



# **UNESCO WORKING GROUP ON WATER EDUCATION AND CAPACITY BUILDING FOR SUSTAINABLE DEVELOPMENT**

## **1<sup>st</sup> MEETING REPORT**

**PARIS, 11-13 APRIL 2007**

### **1.0 INTRODUCTION**

The first meeting of the UNESCO Working Group on Water Education for Sustainable Development was held at UNESCO Paris from 11-13 April, 2007.

The purpose of the meeting was to review international trends, approaches and issues in water education with a view to providing advice to UNESCO on the development of an international work plan on Water Education for Sustainable Development.

A list of Working Group members and UNESCO Secretariat participants is provided in Annex 1. Apologies were received from Working Group members that could not attend the meeting (Rupert Maclean, Smt. Shantha Sheela Nair, Prof Roland K Price, Prof Houria Tazi Sadeq, Prof William Scott, Dr Waleed Zubari)

### **2.0 BACKGROUND**

The UNESCO Working Group on Water Education for Sustainable Development is an intersectoral body established by the Science and Education Sectors of UNESCO, in response to 166 EX/Decision 3.6.1 and IHP-IC resolution XVII-12 that called for the establishment of a working group on water education and for the development and implementation of an intersectoral strategy on education for the management of water as an integral component of the United Nations Decade of Education for Sustainable Development (DESD). As such, the Working Group functions within the context of the Millennium Development Goals and the International Decade for Action 'Water for Life'.

The role of the Working Group is to advise UNESCO, the International Hydrological Programme (IHP) and their partners on key issues, initiatives and strategies for raising awareness and advancing water education for the community, via the mass media and other communication channels, and for the school and vocational education and training (VET) education sectors.

The Working Group operates under the leadership of UNESCO-IHP, the Lead Partner for Thematic Programme 8 on Education for Sustainable Water Management of the UNESCO Action Plan for DESD. UNESCO-IHP is also developing the Seventh Phase of the International Hydrological Programme (IHP-VII) in which a programme theme on water education (Theme 5) has been created. Thus, a special responsibility of the Working group is

to advise UNESCO on ways of building synergies in the work plans for these DESD and IHP-VII programmes.

Annex 2 provides the Terms of Reference for the Working Group.

Annex 3 is a summary of the timelines for Working Group activities.

### **3.0 WORK OF THE MEETING**

The work of the meeting was conducted in four phases. The agenda for the meeting is provided in Annex 4.

In Phase 1, presentations were made by UNESCO staff on:

- *The Role of the UNESCO Working Group on Water Education and capacity Building for Sustainable Development* - András Szollosi-Nagy
- *UNESCO's role in relation to UN priorities* – Mark Richmond
- *Progress in the Decade of Education for Sustainable Development* – Aline Bory-Adams

*The water research and education activities of UNESCO-IHP, Planning for IHP-VII, the World Water Assessment Programme, UNESCO-IHE, UNESCO ASP-Net, and UNESCO-UNEVOC* – András Szollosi-Nagy, Miguel F Doria, Alexander Otte, Shaminder Puri, Sigrid Niedermayer, and Naing Yee Mar.

In Phase 2, members of the Working Group presented case studies of water education in their region/country. These included:

- *Western Europe and North America* – Stephen Gough
- *Asia* – Liu Yunhua
- *Africa* – Jim Taylor
- *Central and Eastern Europe* – Eva Csobod
- *Latin America and the Caribbean* – Alvaro Aldama
- *The Pacific* – John Fien

In Phase 3, all the background information was discussed and synthesised into a set of principles to guide the development of a cross-sectoral UNESCO work plan on water education relevant to DESD Action Plan Thematic Programme 8 and IHP-VII Theme 5.

### **4.0 ISSUES PAPER**

A draft Issues Paper was prepared for the meeting in order to review the world water situation and identify the water issues that are of potential significance in education settings. The paper also reviewed the world-wide pattern of educational responses to the world water situation in the areas of school education, the training of water technicians, community and stakeholder education and the role of the mass media in water education. The paper will include inputs from the Working Group members and a final version will be published by IHP later this year.

## 5.0 REGIONAL PRESENTATIONS

### 5.1 Western Europe and North America

*Stephen Gough (University of Bath)*

A great many materials about water education are available on the web. For both primary and secondary education there are teacher resources, curriculum links, learning packs, posters, school assembly materials, details of educational visitor centres and interactive websites. These are posted by development agencies, not-for profits, water companies, UK Environment Agency, US EPA, Project Wet, Local Government bodies and others. They concern health issues, drought action, conservation, pollution, the hydro-cycle, sustainability, international education and water conservation for business. In short, we may say that water education is a term that covers a great many different possibilities, and is of concern to a great many different interest groups with different principal concerns. Many of these have links to established school curricula.

That said, the policy context is helpful for an expansion of water education. Examples of this context include the following:

- The UK Government's *Code for Sustainable Homes*
- *Envirowise* business advice in the UK 'to increase profitability and reduce environmental impact'
- The UK Office of Government Commerce *Watermark* initiative, which includes a benchmarking tool
- The EU 2000 *Water Framework Directive* to achieve good water quality across the Union by 2015
- The US EPA *Watershed Academy*, which aims to improve the management of water resources, including river restoration and water protection
- The recent establishment of a firm scientific link between the drinking of water by school pupils and their learning.

There is also a useful climate of Corporate Social Responsibility. For example, the Cadbury Schweppes Corporate and Social Responsibility Report for 2006 states: "*Our goal is to minimise the environmental impacts of our business ... We have aspirational group-wide targets for our manufacturing sites to reduce by 10% from 2006 to 2010 the amount of energy and water they use*".

Further, there are many organisations concerned to promote water education as part of a wider commitment to promote development.

However, a number of constraints also exist. These include variations between different contexts, the opportunity cost of curriculum time, the existence of competing priorities, the cost of water at the margin, and the juxtaposition of narrow rich-world concerns about efficiency with wider concerns about global justice.

### 5.2 Asia – with a focus on China

*Liu Yunhua (WWF-China)*

With only 7% of water resource of the world but 21% of the global population, China is facing serious water problems. These include water shortage, water pollution, and soil erosion. To solve the problems, large scale measures have been taken at national level, which include the massive south-north water diversion scheme, big dam building, and relocation of people on a grand scale in the attempt to protect the sources of important rivers. While having perhaps reduced some pressure on water needs, these measures have obvious side effects that could potentially cause more problems, socially and ecologically. In search of more

effective and sustainable solutions, local communities have started to take matter in their own hands, to engage in processes of learning and action for sustainable water resource management in their local areas.

Two such projects from China were introduced at the UNESCO water education meeting. The first is a school-based project called *Education Initiative for Shangri-la Rivers and Lakes*, which aims to empower local communities to actively participate in protecting their nature and culture heritage in Shangri-la area. Local school children act as agents of change throughout the project. The project has three objectives: 1) encourage student-directed, interdisciplinary, hands-on learning approaches through local watershed care projects; 2) promote school-community cooperation in six watershed sites in Shangri-la for 300 students in grade 4-8 to participate in caring for their environment and community; and 3) improve watersheds in selected areas of Shangri-la through restoration projects.

A second example is *Shangri-la Sustainable Community Initiative*, which is composed of two main elements: community learning and action, and the establishment of a mechanism to support and sustain the learning. The project focuses on empowering communities to become a major force of conservation and sustainable development through involvement in local actions. This learning and action are taking place at three levels; 1) facilitate learning to increase individual knowledge, skills and commitment, 2) encourage local environmental stewardship through development of collective wisdom, voices and action and 3) increase impact and effectiveness of local action by connecting to broader social, economic and ecological structures and participating in processes of decision making.

Three lessons from the projects were shared. The role that local culture and tradition play is indispensable to the success of the projects. Community learning and empowerment process is closely linked with the daily lives of the local people. Finally, networking and partnership building are key to help disseminate the learning and scale-up the impact of the action.

### **5.3 Africa**

*Jim Taylor (SADC-REEP & WESSA) & Nick King (Endangered Wildlife Trust)*

The presentation commenced with an overview of climate change and water issues in Africa. It reflected on the Stern Report (October 2006) mass-mediated reports and the 4<sup>th</sup> IPCC Report (Feb 2007) as representing a global 'tipping point' in terms of environmental concern.

Particular statistics relating to freshwater risks in Africa were then outlined. River basins as well as river treaties were then represented graphically as were sites of dispute and conflict linked to water. Water availability in the SADC region was also explored as was the risks and unsustainability of out-dated engineering approaches. A call for holistic water management, the rehabilitation of catchments and an exploration of the payment for eco-logical services (PES) concept concluded this part of the presentation.

#### **Awareness Strategies**

In the second part of the presentation examples of global environmental awareness campaigns were explored. Examples from Malaysia, Sweden, Kenya and the UK were summarised. It was concluded that it is not difficult to make people aware of issues! The ability to interpret and respond to issues and risks in an informed manner, however, simply does not come from 'one-way' awareness strategies. People may develop awareness and appropriate attitudes, they may "know about" and can even "talk about" environmental issues and risks. But reflexive competence or the ability to respond actively and in an informed manner does not necessarily follow from such awareness experiences! A healthy balance between compliance (law & policing), awareness and meaningful capacity building (education) was called for.

### **Reflexive Competence**

The presentation then explored awareness efforts through presentations, workshops and forums and concluded that for meaningful change and reflexive competence to develop educational processes are needed that 'mobilise prior knowledge and experience'. The importance of exploring environmental issues and risks through questions relating to information seeking, the reporting of issues, fieldwork (experiential learning) and action taking was emphasised.

### **Concluding Comments**

One should work with people not on or at them, and engage with their issues and concerns, rather than simply targeting others with messages in the vain hope that meaningful change will result. In some circumstances, targeted communications may even alienate people. Approaches to learning, where the tools of science are shared, such as 'citizen science' or the so-called 'science shop' concept were then described as useful innovations to support people to engage with environmental issues and risks.

It was pointed out that community (through shared action and trust) is more significant than communication if meaningful social change is to come about. Learning to ask better questions may be better than remembering clear messages! The notion that knowledge springs from discontinuity, if the discontinuity is acknowledged and addressed, was also articulated and explained.

A number of projects currently being undertaken in Africa such as the Mainstreaming Education for Sustainable Development in African Universities (MESA), a UNEP/UNESCO initiative, was then outlined. Transfrontier projects such as the Maluti (Lesotho and RSA) and Nile Basin Initiative were referred to. A wide range of innovative approaches to water quality management and sanitation such as urine separation toilets, hand-washers and health, as well as indigenous knowledge examples were then outlined. These were contextualised with the "Catchments to Coast" Enviro-Picture Building resource. The session ended with an invitation to all delegates to attend the Fourth World Environmental Education Congress which is to be held in Durban, South Africa from the 2 – 6 July 2007.

## **5.4 Central and Eastern Europe**

*Eva Csobod (Regional Environmental Centre, Country Office Hungary)*

Formal education is in transformation/reorientation in the CEE from traditional towards learner focused, issue oriented teaching and learning. The water topics are integrated in the subject teaching, in biology, chemistry, physics, geography. In the last ten years the subject teaching is moving towards better integration of water topics, based on complex environmental problem, water conflicts and IWRM. There are several new challenges for the IWRM, as the trans-boundary water pollution issues, climate change, flood and water prize. Matching to the new challenges new curriculum topics as water quality/quantity issues, sustainable resource management appear in the formal school curriculum combined with new methodology : value orientation in teaching, capacity building in critical thinking, future orientation.

The characteristic of the future water education related to sustainable development in the CEE: Water topic calls for inter-disciplinary teaching:

- to improve knowledge (scientific and community based)
- to develop skills for assessment/decision making/recommendations
- to develop responsible attitude and behaviour
- to facilitate the development of active, competent citizenship

New methodology:

- attractive and exciting teaching and learning
- use „green lessons” entertaining, illustrative/informative
- focusing on visible problems-discussion future trends/ alternative solutions
- promote co-operative learning, (on water conflicts, trans-boundary issues)
- facilitate communication- building social competences

## **5.5 Latin America and the Caribbean (Mexico)**

*Dr Alvaro Aldama (Mexican Institute of Water Technology)*

The Mexican Institute of Water Technology, from now on IMTA, its abbreviation in Spanish, is an organization of the Mexican Federal Government devoted to research, technology development and transfer, and education for the sustainable management of water. Three successful cases in which IMTA has participated and that have included efforts in stakeholder, community and teacher water education will be briefly described as follows.

The first one relates to integrated water resources management in the Lerma-Chapala basin, one of the most important watersheds in Mexico, due to both its population concentration and its economic activity. The main watercourse in the watershed, the Lerma River, discharges into Chapala Lake, the largest surface water body in the country and the main source of water for Guadalajara, Mexico's second largest city. The basin includes territories belonging to five states: State of Mexico, Queretaro, Guanajuato, Michoacan and Jalisco. Very complex hydrological topology and social fabric, as well as intense competition for water, particularly between Guanajuato's farmers and the city of Guadalajara in Jalisco posed a very difficult water management problem, particularly in low precipitation periods. Indeed, the Lake had lost 70% of its stored volume in a decade and was in danger of disappearing. Consensus among users could not be reached, as their positions were opposite and based on opinions, rather than facts. IMTA performed a series of scientific studies that led to the development of a simulation model and an optimization model that were used to study different climatic, demographic, economic, technological, and management scenarios. The users in every state represented in the basin retained consultants that composed a high-level technical group that worked as an expert panel under the guidance of the National Water Commission and IMTA. The Institute trained the expert panel in the use of the models and the expert consultants in turn related the results to the users in plain and easy to understand terms. This created a climate of trust, and after 30,000 man-hours, consensus was reached and a so-called "Joint Operational Management Policy" was defined as the basis of an agreement for the management of water in the basin, that was signed by the users, the governors of the five states and the President of Mexico, as Witness of Honor. The above mentioned operational policy has performed very well, even in low-precipitation, low-flow periods.

The second case relates to community education within the framework of the Program for the Environmental Restoration of the Lake of Patzcuaro Watershed. This program is the response of the State Government, the Municipal Governments, NGO's, and a private foundation, coordinated by IMTA, to the environmental degradation exhibited by the watershed, due to unsustainable agricultural practices, non treated waste waters discharged to the lake, deforestation, soil erosion and water pollution. Unsustainable natural resources exploitation is intimately related to poverty in several communities throughout the basin. The inhabitants of these communities did not have access to water or basic sanitation. The problem is compounded by the fact that such communities are dispersed and conventional water supply and sanitation schemes are not economically feasible. Thus, IMTA initiated the massive transfer of appropriate technologies to the communities, on the basis of an education program that included training not only on the operation of such technologies, but the construction of the devices required for their use. The transferred technologies include rain water harvesting and storage, biofilters and biodigestors for domestic waste water treatment, fluidic devices for the efficient use of water in backyard lots for the production of

fruits and vegetables, solar disinfection, and, notably, artificial wetlands for municipal waste water treatment.

The third case involves a program for the training of K-12 teachers in water-related activities that may be incorporated in their regular courses and adapted to teach various subjects, such as natural sciences, history, geography, mathematics and so forth. IMTA signed an agreement with Project WET International and has adapted many of their materials to be used in Mexico. The key word in the previous phrase is adaptation. The effort was done in such a way that the materials were not only translated but tropicalized, so to speak. Thus, the Project WET guide became the ¡Encaucemos el Agua! guide, which includes fun-to do, hands-on activities that allow the students to “learn by doing”. The guide has been used to train thousands of teachers in water education throughout Mexico. IMTA has also collaborated with Project WET on the development of watershed-specific water education guides for two international basins: the Rio Grande/Rio Bravo basin, and the Colorado River basin, within the framework of the Discover a Watershed series. Thus, guides and booklets for each of the basins has been published, both in English and in Spanish, and used to train teachers in both basins. IMTA has also employed the methodology of the Discover a Watershed series to publish a water education guide for the Program for the Environmental Restoration of the Lake of Patzcuaro Watershed, and has used it to train nearly one thousand teachers in the basin. Recently, IMTA led the effort for the production and publication of an Spanish water education for teachers guide for the Spanish speaking countries in the Americas, in collaboration with UNESCO and Project WET International, as well as various organization of various countries throughout the region.

## 5.6 The Pacific

*John Fien (RMIT University, Australia) on behalf of Live and learn Environmental Education, Fiji*

Pacific Island governments, inter-governmental organisations and non-government organisations met in July 2002 to discuss pathways to sustainable water management in the South Pacific. Ministers from 18 Pacific Island countries endorsed four recommendations

- The development of a high quality participatory framework for water education at the national level to allow for open participation of communities in sustainable water and wastewater management.
- Access to, and availability of information on, sustainable water and wastewater management should be provided to all levels of society.
- Water and sanitation education should be mainstreamed into the formal education system.
- Improve communication and coordination of all stakeholders in sustainable water and wastewater management including government, civil society and the private sector.

These recommendations provided a framework for developing an educational response that will actively encourage sustainable management of water resources in the Pacific. Many education programs in the past have focused on dissemination of information and assumed that people had the knowledge to use this information. Other programs have provided pre-determined solutions to resolve immediate problems and have not allowed for the building of community capacity and long-term practice. There is an essential need to develop a new educative paradigm that allows for the gradual development of critical thinking and the testing of new community-led ideas to water management. Critical thinking allows for challenges to be directed to intrinsic unsustainable practices and thus promote change through commitment, open-mindedness and participatory decision-making. It encourages the community to reflect and consider the testing of new ideas.

This educative paradigm of critical thinking is relevant to water education in two areas: firstly the responsibility that communities, governments and individuals have towards ensuring there is enough water for future generation and secondly the recognition of water as a basic human right. Overall this requires discussion of management issues, partnerships between the community and various stakeholders and reflection on equality of access to water and the sharing of water resources. A

responsibility/rights-based approach to water education is complex but necessary. It adds a new dimension that looks at why the difficult socio-economic issues surrounding water need to be resolved in an ethical way. Whilst It is important to recognise “what is” it is also necessary to shape community practice and government policies “what can be”. Thus the path towards sustainability starts in peoples’ minds and it needs to go far deeper than just a problems solving exercise. The path we choose to take needs to reflect and sustain social democracy, moral economy, justice and citizenship.

Such an educative paradigm carries significant cultural and ethical complications. It is likely to challenge both traditional values and contemporary culture as it is impossible to achieve new thinking whilst maintaining a traditional society. It is possible, though, to use the cultural fabric as a basis for new thinking and to recognise social values provided that it engages everyone in identifying and justifying values, aspirations and agendas. This engagement will be effective only if participants can accept that challenges and conflict that are bound to occur and can recognise that negotiating compromises are not signs of weakness but are a sign of strength.

Water issues have immense capacity to both, limit and advance human development and these capacities are mediated by social processes: social processes that are guided by governance and decision making, thus governance must be a cornerstone in environmental education. Across the South Pacific, SOPAC and Live & Learn Environmental Education are working in partnership to strengthen the impact of water education. Considerable emphasis has been placed on creating links between social processes and water as a natural resource. Some of the principles being followed include:

- Strengthen local knowledge as a change agent through education.
- Inclusion of human and social dynamics in all learning processes.
- Learning processes should aim towards developing sustainable lifestyles and livelihoods.
- Learning approaches should aspire to build the capacity of young people to critically reflect and mobilise action.
- Ensure education is not restricted to a specific ecological area.
- Ensure education is relevant and starts where people are at.
- Building capacity for advocacy and awareness of the impact from regional and global dynamics

These principles represent a new educative paradigm that introduces innovative thinking skills in schools and communities, which work on the recognition that everyone has a right to water and a responsibility to protect water resources can provide for new opportunities in water education. Water education focusing on giving the learner the skills to build inclusive dialogue whilst strengthening the capacity of communities to be a contributing partner in water management is the way forward.

## 6.0 PRINCIPLES TO GUIDE TO DEVELOPMENT OF A WATER EDUCATION WORK PLAN

An analysis of the Issues Paper, the UNESCO presentations, and the regional case studies led to the development of a set of guiding principles for the development of a cross-sectoral UNESCO work plan on water education relevant to DESD Action Plan Thematic Programme 8 and IHP-VII Theme 5, in particular within the thrust of educating the general public and stakeholders, included:

- In order to reach all its potential, water education needs to be seen as a contribution to the broader goals of, and as a contribution to, Education for Sustainable Development.
- The possible tension between the desire of educators to use water as a medium for quality education and the desire of water scientists to use education as a means of achieving sustainable water management needs to be addressed in ways that meet the needs of both groups.
- Water education programmes should build on existing community practices and actions wherever possible
- Innovations and materials in water education need to be contextualised to local situations, especially with opportunities for teachers to adapt/develop their own materials
- Water education programmes should encourage indigenous knowledge and traditional practices (but not romanticised) and use these to guide selection of appropriate technologies
- Water education programmes should not rush communities and learners, but rather should follow a step by step approach working to the timelines of local communities
- Water education programmes should seek to strengthen the 'organisational fabric' of communities, and build links across communities, NGOs, industry and government
- Water education programmes should link education to broader strategies and policy frameworks, in particular the MDGs, DESD and EFA.
- Water education programmes should seek to mobilise and support the existing capital of ideas, resources, networks, etc., building on community assets within a rights-based approach
- Water education programmes based upon linear "information → behaviour change" approaches have been found to be less successful than action learning approaches
- Water education programmes should seek to build trust between all stakeholders through shared actions and dialogue
- The "content" of water education programmes must be useful to local environmental issues and risks. This is because meaning is made within community and with people, rather than through the "receiving" of messages.

## **7.0 SUGGESTED ACTIVITIES FOR A UNESCO WATER EDUCATION WORK PLAN**

The suggested activities for a UNESCO Water Education Work Plan, which will be further revised by expert group members and the IHP Bureau, include:

### **Focal area 1: Tertiary education and professional development of water scientists, engineers, managers and decision makers**

#### ***Objectives***

This focal area aims to enhance education and training programmes for water scientists, engineers, managers and policy makers through an extended suite of activities designed to educate a new generation of water managers and decision makers who are able to apply a holistic, integrated multidisciplinary approach to water resources. It also seeks to catalyse the wide dissemination of scientific research results and for communication and adoption strategies to be made an integral part of all IHP projects.

#### ***Activities***

- Survey and prepare case studies of examples of leading practice in undergraduate and postgraduate education and short course training in Integrated Water Resources Management (IWRM).
- Analyse case studies and prepare guidelines and Briefing Papers on professional education and training in IWRM.
- Conduct regional workshops to promote the understanding of the guidelines and Briefing Papers and to build capacities for their adoption in regionally/nationally appropriate ways.
- Develop strategies for fostering dialogue across disciplines, especially to ensure that cultural values, local traditions, historical experience and other factors influencing attitudes and behaviours towards freshwater are taken into account in water resources development.
- Set up a strategy to strengthen collaboration between UNESCO-IHE, UNESCO Category II water-related Centres and UNESCO Chairs, other UN system agencies and programmes, and existing international water-related education programmes.
- Establish master courses and short-courses in water education at IHE, focusing on water education at the school and community level.
- Assess regional needs and priorities in water education and strengthen water education capacities in developing countries.
- Develop guidelines and strategies for facilitating communication among policy makers, practitioners and research scientists, and develop the capacity of those in charge of planning, development and making decisions on water issues to understand the results of research on water science and technology and related policy implications.
- Develop an interdisciplinary approach and exemplar educational materials and case studies, on topics such as conflict resolution and the management of shared water resources, including training material on legal, socio-cultural and historical aspects.
- Prepare guidelines for the integration of sustainable water uses and management into the operations of governments and of key institutions.

#### ***Outputs***

- Guidelines to solve problems of communicating interdisciplinary information on water.
- Recommendations for broader curricula and exemplar educational materials and case studies.
- Creation of data bases - clearing house for the sharing and dissemination of interdisciplinary curriculum and teaching materials.
- Assessment and pilot studies of regional needs in water education.

**Benchmarks**

- Promote the interdisciplinarity among university and professional development courses.
- A communication process made integral to all IHP projects.
- Increased synergies of UNESCO-IHE Water Education Institute, the water-related UNESCO category II Centres and Chairs, other UN agencies, and existing international water-related education programmes in relation to university and professional development courses.

**Focal area 2: Education and training of water technicians****Objectives**

This focal area aims to expand the integration of principles and technologies for sustainable water management, assessment, supply, treatment, community-based water and sanitation services, and water conservation into Technical and Vocational Education and Training (TVET) of water technicians.

**Activities**

- Survey and prepare case studies of examples of leading practice in various areas of sustainable water management in water technician training.
- Analyse case studies and prepare guidelines and Briefing Papers on sustainable development and sustainable water management for TVET decision makers.
- Conduct regional workshops to build understanding of these and capacity for adopting them in regionally/nationally appropriate ways.
- Support national demonstration projects in selected Member States on TVET for sustainable water supply and treatment, community-based water and sanitation services, and water management and conservation, and establish a process to learn the lessons from them and share the lessons widely.
- Build a partnership between IHP, IHE and other water-related centres with UNESCO-UNEVOC for promoting innovation in the training and accreditation of water technicians.
- Develop prototype/model competency frameworks for training water technicians and a range of instructional support materials.
- Develop institutional frameworks and guidelines for the accreditation of water technicians by independent institutions.
- Contribute to a UNESCO-IHP international conference on water education.
- Contribute case studies to a UNESCO-IHP book on water education.

**Outputs**

- Guidelines for integrating sustainable water management in water technician training.
- Prototype/model competency framework for training water technicians and associated support materials.
- Guidelines for the accreditation of water technician training.
- Case studies, best practices and publications on water education within TVET.

**Benchmarks**

- Significant increase in the number of countries and courses focusing on sustainable water management in technical training.

### **Focal area 3: Water education in schools**

#### **Objectives**

This focal area aims to build the capacities of education systems to make water a significant part of the K-12 curriculum, so that young people have an opportunity to develop (i) an understanding of the complexity of water issues related to the quality of life, in both local and global contexts, (ii) a commitment to water ethics, and (iii) skills for contributing to sustainable water management in the local community.

#### **Activities**

- Survey and prepare case studies of examples of good practices in K-12 water education around the world connected to sustainable development.
- Analyse case studies and prepare guidelines and Briefing Papers for education decision makers on the significance of water education related to sustainable development, its role and place in the learning process, and implications for curriculum and professional development.
- Develop guidelines for interdisciplinary curriculum planning and innovative ESD pedagogy in water education to model effective teaching and learning in schools.
- Conduct regional workshops to build understanding of these among education decision makers, as well as educators and students, and their capacity to adopt them in regionally/nationally appropriate ways.
- Support national demonstration projects in selected Member States on K-12 water education, focusing on curriculum and professional development fitting to ESD.
- Recommend and promote the recognition of water education activities for career progression of teachers.
- Develop professional development programmes so that teachers and curriculum officers develop an understanding of world water issues, including their relationships with sustainability, and the curriculum and pedagogical skills for integrating water issues into activities for their classes.
- Using the experience of UNESCO Associated Schools (ASPnet), facilitate twinning between schools in different countries around water-related projects to encourage innovation in pedagogical material and approaches and professional development
- Establish processes for sharing experiences in, and developing guidelines for, writing and/or adapting water education materials.
- Establish inter-regional dialogue across leading centres of water education for sustainable development in different parts of the world as a strategy for sharing innovative practices and resources.
- Establish courses in innovative water education for teachers at IHE and other water-related centres.
- Ensure that pedagogical materials for World Water Day are prepared annually.
- Actively support the Children's World Water Forum.
- Contribute to a UNESCO-IHP international conference on water education.
- Contribute to a UNESCO-IHP book on water education.

#### **Outputs**

- Guidelines for integrating water education related to sustainable development into the K-12 curriculum, with emphasis on "learning by doing" or "experiential learning" approaches.
- Prototype education support materials at the regional level.
- Regional prototype teacher education programmes.
- Case studies and publications on water education within the K-12 curriculum.

#### **Benchmarks**

- Significant improvement in the teaching quantity and quality of water issues in the K-12 curriculum.

## **Focal area 4: Community and stakeholder education**

### ***Objectives***

The aim of this focal area is to build the capacities of water scientists and managers, community educators and NGOs to utilise a wide range of community education strategies in order to promote community-wide water conservation and sanitation and health practices as well as skills in local co-management of water resources.

### ***Activities***

- Survey existing methods of public participation, action learning, conflict resolution and arts-based education in development and environmental decision-making and analyse their applicability in water management
- Survey and prepare case studies of examples of leading practice in community and stakeholder water education around the world.
- Analyse case studies and prepare guidelines and Briefing Papers on community- and stakeholder-based approaches to sustainable water management.
- Conduct regional workshops to build understanding of these and capacity for adopting them in regionally/nationally appropriate ways.
- Support national demonstration projects in selected Member States on community- and stakeholder-based water education.
- Develop training courses and a UNESCO-IHP website on community education resources and strategies to assist Member States in promoting community-wide water conservation and sanitation and health practices as well as skills in action learning, conflict resolution and the arts and cultural practices in the local co-management of water resources.
- Contribute presentations to a UNESCO-IHP international conference on water education.
- Contribute case studies to a UNESCO-IHP book on water education.
- Support the active involvement of NGOs at large international water events

### ***Outputs***

- Production of guidelines, supported by practical examples, for public participation in water management decision-making.
- A community education website managed by UNESCO-IHP.
- Demonstration projects on community-based water education strategies in several Member States focused on action learning approaches and the diffusion of their evaluations.
- Case studies and publications on community-based water education.

### ***Benchmarks***

- Significant increase in the use of community-based water education strategies.

## **Focal area 5: Water education for mass-media professionals**

### ***Objectives***

The aim of this focal area is to build the understanding of the importance of world water issues among journalists, editors and the producers of radio, television, film, multimedia and other media resources as well as their capacities to communicate water issues effectively.

### ***Activities***

- Prepare guidelines, training materials and exemplar materials to support mass media reporting of water issues and the use of the media by community organisations as a strategy for water education.
- Develop training for journalists connected to the World Water Forum for dissemination of complex water issues, good regional and country cases.

- Build partnerships to facilitate training workshops on water reporting.
- Contribute to a UNESCO-IHP international conference on water education.
- Contribute to a UNESCO-IHP book on water education.

### **Outputs**

- Production of guidelines, supported by practical examples, for water-focused journalism by media professionals.
- Case studies and publications on community-based water education.

### **Benchmarks**

- Significant increase in the amount and quality of media reporting of water issues.

## **8.0 RECOMMENDATIONS**

The Working Group commended UNESCO for its commitment to developing and implementing a cross-sectoral water education programme and for the wide regional representation involved in its development.

The Working Group endorsed the plan from IHP-IC resolution XVII-12 to present a declaration on water education to the 2007 General Conference.

The Working Group recommended that the following actions be undertaken:

1. The suggested activities in Section 7 should be developed into a cross-sectoral UNESCO Work Plan on Water Education for Sustainable Development, integrating activities across DESD Action Plan Thematic Programme 8 and IHP-VII Theme 5, wherever possible.
2. The name of the work plan should be “Water Education for Sustainable Development” and this term close to the one in the DESD Action Plan Thematic Programme 8.
3. The work plan should be concentrated for delivery at the country level, focusing upon helping to create an enabling environment and enhanced capacity for Member States to implement nationally and locally relevant water education programmes.
4. Activities in the work plan should be sequenced for the presentation of major reports and key resources at World Water Forum V, and the International Conference on Education and General Conferences of UNESCO.
5. UNESCO should take a leading role in the organisation of thematic sessions on water education and the Children’s World Water Forum.
6. The Issues Paper prepared for Meeting 1 should be extended, with input from members of the Working Group, and published by UNESCO as “An Introduction to Water Education”.

## **9.0 NEXT MEETING**

The next meeting of the Working Group on Water Education for Sustainable Development will be held in Paris from 18-20 July 2007. The main business of the meeting will be to review the Work Plan and to provide advice to UNESCO on the development of project briefs to support the implementation of the Work Plan. It was suggested that members of the Working Group bring sets of exemplary water education resources to the next meeting.

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\* Working group experts serve on an individual capacity and do not represent any Member State or organization. Institutions and addresses are presented for contact purposes only.

## **ANNEX 2 TERMS OF REFERENCE**

### **1. SCOPE AND ROLE**

The UNESCO Working Group on Water Education and Capacity Building for Sustainable Development (GWESD) is an intersectoral body established by the Science and Education Sectors of UNESCO, in response to 166 EX/Decision 3.6.1 and IHP-IC resolution XVII-12 that called for the establishment of a working group on water education and for the development and implementation of an intersectoral strategy on education for the management of water as an integral component of DESD. The Working Group will directly contribute to the United Nations Decade of Education for Sustainable Development and function within the context of the Millennium Development Goals, and the International Decade for Action 'Water for Life'. The Working Group will operate under the leadership of UNESCO-IHP and will lead activities towards and contribute to the implementation strategy of the Thematic Programme 8 on Education for Sustainable Water Management of the UNESCO Action Plan for DESD.

The role of the Working Group is to advise UNESCO, the International Hydrological Programme and their partners on key issues, initiatives and strategies for raising awareness and advancing water education for the community, via the mass media and other communication channels, and for the school and vocational education and training (VET) education sectors.

### **2. OBJECTIVES**

The objectives of the Working Group are:

- 2.1 Provide expert guidance on conceptualising the nature, scope and purposes of Water Education for Sustainable Development.
- 2.2 Provide expert guidance on identifying needs, leading practice, key trends and issues, audiences and strategies for Water Education for Sustainable Development.
- 2.3 Provide expert guidance on the setting of priorities vis-à-vis actions and initiatives.
- 2.4 Provide expert guidance on such critical issues as establishing partnerships, building on networks and raising resources to promote Water Education for Sustainable Development.
- 2.5 Provide expert guidance on strategies for documenting, monitoring and evaluating progress in Water Education for Sustainable Development.
- 2.6 To review the draft thematic programmes of the UN-DESD to ensure that they are scientifically sound with regards to water sciences.
- 2.7 To engage all the relevant actors involved in UNESCO's water programme, including IHP National Committees and water-related centres.

### **3. MEMBERSHIP**

- 3.1 The UNESCO Working Group on Water Education will be composed of 6 to 8 experts in one or more technical areas related to Water Education for Sustainable Development. Individual members appointed on the basis of their own merit but also with a view of representing different geographic parts of the world as well as wide and diverse networks of stakeholders.
- 3.2 Members will be selected by the International Hydrological Programme (Science Sector) and the Section on Education for Sustainable Development, Division of UN Priorities (Education Sector), in compliance with IHP-IC resolution XVII-12 and 166 EX/Decision 3.6.1. UNESCO-IHP will appoint the Chair of the Working Group. The membership will be reviewed periodically by the International Hydrological Programme and the Section

- on Education for Sustainable Development, to guarantee that the Working Group is able to respond to the variety of tasks that it should address.
- 3.3 Participation in the group is honorary; only travel fees and per diem will be covered by UNESCO when the group convenes and when and if individual members are invited by UNESCO to participate in particular events.

#### **4. ACTIVITIES**

- 4.1 The Working Group will meet at times and places to be agreed. It will also communicate by e-mail and other agreed channels as necessary and feasible.
- 4.2 Guide UNESCO in the preparation and review of an issues paper on water education for the community, mass media, school and VET education sectors.
- 4.3 Guide UNESCO in the preparation and review of a Water Education Work Plan.
- 4.4 Guide UNESCO in the preparation and review of the project briefs required to operationalise the Work Plan.
- 4.5 Guide UNESCO in the preparation of a recommendation to Member States' ministries of education to strengthen water education programmes at the primary and secondary levels.
- 4.6 Set a strategy to engage all the relevant actors involved in UNESCO's water programme, including IHP National Committees and water-related centres.
- 4.7 Provide on-going support and guidance to UNESCO in promoting Water Education and Capacity Building for Sustainable Development within the context of the United Nations Decade of Education for Sustainable Development, the Millennium Development Goals, and the International Decade for Action, 'Water for Life'.

#### **5. TERMINATION**

- 5.1 The Working Group will be terminated on the completion of the activities described above or by decision of the International Hydrological Programme.

### ANNEX 3 TIMELINE

ACTIVITIES	TIMELINE	EXPECTED OUTPUTS
Consultations	01/04/2007	UNESCO Working Group on Water Education and Capacity Building for Sustainable Development constituted and operational.  Issues paper on water education issued and circulated to the Working Group members
1 <sup>st</sup> meeting of the Water Education Working Group	11-13/04/2007	Outline of the Water Education Work Plan
Consultations	20/04/ 2007	Outline of the Water Education Work Plan incorporated in the draft strategic plan of IHP-VII as a theme for 2008-2013, and in Thematic Programme 8 on Education for Sustainable Water Management in the UNESCO DESD Action Plan.
Water Education item presented to the IHP Bureau at its 40 <sup>th</sup> session	13/06/2007	Information document on the progress of the Water Education Work Plan
2 <sup>nd</sup> meeting of the Water Education Working Group	18/07/2007	Draft of the Work Plan and project briefs
Consultations	05/09/2007	Final version of the Water Education Work Plan and detailed project briefs
Water Education item presented to the UNESCO General Conference at its 34 <sup>th</sup> session	03/11/2007	Expected result on “freshwater education programme developed within the framework of the Decade of Education for Sustainable Development” included in the approved 34 C/5

## **ANNEX 4 AGENDA**

### **Day 1 (Wed. 11 April)**

- 09:00 – 09:30**      **Arrival and registration**
- 09:30 – 10:00**      **Welcome session**
- Welcome remarks – Mr András Szollosi-Nagy, Deputy Assistant Director-General for the Natural Sciences and Director of the Division of Water Sciences
  - Welcome remarks – Mr Mark Richmond, Director of the Division of UN Priorities
  - Adoption of the Agenda
- 10:00 – 10:30**      **UN Decade of Education for Sustainable Development**
- DESD Overview - Aline Bory-Adams, Chief of the Section on Education for Sustainable Development
- 10:30 – 11:00**      **Coffee break**
- 11:00 – 12:00**      **The world water scene**
- Main water issues and UNESCO's role – Mr András Szollosi-Nagy
  - Questions
- 12:00 – 13:00**      **Regional presentations**
- 13:00 – 14:30**      **Lunch**
- 14:30 – 16:00**      **Regional presentations**
- 16:00 – 16:30**      **Coffee break**
- 16:00 – 18:00**      **Regional presentations**

### **Day 2 (Thu. 12 April)**

- 09:30 – 10:00**      **Review of day 1**
- 10:00 – 10:30**      **Overview of IHP activities on Water Education**
- 10:30 – 11:30**      **Review of issues paper (1)**
- Major water issues for education training and capacity building for different audiences
- 11:30 – 12:00**      **Coffee break**
- 12:00 – 13:00**      **Review of issues paper (2)**
- Key principles for water education for different audiences
- 13:00 – 14:30**      **Lunch**
- 14:30 – 16:00**      **Towards an action plan**
- Review of UNESCO Action Plan for Thematic Programme 8
  - Strengths and weaknesses
  - What needs to be done?

- 16:00 – 16:30**      **Coffee break**
- 16:30 – 18:00**      **Towards an action plan (cont.)**

**Day 3 (Fri. 13 April)**

- 09:30 – 10:00**      **Review of day 2 and work plan for day 3**
- 10:00 – 11:30**      **Ideas for specific activities**
- 11:30 – 12:00**      **Coffee break**
- 12:00 – 13:00**      **Ideas for specific activities (cont.)**
- 13:00 – 14:30**      **Lunch**
- 14:30 – 16:30**      **Closing session**
- Summary of decisions
  - Identification of roles for future work
  - Next meeting
  - Closing remarks