to keep activity and interest in the network. These events will provide opportunities for members and other interested parties to meet face to face and further the discussions that have been initiated via the network. They also provide members with the chance to forge new partnerships and contacts with people. For example, those needing practical input in applying environmental flows can forge links with the necessary experts, and experts have the opportunity to find stakeholders that may need their tools or ideas. Furthermore, policy makers can interact directly with those affected by their policy decisions and get an idea of their effectiveness or the need for change in their approach.

IUCN and the main network steering committee organisations are sponsoring the International Environmental Flows Conference in Brisbane from September 3-6<sup>th</sup> 2007. The Network will display and distribute information to potential members at the conference. Furthermore, the Network will have a 1.5 to 2 hour interactive facilitated side session in order to promote of the network, explore how the Environmental Flows Network will aid people working on environmental flows, and encourage networking among participants. Below is a sample agenda of how the session would be structured.

<b>Event</b>	<b>Content</b>
<i>Session 1: Welcome and Introduction</i>	1. Activity: How do we feel about the Environmental Network and networking in general? (10 min) 2. Workshop objectives and schedule (5 min) 3. Participants introductions (ice breaker) (20 min)  Networks and networking are a part of our lives - what kind of impact do you think the Environmental Flows Network have on your work and outputs? How will a network help you reach your objectives in relation to working on Environmental Flows?
<i>Session 2: World Café Exercise</i>	The interactive World Café technique will be used for brainstorming and discussion in groups of four around these interesting questions. (40 min) Sharing discussion highlights (10 min)
<i>Session 3: Reflections and Closing</i>	Reflections on the workshop, pairs discussion and reminder activity (30 min)
End of Workshop	



#### 4.4 Management structure

The management of the environmental flows network will be carried out across organisations. As previously mentioned the central coordinator will be based within one organization. This coordination role is being taken on by the steering committee, which is a core group of organizations on a rotating basis (i.e. SIWI, IWMI, CEH, Swedish Water House, IUCN, Delft, DHI, TNC). A meeting of the steering committee was held during World Water Week in August, 2006. Attendees and minutes from this meeting are available in Appendix 6. One of the major current constraints of the managing the network is finding available time to dedicate to the development of the network. However, as the network grows interested members will be able to take on some of the responsibilities.

As the website will be hosted on a dynamic platform, different organizations will be able to administer their nodes or theme area (governance, technical, legislation, etc). The role of the central coordinator will be to ensure consistency between administrators, and manage the overall content of the network and make final decisions on how the network evolves. Regular meetings between the central coordinator and the administrators will be conducted to discuss concerns, ideas and make decisions on the constant evolution of the network. The administrator of each theme area will regularly interact with nodes of actors in each region. For example, the administrator for theme 1 (i.e. governance) will be in communication with members from Europe, the Americas, Oceania, Asia and Africa. If necessary each of the regions will also have focal points. However, the success of the network relies on communication on the experiences, information and problems of these regions so it is important that the administrator bring discussions together.

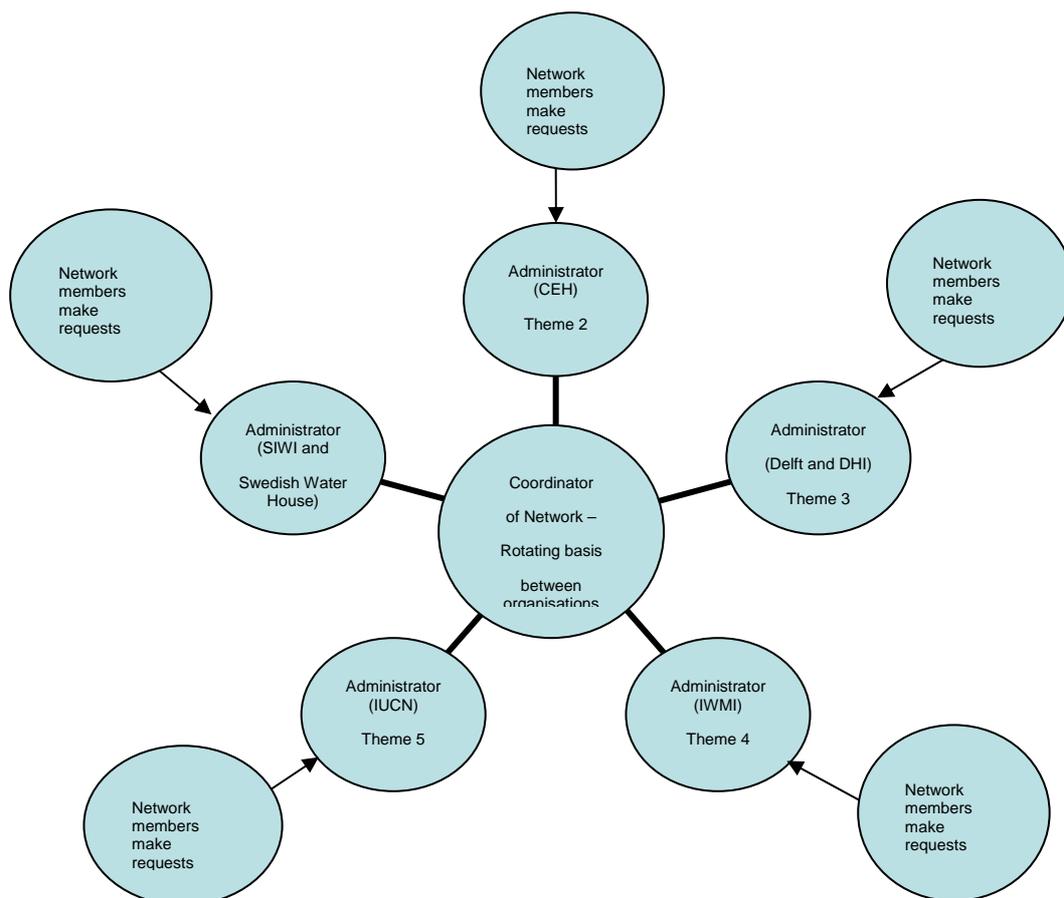


Figure 3. Management structure of Environmental Flows Network



#### **4.5 How will the network be funded?**

The network will be promoted as a tool that can be used by stakeholders working in river basins especially on environmental flows. Consequently, funding could be sourced from those who would use the network, such as River Basin Organizations, governments and even businesses. Funding will likely be more forthcoming if the network is promoted as one of a collection of tools that can support management of river basins, ecosystems and environmental flows. Presently, in kind contributions have been provided by the steering group committee, and support for developing the seminar during World Water Week was given through Swedish Water House. A concept note has been put together to provide information about the network for potential donors and interested members (see Appendix 7).

Rapid development of the network requires a constant flow of resources. Currently, IUCN is providing funds for the development of the website and providing seed money for conference events. However, a more sustainable source of funding needs to be obtained. This could be potentially through private company sponsorship or foundations. The network needs to produce tangible outcomes so that donors can see the benefit of their investment. Possible outputs include collaboration on papers and books, creating working groups to aid in drafting water laws, and application of best methods to implement environmental flows.



## 5 Role of NeWater in the Environmental Flows Network

### 5.1 Major deliverable – Network database

The task for the NeWater project was to establish a network of experts to support applications of methods of balancing management for quantity, quality and ecosystems. A network has been established and is being used as a mechanism for the partners of NeWater to share their experiences and ideas on adaptive management in relation to environmental flows. The database of contacts is available at:

[http://intranet.iucn.org/webfiles/doc%5CEnvironmental\\_Flows%5CContact\\_list%5Cdoc\\_Environmental\\_Flows\\_Contact\\_list\\_Environmental\\_Flow\\_Network\\_020507.xls](http://intranet.iucn.org/webfiles/doc%5CEnvironmental_Flows%5CContact_list%5Cdoc_Environmental_Flows_Contact_list_Environmental_Flow_Network_020507.xls)

The database will also be available through the NeWater intranet website and will be updated on a continuous basis as it is developed. Further information will be added to allow NeWater partners to identify experts in specific field of interest. This database will also be accessible in the membership section of the new website.

In addition to the database of contacts, numerous other products have been produced and are in the process of being produced as detailed in Section 4.

### 5.2 Role of NeWater in the Network – Current and Future

The Environmental Flow Network connects to NeWater as a portal for communicating the importance of adaptive water management in river basins. Organisations involved in NeWater are encouraged to join the network as it will provide opportunities to communicate their research and ideas to a global forum. Furthermore, the network will help to ensure the sustainability and widespread dissemination of knowledge and tools from the NeWater project.

To date, the partners in NeWater have participated in the seminar in Stockholm and in virtual discussions via the Environmental Flows Network email listserv. NeWater partners will be able to use the website to post information on NeWater activities and as a forum to distribute and share the products that come out of the NeWater project. The concepts initiated in NeWater can be shared with the Network and be developed into applications that can sustain the legacy of NeWater beyond the project lifetime.

NeWater organisations can benefit and contribute to the network by:

- Contribute to the Environmental Flows Network newsletter
- Take part in Listserv and web forum discussions
- Introduce discussions and potential projects on adaptive management and environmental flows
- Participate in events organised by the Network
- As members of the network, organise events related to environmental flows at Water related conferences, events, etc
- Contribute to projects initiated by the Network (i.e. papers, policy briefs, demonstration projects, partnerships, etc)



## **6 Conclusions**

Environmental flows are an important component of adaptive management as they take into account the water allocation requirements for ecosystems. This is an essential factor to consider when applying adaptive management to river basins. Consequently, the Environmental Flows Network is an important source of information for NeWater, specifically through the contact database and future website.

The organizations involved in NeWater are a network of knowledge that can tie into the Environmental Flows Network, thus providing numerous opportunities and benefits to NeWater users including:

- Providing a central communication point for stakeholders
- Sharing of information
- Creation of partnerships beyond NeWater
- Forum to showcase Newater products
- Stimulation of dialogue on environmental flows and adaptive management

When new concepts and ideas are emerging they are more powerful and productive if collectively harnessed. However, one of the main problems from the outset is the lack of communication between all parties. The environmental flows network will ensure that all stakeholders affected and influencing this area have a central point to actively participate in discussions and a readily accessible way to contact and work with people across the globe. Dissemination of knowledge through NeWater and the Network is a key to the success of spreading the implementation of environmental flows for healthy water basin ecosystems as well as livelihoods and the wellbeing of populations that are reliant on ecosystem services within river basins.

The funding provided by NeWater allowed the Network to initiate preliminary activities such as the contact database, organization and participation in seminars, and production of a newsletter. Additional funds from IUCN were sourced to create a website, which will be an important portal of information, collaboration and sharing on environmental flows. The steps required to move the Network forward and make it sustainable include:

- Launching the website
- Continuation of active dialogues through the email listserv and web forum
- Collaboration on environmental flows projects, papers, policy briefs, etc
- Events organized under the auspices of the Network at conferences, symposiums, and meetings.

NeWater partners can continue to contribute to each of these steps and continue to be active members of the network.



## 7 List of references

Dyson, M., Bergkamp, G., Scanlon, J. (eds). *Flow: The Essentials of Environmental Flows* 2<sup>nd</sup> edition. IUCN. Gland, Switzerland.

Millennium Ecosystem Assessment (MEA). 2005. *Ecosystems and Human Well Being: Wetland and Water – Synthesis*. World Resources Institute, Washington, D.C.

Moore, M. 2004. *Perceptions and interpretations of Environmental Flows and implications for future water resource management - A Survey Study*, Masters Thesis. Department of Water and Environmental Studies, Linköping University, Sweden.

Tharme, R. 2003. A global perspective on environmental flows assessment: emerging trends in the development and application of environmental flows methodologies for rivers. *River Research and Applications* 19:397-441.



## Appendix 1 – Website requirements and structure

### Website requirements

Below is a general description of the requirements for the website. In the Annex the various suggested pages are described in more detail.

#### *Basic features*

- Content Database: A database that captures and organizes the content to be published on the Environmental Flows Network site
- People Database: A database of the people related to the site – visitors, members, email newsletter subscribers
- User Management: A database of administrators and content authors with associated roles and responsibilities.
- Information Architecture (IA): Site map of the site.
- Presentation Authoring – The look-and-feel of the site established using graphic design using templates that are re-applied across the site.
- Content Authoring: Form and html editor (What You See Is What You Get) tools which allow users to add content without technical resources. Inclusion of a preview function, which allows the author to view their content within the presentation template or wrapper without publishing.
- Workflow Tools: Process-automation that shepherds content through the authoring process - Writer, Editor, and Publisher roles before publication.
- Database Forms: Forms presented on the public web site are used to accept ad-hoc data from site visitors. These forms handle basic data collection needs such as a member sign-up page.
- Search Tools: Site-wide and section-specific attribute and text search tools help site visitors more directly locate content.
  - Advanced tools for creating site search functions – for the entire site, by content type, by site section, by page, by date, etc.
- Site Reporting: Analyze site traffic volume, highest interest pages, traffic sources, average visit duration, most frequent referring search engines, search terms and many other site statistics.

#### *Administration*

- A sophisticated administrative panel with explanation to website administrators on how to use it (either through personal training session or by producing a guide). This panel will allow non-web administrators to easily update the web site whenever needed. Examples of administrative panels:
  - <http://www.pub.iwmi.org/UI/Content/Default.aspx?PGID=0>
  - <http://www.iwmi.cgiar.org/drw/info/default.asp?PG=HOME>
- It should be easy to register webmasters, editors and content providers along with providing clearly defined access and editing rights
- Multi-site management: Create and administer related sites from one administrative panel; (this may only be needed at a later date)
- Provision of content management tools, that will allow administrators and network focal points to contribute stories and documents to the website, including levels of visibility (internal, restricted to, external)
  - Ability to auto-publish (create once but publish many times to different site sections.)
- Mechanisms for webmasters and editors to control the content and design of the site, and its sub-sites
- A website which works well in countries with slow internet connections
- Options provided to send messages to the administrators, or to submit contributions.



- Multi-channel Publishing (this may only be needed at a later date): Publish content to three channels simultaneously: 1) The main website; 2) A print-friendly version suitable for printing; 3) To an email module that sends the page to a designated audience.

### ***Webpages***

- Various theme pages in which the latest information appears automatically. Search feature, including options to search in specific sub-sites and for specific document types
- Add large parts of existing flow information to the website content (i.e. FLOW information on IUCN website)
- File management for various formats, including PDF, Word, PPT and different image formats
- Delivery of templates, tools for easy editing of templates, and application of these templates to various parts of the site, with varying rights of webmasters and editors to change specific elements of these templates
- The website can function in multiple languages → to begin just English, French and Spanish, but perhaps later Chinese, Russian, and Arabic

### ***Network registration and contact database***

- There will be an option for online registration where people can select various options and enter information. The information should be sent to the administrators and be added to a database of contacts.
- A database of contacts with details of members should be well protected and available only to registered people who are sharing their own contact details. The purpose of the database will be to find people with certain expertise or experience in the area of environmental flows. However, people will need to give their permission in order for their contact details to be shared among members of the network.

### ***Online collaboration tools***

Tools to interact, transact and communicate with members of the Network including listservs, and web forum. Features such as Live Chat, and Web Conferencing could come later.

- Intranet: A password protected portal on the Internet where members can retrieve documents, collaborate, communicate, and organize their efforts.
- Options to register for and manage messaging facilities; from user to user, email lists, and listservs
- Discussion boards, announcement boards, and simple online collaboration tools
  - A writing corner where members can collaborate on documents (like a wiki)
- Webforum structured so that members can share information and ask questions
  - Questions will be directed to the node of expertise
  - Answers will be posted publicly and sent directly to the enquirer
- Surveys for information collection
- Calendar of events, where members can submit new events (to be screened by administrators)

### ***Document and information sharing***

- Document Management – Management of internal documents through access-control and versioning.
- Ability to post case studies (that will be screened by administrators)
- Ability to submit documents, papers, recommendations of publications (screened by administrators)
- Ability to submit information and access to new tools and innovations relating to environmental flows (screened by administrators)



### ***Other***

- Hosting of and technical maintenance of the web server, including assurance of sufficient bandwidth

### **Website structure**

Administrative panel containing links to each main page.

*There should be space for regional networks to develop, but they will follow the same structure as the global network*

### **Home/Main page**

- Sign in to intranet
- Welcome note
- Featured news story or case study summary with links to news or case study page
- Month Calendar with link to calendar page and link to event submission
- Link to members page to sign up to network, newsletter and listservs (global and regional), survey
- Links to regional networks (to be developed)

Every page =

- Pictures
- Logo

### **About the network and environmental flows**

#### ***Environmental flows***

- short history
- definition
- elements (with reference to the other parts of the website):
  - methods
  - cases
  - projects
  -
- purpose of EF is to enhance informed, equitable, sustainable decision-making

#### ***Network***

- Short introduction (based on rationale of project proposal)
- Goal (project proposal)
- Targeted audience
- Who we are – secretariat (administrator, core group, advisors) – independent
- Services provided by the network, what members can contribute

### **Newsletter and calendar**

#### ***Newsletter***

- News updates
- Latest newsletter (every quarter)
- Newsletter sign up
- Archive

#### ***Calendar***

- upcoming global events



- upcoming regional events
- Form to submit an upcoming event

## **Resources**

### ***Methods and tools***

- The regular overview: hydrological --- holistic methods
- link to RBM/IWRM tools
- Link to FLOW toolkit
- Link to valuation tools

### ***Training and education***

- Links to on-line courses (FLOW)
- Links to education material (CAPnet)
- Information on environmental flows related courses (graduate programs, links to universities, research institutions)

### ***Document sharing***

- The website will provide a selection of relevant documents in environmental flows, grouped by themes. Following themes are envisaged:
  - reviews
  - methods
  - implementation
  - social and economic
  - ecology
  - hydrology
  - IWRM
- Collaboration area (need to sign into intranet)
  - Members can collaborate on projects, documents and ideas (wiki link?)
- Web forum
- Sign up to email listservs (choice of global and/or regional)

## **Putting Environmental Flows into practice - Case studies**

- Highlighting specific case study (the first is to be the Limpopo):
  - Where
  - When
  - Who
  - Situation/problem description
  - Methods applied
  - Data used
  - Results – summaries of specialist reports
- Testimonials (cases with people, specifically non-specialists talk and present how they have benefited from environmental flows)
- Links to blogs from case study areas
- Descriptions of how to implement environmental flows in practice (step by step process or guide)
- Archive of previously highlighted case studies, including a search option based on keywords: country/region, topic, applied methods

## **Members**

- Database of network members (accessible only by signing into the intranet)
- How to register yourself on the database
- How to find people with expertise or experience
- How to contact members



- Survey to determine member expertise, experience, use of network, etc

### **Regional Networks**

- Map with links to regional networks
- Sign up for regional listservs
- Regional network contact information

### **Opportunities in environmental flows**

- finding jobs, apprenticeships related to environmental flows
- funding opportunities

### **Contacts**

- Contact information.
  - General
  - To announce or organise an event?
  - To contribute information to the network (case study, documents)
  - How do I join the network?
- Frequently asked questions

### **Links**

Hyperlinks will be provided to sites which present additional information on Environmental Flows and related topics. For example:

- IRN
- IUCN
- IWMI
- GWP
- Valuation network
- Ecohydraulics network
- Other relevant networks (eg DIVERSITAS)



## **Appendix 2 - Environmental Flows Newsletter and Updates**

### **Newsletter**



**Update**



**Environmental Flows Network Update**

January 22<sup>nd</sup>, 2007

Happy New Year!

This email list can now be used as to discuss issues relating to environmental flows. If you have any questions, suggestions or comments in relation to environmental flows, please reply to: [env\\_flows@indaba.iucn.org](mailto:env_flows@indaba.iucn.org). All emails will be screened by the moderators before posting to the email list.

**First Discussion!! - Environmental Flows Audit**

Our first item of discussion:

Chris Dickens and his team have recently been engaged to conduct an audit of the environmental flows operations below the mega dams in Lesotho in Southern Africa. These flows have been released following an IFR flow release policy for 5 years now. The policy was derived after the environmental flows requirements were determined using the DRIFT method. This may be the first time that a fully operational flow management system is going to be audited after several years of operation.

**If you know of any other similar situations, Chris and his team would really like to compare with others.** Please reply to [DickensC@ukzn.ac.za](mailto:DickensC@ukzn.ac.za).

**Environmental Flows Newsletter – Your input is needed!!**

The Environmental Flows Network Newsletter will be issued at least twice a year and up to a maximum of six times a year, interspersed with periodic updates.

The network is putting together the next newsletter, and would like your contributions. This can include:

- Experiences on water management that involves water allocation and environmental flows
- Case studies (i.e. Problems and solutions to water allocation and environmental flows in your region)
- Reports on ongoing or recently completed research
- Results of recent seminars, workshops and conferences involving environmental flows
- Upcoming events relating to environmental flows
- Announcements and awards
- Recent publications
- Tools and resources



Please send your contributions to [Karen.Meijer@wldelft.nl](mailto:Karen.Meijer@wldelft.nl) or [env\\_flows@indaba.iucn.org](mailto:env_flows@indaba.iucn.org) by **February 15<sup>th</sup>, 2007**.

### International Environmental Flows Conference

This is a reminder to submit abstracts for the International Environmental Flows Conference in September 2007. The deadline for abstracts is very soon - January 31st. Details are available at: <http://www.riversymposium.com/index.php?page=submissions>. In order to have a good cross section of abstracts from across the world so we encourage you to submit an abstract relating to environmental flows in your country or region.

For a full list of topics and definitions and for submission procedures visit [www.riversymposium.com](http://www.riversymposium.com)

There is the possibility of receiving funding BUT only if you submit an abstract before the deadline. The application for funding from the River Symposium can be found at: <http://www.riversymposium.com/index.php?element=2007AssistedDelegatesGuidlines>. I will also provide information on further opportunities from the Environmental Flows Network.

### 2007 Theiss Riverprize Nominations

The 2007 Theiss Riverprize Nominations are now open. Awarded during the *Riversymposium* for outstanding achievement in the restoration and preservation of rivers and waterways across the world. The International Thieess Riverprize of AUD\$225,000 and National Thieess Riverprize of AUD\$75,000 is supported by the [International Riverfoundation](#), established to advocate the protection and restoration of the world rivers and waterways for future generations.

- [Download nomination form and judging criteria](#)
- [Download International Riverfoundation quarterly newsletter, RiverConnect](#)

### Announcement: Mini-symposium Environmental Flows & Human Well-being

#### **Announcement: Mini-symposium Environmental Flows & Human Well-being**

Delft Hydraulics is organising a mini-symposium on Environmental Flows and Human Well-being in Delft, on April 12<sup>th</sup>, 2007. Speakers will introduce the topic of the symposium from various angles (environmental flows assessment methods, IWRM, social science), after which the discussion will concentrate on what next steps should be taken to better include human well-being in environmental flows assessments, and on what questions future research should focus. Persons interested in attending the symposium can contact Karen Meijer at [Karen.Meijer@wldelft.nl](mailto:Karen.Meijer@wldelft.nl).

### Environmental Flows Survey

The survey conducted by the Environmental Flows Network is coming to a close. If you haven't had the chance to fill it out yet please visit <http://www.surveymonkey.com/s.asp?u=645422451807>. As we continue to put together funding resources, we are in the process of creating an interactive website.



For more information please contact:

Katharine Cross  
IUCN - The World Conservation Union  
Email: [katharine.cross@iucn.org](mailto:katharine.cross@iucn.org)



## Appendix 3 – Environmental Flows Seminar

### Programme - Environmental Flows: Creating Benefits for Ecosystems and People?

*An open discussion to explore the development of a global Environmental Flows Network of local and national practitioners and experts*

**Convenors: Stockholm International Water Institute, Delft Hydraulics, DHI Water & Environment, International Water Management Institute and IUCN – The World Conservation Union**

Chair: Dr. Ger Bergkamp, Head, Water Programme, The World Conservation Union (IUCN)

- 13:30 Welcome and Introduction. Dr. Ger Bergkamp, IUCN, Switzerland
- 13:45 Keynote Speech: Demand of Environmental Flows from a User Perspective. Washington Mutayobwa, Tanzania
- 14:00 Latest Developments in Environmental Flows: A Network approach to delivering progress Dr. Mike Acreman, Centre for Ecology and Hydrology, UK
- 14:15 Roundtable Discussions
- Participants discuss the implications for how the network will help face the challenges of implementing Environmental Flows, focusing on:
5. Environmental Flows generate benefits for people and ecosystems.
  6. Environmental Flows are essential for delivering the MDGs and for reducing poverty.
  7. Environmental Flows are an essential part of IWRM, River Basin Management and Environmental Impact Assessment.
  8. Environmental Flows needs Technical, Social, Political and Economic support for implementation.
- 16:30 Synthesis of discussions by facilitators of Roundtables
- 17:00 Conclusions including statements of the outputs from the seminar and the way forward

### Guiding questions used

#### *Part 1*

Determine the reasons why an environmental flow network would be useful in delivering results.

- What is the demand for an environmental flow network?
- Why is it urgent to meet the stated challenges?
- What is the vision for the environmental flow network?
- What are the goals for the environmental flow network to meet the challenge?

#### *Part 2*

- What will the network deliver (i.e. tools, reports, technical consultation, knowledge brokering)?
- How will the network achieve its goals (i.e. workshops, discussions, partnerships, create proposals)?
- Who is needed?
  - Who needs to be involved?
  - How will they be organized?
  - How will the network reach out to all actors and ensure their involvement?



## Summaries of seminar groups

### *Group 1 - Environmental Flows Generate Benefits for People & Ecosystems*

**What are the problems in relation to the statement that environmental flows generate benefits for people & ecosystems? What is the demand for an environmental flow network within this context?**

- Relatively new concept. Main issues are how and when to address environmental flows.
- Challenge of uneven distribution of water globally and thus EF for people & ecosystems vary across countries and regions.
- Rehabilitation of river systems linked to poverty issues but not easy to connect the two. Awareness-raising is needed to ensure EF for people and ecosystems is taken into account.
- How can sustainable livelihoods be reconciled with EF for nature.
- Dam development issues—EF not considered; rather emphasis is on capturing as much water as possible.
- Tension between rural irrigators and EF.
- How integrate EF with socioeconomic concerns related to fisheries.
- Need to link with the ecosystem goods and services concept.
- Must bring concept of catchment into consideration when looking at EF issues. Land use changes have dramatic impacts on flows.
- Must think about differences between perennial versus non-perennial rivers. Social component in perennial rivers very different than in non-perennial.
- Must think about what is the environmental protection target before trying to calculate EF.
- It is not just EF for EF, but for healthy floodplains, estuaries, etc.
- Need for clarity in defining what is EF for people and ecosystems.

**What role would the network play in meeting the demand for knowledge on applying EF to benefit people and ecosystems? Is there something that can be done by the network to address the problems?**

- Network could play a major role in awareness-raising on EF concept. It can help take this relatively new concept forward.
- Need experts to help identify when and why EF issues should be considered in a river system.
- It can help show how EF concept is applied in practice—show how projects are implemented on the ground.
- Perhaps regional blocs could develop where people could share their experiences as the social issues differ across regions.
- Help with translating good science into practice, particularly on issue of how to balance people and ecosystems.
- Help create a common understanding on what is the notion that EF generate benefits for people and ecosystems.
- The network could help people understand how to integrate socioeconomic issues with scientific/technical ones.

**What should be the vision for the network? What can the network deliver and how can it deliver it?**



- Get together people with different interests.
- Valuable if organized—not just a chat room.
- Credibility of the network is key—must have the backing of the organizations actively involved.
- Need core group involved proactively so that it can develop into something more than just exchange of information—possibly research, policy actions, etc.
- Efficient knowledge sharing system that can be fed with information through a series of workshops.
- Should not just add information but help people on how to use the information.
- Should not become EF club of the “elite” but help those lacking experience in EF—spread good examples of what works and what does NOT work is needed.
- Need a moderated listserv, as well as a website with documents and case studies.
- Danger of broadening things so network becomes too “thin” and loses its value.
- Perhaps could be involved in electronic publishing of peer reviewed articles—could lead the way in EF journal freely available and accessible to the public.
- Should share existing tool-kits developed by organizations.
- Network would be a hub with the spokes of the wheel looking at:
  - Sharing case studies
  - List of experts available
  - Conferences—EF conference to piggyback on existing conference each 3 years for example (perhaps Stockholm Water Week next time, somewhere in Africa after that)
  - Advocacy groups that could share information among themselves without the network becoming an advocacy network.
  - Government planning protocols shared and governmental policies on EF
  - Web based tools including access to training programs developed by other organizations.
- Must make sure to share tools and materials not only through the web since people in developing countries often lack reliable web access—share through CD roms, hard copies.
- Should have founding partners/originating partners and open membership.

**Group 2 -*Environmental flows are essential to deliver MDG's and to reduce poverty.***

**What is the demand for an environmental flow network? And what types of demand are there linked to the importance of environmental flow for delivering MDG's and reducing poverty?**

- Discussion of the statement showed that there is a need for clarifying the contribution of environmental flows to achieving MDGs and reducing poverty, in the context of the other water uses in the basin. Information on the benefits of environmental flows is urgently required. The network can play a role in this. Summary of discussing the issues of environmental flows linked to MDG's and poverty alleviation:
  - All participants agree that ecosystem goods and services can play a role in delivering the MDG's and reducing poverty. Because each basin is different, and other types of water use can contribute to delivering the MDG's as well, whether environmental flows are essential depends on the exact links between water and MDG's. Environmental Flows are required to maintain a healthy ecosystem, which can contribute to achieve the Millennium Development Goals. It may be better to talk about healthy ecosystems instead of about environmental flows. Environmental flows need to be considered in context. Actually, a need was identified to define environmental flows to facilitate the discussion.
  - Water abstractions and river regulation are also carried out to achieve the MDG's and reduce poverty. When people talk about MDG's, they talk about providing drinking water and sanitation to villages. There is a lack of understanding of the contribution of river flows via river ecosystems to MDG's and poverty alleviation. Benefits are created through river regulation and abstractions,



but at the costs of existing benefits downstream, which have not been quantified. When people talk about MDG's they think about providing water to villages, not about environmental flows. The benefits of the link between EF and MDG should be demonstrated to primary stakeholders.

- Discussion of over-allocated rivers. There may be benefits from having environmental flows in a river, but it is too expensive to change the river back to natural, for example through buying water right from farmers.
- In the Okavango delta, through participatory work, it was found that downstream people were willing to pay upstream people for maintaining the flows in the river.
- Many questions were raised, like: What is the condition of ecosystem you want in your river? To what extent is water quantity a determinant in this? How to involve stakeholders? How can awareness be created. A network is required to provide support in answering these questions.

### **Why is it urgent to have an environmental flow network related to the issues of MDG's and poverty alleviation?**

- A difficult issue is how to organise information in order to support people on the ground. In participatory decision-making people need to be informed. However, there are limits as to the amount of information people can take up and use. (For example, to promote the consumption of environmental and socially friendly produced tomato's, it may be better to discuss with supermarket owners, instead of providing lot's of information the various pro's and con's to the individual consumers. For the EF network this may mean that the steering committee should make a selection and not just convey all possible information).
- Information is required on the exact benefits of environmental flows.

### **What should be the vision and goals of the environmental flow network?/What will the network deliver?**

- Role in clarifying concepts, defining environmental flows;
- Role in certification, what is/what is not sustainable use of a river;
- promote education, increase awareness;
- funding of research;
- discussion forum for findings, ending up in concrete tools;
- training of local decision-makers;
- different information and training should be available for different levels of decision-makers;
- local decision-makers should be trained;
- network could identify cases of examples;
- website should contain list of who works where on a certain topic. members could be group according to main topics of interest/work;
- grouping information by country or region will be highly useful, especially when it concerns actual data on flow-ecosystem links in the specific region;
- the website could be organised through relevant questions, such as: how much water does my river need, although the exact answer cannot be given, this may appeal to decision-makers who are then guided through the steps to assess the environmental flow requirements;
- There is a difference between European countries where objectives are already set, and developing countries where the environmental flows needed to be traded off against other uses. This requires different approaches. The network/website can play a role in explaining the suitability of various approach depending on the circumstances;
- Facilitate studies on test sites, ability to assist in environmental flow studies;
- Network should provide access in terms of resources, people & knowledge;
- To decide on environmental flows, there are three processes that are or should be taking place:
  - Technical advice



- Political process
- Community process/participation

Actual decision-making takes place at the political level. Technical information can only to a certain extent influence decision-making. However, good data will make you feel more confident/comfortable when dealing with decision-makers. The network should be a technical network that can provide data. Once benefits are clear, local governments can be convinced.

- Provide best examples of links between economics and environmental flows;
- Support, e.g. through providing tool for quantification of benefits.
- A website for information sharing is important, but should not be all. Other activities to spread the concept of environmental flows and support assessments and implementation is to organise local workshops.

An unanswered question is to what extent activities are conducted by the network, or conducted by individual members who find supporting information and convey their experiences through the network.

### **Who should be involved in the network that will both use and provide support for environmental flows implementation?**

- If we want to contribute to linking MDG's and environmental flows, it may be useful to identify who is responsible for the MDG's. These organisations should be made aware of the link between flows and MDG's. Instead of generating the knowledge on MDG's ourselves, it would be better to link up with possible network, internet sites on the MDG's. Who these people are and whether a network or website on this topic exist is not known.
- Who is the target audience? How can people without internet access be reached? There may be potential end users who are not present in the current discussions, for example people at NGO's. Also, in a country there may be specialists in very narrow fields, who on their own cannot make an environmental flow assessments, but which can contribute a crucial component to the larger flow assessments, such as fish specialists, bird specialists. These people will by themselves not start looking for an environmental flows network, yet are potential users.
- Aim: expand the network. It's about people – how to involve more. Actively approaching relevant people for the assessment and implementation of environmental flows.

### ***Group 3 - Environmental Flows are an essential part of IWRM, RBM, SEA and EIA relating to land and water resources.***

#### **What is the demand for an environmental flow network in relation to this statement?**

- All participants agreed that the above statement is true, but there are widespread confusions as to how the various terms/concepts relate to or differ from each other → need for *clarification*
- A central 'blueprint' definition of eflows is lacking → need for *definition*
- Eflows are currently not well integrated into IWRM, RBM, EIA, SEA → need for *awareness raising and development of guidelines*
- Ecosystems (and people relying on ecosystem services) are silent water users → need for *giving voice to a voiceless constituency*

#### **Why is it urgent to meet the stated challenge?**

- The confusions regarding concepts are seen as a major constraint to promoting the concept/implementation of eflows and thereby to giving voice to 'the silent water user'
- Better cooperation/collaboration between environmental flows circles and all other water management circles are urgently needed to avoid further confusion



**What is the vision and goals for the environmental flow network?**

- To become THE central platform/reference point on eflows
- ‘Blueprint’ definition and scope/clarification
- Raise awareness among other water management related circles (academic, practitioners, etc)
- Get eflows explicitly accepted by/incorporated into IWRM, RBM, EIA, SEA guidelines
- In future – formulate a convention on eflows to be ratified by governments (like RAMSAR)

**What will the network deliver?**

- Definition of eflows
- Clarification of the links to other concepts, e.g. IWRM, RBM, EIA, SEA
- Links/cooperation with GWP ToolBox, [www.gwpforum.org](http://www.gwpforum.org)
- Links/cooperation with International Association of Impact Assessment (IAIA), <http://www.iaia.org/>
- Provide assistance to GWP, IAIA, etc. on environmental flows
- Develop guidelines and provide case-studies on eflows in relation to IWRM, RBM, EIA, SEA
- Input to IWRM, RBM, EIA, SEA related conferences

**Who is needed?**

- Contact persons at central IWRM, RBM, EIA, SEA institutions

*Group 4 - Environmental Flows needs Technical, Social, Political and Economic support for implementation.*

**What is the demand for an environmental flow network? And what types of demand are there for technical, social, political and economic support for implementing environmental flows?**

- Need to have a conceptual clarification of the meaning of EF → the network can provide this clarification as a central reference on environmental flows, but we need to be aware that the definition may be differing from region to region.
- The environmental flow network is needed to:
  - Influence managers
  - Influence policy makers
  - Reach users of environmental flows outside of experts and policy groups
  - To communicate the speed of degradation of river basins
- Knowledge for managers and policy makers is needed on environmental flows
- We need to create demand through emphasizing the economic value of environmental flows, therefore case studies are needed, specifically those that include valuation.
- The scale of demand needs to be identified, we need to consider the different levels of government, and different actors in society that would use information on environmental flows
- Information is fragmented and there needs to be a cohesive central reference point to bring it all together and distribute the best information more widely around the world.
- Communication tools such as the network are required to expand access to information on environmental flows
- Need to know what has already been done on environmental flows through a communication tool (i.e. the network)
- The term environmental flows is not always clear and the network could explore whether there is a demand for conformity or standard for environmental flows



- The network could be a conduit to equip practitioners with tools to create demand for environmental flows

**Why is it urgent to have an environmental flow network to provide technical, social, political and economic support for implementing environmental flows in water basins?**

- Information needs to be disseminated on the rate of degradation of watersheds to highlight the need for ensuring that environmental flows are a part of water allocation planning
- The understanding of environmental flows is low, so we need to have clear definitions and statements of why environmental flows are important.
- Many countries do not have the capacity to implement environmental flows even if they want to, so they need useful information on what approaches to take and how to move forward. The network could be the diverse source of information to support them.
- Tools for urgency are highlighted through benefits and losses, for example, water budgets can be used to explain how environmental flows is important

**What should be the vision and goals of the environmental flow network?**

- The EF network can be used to create link to other networks and raise awareness of environmental flow issues
- The network should be a clearinghouse of information (information signpost) rather than undertaking specific projects
- Have a Wikipedia approach with open access to share information
- Challenge of language → Could have different websites for different languages
- Consider having global and national levels of the network to overcome language barriers, however the use of diagrams, pictures, figure and photos can be very powerful in communicating scientific concepts and issues at both a basic level, political levels and scientific level. Language barriers are then not such an issue.
- The network can show how environmental flows are linked to all parts of the hydrological cycle → surface and groundwater, estuaries, standing water, etc
- Include impact assessment that has key performance indicators to see whether the network is achieving its objectives.

**What will the network deliver?**

- Universal database; clearinghouse of information
- Act as a navigation map → a document that clarifies various definitions, concepts, elements
- Provide a global bibliography on environmental flow information and documents
- Guide to methods and a decision tree
- Summaries of case studies
- Provide tools for scenario building to help water basin managers
- Members can share benefits on transboundary issues
- Perhaps link to a training program and accreditation
- Include definitions of technical terms and distill terminological differences
- Information needs to be sorted and clustered for easy access and dissemination
- Provide knowledge on who accesses information in the network and how they use the tools (i.e. if a lot of people are using a certain document, the network could keep track of who access the document and even be a conduit to conduct a survey asking how the document or toolkit is used)
- Live case studies with economic, technical and political updates
- Contribute to environmental impact assessment methods



- Provide information for universities to have exchanges or share curriculums that include environmental flows
- Include information on traditional knowledge
  - Improve understanding of traditional knowledge and how it can be used to implement environmental flows
  - Encourage participation of those with traditional knowledge
- The network could encourage members to undertake or share studies of basins derived from actual field work.
- Framework for environmental flow valuation
  - Environmental flows valuation calculator

#### **How do we disseminate tools?**

- Dissemination is dependent on the people who are involved in the network
- Economic valuation
- There could be different level tools depending on the technical knowledge
- Need to have an evolutionary approach that changes according to user needs and demands
- Education that incorporates innovative ideas
  - Making it relate on a personal level (through insurance and real estate)
  - Financial links
- Link to other networks, but perhaps we need a protocol to interact with different networks so that we have a consistent message

#### **Who should be involved in the network that will both use and provide support for environmental flows implementation?**

- Practitioners
- Policy makers
- Need to consider issues of access to the network → will people pay to become a member?
- We can have different nodes or groups within the network but their overlap and interaction within the network is important to ensure that information continues to be shared.
- Perhaps have a volunteer network to spread information on environmental flows and encourages public participation



## Appendix 4 – Environmental Flows Survey

### Section 1. Building connections to generate benefits for people and nature

Environmental flows refer to water provided within a river, wetland or coastal zone to maintain ecosystems and their benefits where there are competing users.

The Environmental Flows Network ([www.eflownet.org](http://www.eflownet.org)) is a way for people to access and share the latest information ranging from basic explanatory information to detailed scientific information on methods, as well as case studies, links, contacts or literature on environmental flows. The network connects water managers, NGOs, local communities, scientists and researchers, and governmental and intergovernmental agencies that are interested in sharing knowledge on environmental flows.

We would like you to fill out this short survey, which will take less than 10 minutes of your time to gather information on your experience and interest in environmental flows and the network.

Thank you for your time and cooperation.

To answer the questions, please type an x beside your response.

#### 1. I am interested in the Environmental Flows Network

- Yes (Go to question 3)
- No (If your answer is no, go to question 2)

### Section 2. Environmental Flows Network

#### 2. I am not interested in the Environmental Flows Network.

- My work is not related to Environmental Flows.
- I already have sufficient access to Environmental Flows knowledge and Information.
- Other (please specify)

### Section 3. Areas of knowledge

#### 3. Please select your area(s) of knowledge relating to water resources management.

Hydrology  
Hydrogeology  
Engineering  
Modeling  
Economics



- Governance
- Policy
- Law and Legislation
- Transboundary issues
- Civil society
- Social issues
- Agriculture
- Irrigation
- Fisheries
- Water infrastructure
- Hydropower
- Navigation
- Recreation
- Industry
- Water supply
- Flow regimes
- River basin management
- Climate change
- Wetlands
- Coastal zones
- Vegetation
- Freshwater species
- Water quality management
- Poverty alleviation
- Health
- Other (please specify)

#### **Section 4. Regional Experience**

##### **4. In which region(s) have you had experience in water basin management issues?**

- Africa - Eastern
- Africa - Southern



- Africa - Western
- Africa - Central
- Africa - Northern
- Americas - Caribbean
- Americas - Central
- Americas - South
- Americas - North
- Asia - Central
- Asia - Eastern
- Asia - Southern
- Asia - South-Eastern
- Middle East
- Europe - Eastern
- Europe - Western
- Europe - Scandinavia
- Europe - Mediterranean
- Oceania - Australia and New Zealand
- Oceania - Pacific Islands
- Other (please specify)

**5. In which specific countries have you worked on water resources management?**

**Section 5. Registration and Newsletter**

If you would like to receive our newsletter, or become a member of the Environmental Flows Network you can register below.

**6. I would like the network to share my contact details with other registered users.**

- Yes
- No

**7. I would like to receive the electronic Environmental Flows Network newsletter.**

- Yes
- No



8. If you would like to receive the newsletter please enter your email address below.

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9. I would like to register as a member of the Environmental Flows Network. (Please note that this does not oblige you to pay any registration fee but just indicates your interest in the network)

- Yes
- No

### Section 6. Personal information

Please provide your contact details to receive more information on the Environmental Flows Network.

This information will remain confidential and will only be shared with members of the network with your approval.

\* 10. Last name

\* 11. First Name

\* 12. Organisation

\* 13. Position

14. Address

\* 15. Country



**16. Phone number**

**17. Fax number**

**\* 18. Email**

**19. Other contact information**

### **Section 7. Involvement in Environmental Flows Network**

The Environmental Flows Network will have various levels of involvement. Selecting one of these categories does not commit you to specific responsibilities but informs us of your level of interest.

Casual user

- see discussion forums
- access downloadable information

Registered user

- Access to newsletter
- Alert to new information
- Access to lists of experts
- Contribute case studies
- Ask questions and enter discussion forums

Active members with responsibilities

- Management responsibilities which can be either thematic or regional
- Linking the network to expert groups that already exist
- Could be responsible for organising workshops
- Develop relationships with national organisations

Member of the Steering Committee

- Decide direction of network
- Larger management responsibilities of the overall network
- Organisation of workshops

### **20. What level of involvement would you want in the Environmental Flows Network?**

- Casual user
- Registered user
- Active member with responsibilities



- Member of the Steering Group

**21. Would you be willing to pay a \$10USD membership fee to be part of the Environmental Flows Network?**

- Yes
- No

### **Section 8. Input to Environmental Flow Network**

**22. Give a brief outline of a water or river basin management issue you are currently working on.**

**23. What help with your work would you look for from an Environmental Flows Network? (e.g. Documents, expert advice, discussion forums, case studies, distance learning courses, etc)**

**24. Please choose or add at least 2 critical functions you envision the Environmental Flows Network can fulfill.**

- Sharing knowledge
- Connecting people
- Building partnerships
- Discussion forums
- Access to documents
- Advice and consultation with other members
- Distance learning
- Access to case studies
- Other (please specify)

### **Section 9. Additional Feedback**

**25. How could we improve this survey?**



**26. Additional comments and suggestions**

**Thank you for completing this survey**

For more information on the Environmental Flows Network, please contact [katharine.cross@iucn.org](mailto:katharine.cross@iucn.org)



## **Appendix 5 – Database of Contacts**



## **Appendix 6 - Summary of Environmental Flows Network steering group meeting – August 21<sup>st</sup>, 2006**

### **In attendance:**

Mike Acreman, CEH  
Louise Korsgaard, DHI  
Karen Meijer, Delft Hydraulics  
Vladimir Smakhtin, IWMI  
Michael McClain, Global Water for Sustainability Program  
Brett Golden, Deschutes River Conservancy  
Angela Arthington, Griffith University  
Greg Thomas, NHI  
Michael Moore, SIWI  
Karin Krchnak, TNC  
Katharine Cross, IUCN

### **General feedback from seminar**

- The seminar contained people with different levels of knowledge and different opinions
- Most people came to gain, not to offer help
- There is a need to create a demand for environmental flows and the network
- Communication is key, especially on a personal level
- Don't want to reinvent what has already been done
- Everyone attending the seminar felt that they could have some level of contribution in the network
- Optimism for the network, but we must not promise too much – avoid building too high expectations, must not let people down, small steps needed
- Good discussions, but most responses very general, not specific actions for the network

### **Moving forward with the network**

- We need to have clear goals of what the EF network will achieve
- Need to have realistic steps to move forward
- We should start small and do it right
- But we need a 5 to 10 year objective
- Should examine how other networks operate (Diversitas, GWP, Global water system projects)
- Need to distinguish whether networks actually does things or supports → start as a clearinghouse for information
- We need to separate actions for the network (e.g. provision of information) and for members of the network (advocating EFs)
- Provide blueprint definition of environmental flows?
- Need to identify benefits on why people should join the network



### **Funding**

- Katharine will circulate the first draft of the budget, plus put together a revised budget of the costs over the next six months
- Mike will look into money for networks from the EU
- Swedish Water House? Include information from the seminar in their next policy briefing (Michael)

### **What so we want to achieve by the Environmental Flow Conference in Brisbane - September 2007?**

- Website with general information on environmental flows
- 50 organisations on the website, registered members
- Newsletter
- Independent mailing list
- Event at the conference

### **Immediate actions**

ACTION – web site is the hub of the network

- We need (1) host institution (2) organiser (3) newsletter - Vladimir
- Costs of web-site software and maintenance – Katharine/Vladimir
- TNC may be able to provide seed-corn funds



## **Appendix 7 – Environmental Flows Concept Note**

# Environmentalflows.net

## Creating a global network on environmental flows



### Environmental Flows Network

Knowledge and experience on environmental flows is spread all around the world, yet there is no central reference point where people can access or share information. For this reason, there is a need to create a network on environmental flows that provides the means for people to access and share the latest information. The network will connect water managers, NGOs, local communities, governmental and intergovernmental agencies, and scientists and researchers that are interested in sharing knowledge on environmental flows.



[www.eflownet.org](http://www.eflownet.org)

# Environmentalflows.net

## Creating a global network on environmental flows

### **What are environmental flows?**

Environmental flows refer to water provided within a river, wetland or coastal zone to maintain ecosystems and the benefits they provide for people.

The Environmental Flows Network aims to assist with the provision of solutions for river basin management that use equitable approaches to allocation of water among users. The Network will provide access to tools and expertise and facilitate sharing of experience, creating a support mechanism for poverty reduction strategies, especially in areas where water resources are limited or over-allocated.

### **What is the need for an environmental flows network?**

Activities under the Network will encourage broad dialogue on environmental flows to support the integration of the approach into standard practices for the management and use of river basins. The Network will reach out to stakeholders such as policy-makers shaping legislation on water allocation, water users from industry and agriculture, and fishers who rely on sufficient flows to support fishery stocks. The Network will provide a forum to support action by such groups in putting environmental flows into practice, which is essential if river basins are to be restored and managed in a manner that serves environmental needs alongside livelihoods and well-being.

Access to information, tools and discussion of experience through the Network will support stakeholders in developing solutions to water allocation, leading to greater water security and equity between users.

### **Enabling application of environmental flows in practice**

The Network will be a resource for people wishing to find and share information on environmental flows and how it applies to their surroundings. Enquiries from participants would be specific to their needs and could include requests for help on environmental flows.

This Network connects to NeWater as a portal for communicating the importance of adaptive water management in river basins. Organisations involved in NeWater are encouraged to join the network as it will provide opportunities to communicate their research and ideas to a global forum. Furthermore, the network ensures the sustainability and widespread dissemination of the NeWater project.

Lack of water is a major cause of poverty and ecosystem decline where river flows are limited or available water is over-allocated. The Network will enable rapid access to advice and sharing of solutions, thus supporting sustainable resource use and poverty reduction.

### **Environmental flow network deliverables**

The Environmental Flows Network will support a variety of activities which benefit stakeholders, including an interactive website with case studies, discussion forums, partnership development opportunities, a newsletter, and workshops and conferences.

These activities will connect members of the network, enabling them to share information, lessons learned and experiences on environmental flows. The network will be a vital tool in bridging the gap between science, policy and the wider community.

### **How you can get involved**

The aim is to showcase the network in September 2007 at the Brisbane Environmental Flows Conference. Investment and time are needed to effectively build a network that provides a global focal point when searching for information, discussion and advice on implementing environmental flows.