

Troubled waters - Bridging Science and Society

Report from the University of Kalmar workshop in cooperation with the GIWA project, IOI Operational Centre for the Baltic, Sweden, HELP/ UNESCO and the VASTRA project on the 23rd of August 2004 in Kalmar, Sweden.

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1. Introduction

On the 23rd of August a number of representatives¹ from the wide spectra of integrated water research management (IWRM) were gathered in the Swedish city of Kalmar. The meeting was arranged for the purpose of involving actors from the field of management of transboundary water resources to share and discuss important issues to be considered for future activities within the project Global International Waters Assessment (GIWA) run by United Nations Environment Programme (UNEP) and executed by the University of Kalmar (UoK).

The first half of the day consisted of presentations drawing experience from Swedish as well as internationally related activities, from research institutions as well as non-governmental and international governmental directions, from small to large size, from new to old, and with a wide scope in focus of scale, methodological approaches and objectives; in short the heterogeneity was apparent, however all were sharing a common interest in IWRM. After the presentations followed a discussion on future challenges within the field of IWRM connected with suggestions for GIWA future activities. The seminar was concluded by listing some of the most emergent issues in IWRM identified by the participating group.

On behalf of the organizers of the conference we would like to express our gratitude to all participants for making this workshop so successful.

¹ Participants were:

Ms Natalia Alexeeva, HELP; Ms Lotta Andersson, VASTRA and HELP; Mr Lars Aronsson, University of Kalmar; Mr Juan Carlos Belausteguigoitia, GIWA; Ms Anna-Kari Bill, WMU; Ms Agneta Bladh, University of Kalmar; Mr Mike Bonell, HELP; Mr Dag Daler, GIWA; Mr Werner Ekau, IOI; Ms Anna Jöborn, VASTRA; Mr Victor Galaz, VASTRA, Ms Sara Gräslund, GEF; Mr Björn Guterstam, GWP; Ms Anna Jonsson, VASTRA; Mr Ulf Lidman, University of Kalmar; Ms Bodil Liedberg-Jönsson, HELP; Mr Olof Lindén, University of Kalmar; and WMU; Ms Marianne Lindström, GIWA; Mr Jörgen Nilsson, SMHI; Mr Klas Sandström, Swedish Water House; Ms Ann-Karin Thorén, University of Kalmar.

2. Presentations

This section will in a condensed way report on information presented by the participants during the first half of the workshop. To make the report as assessable as possible I have taken the liberty to do some restructuring. In cases where two presentations from the same project/institute² were made, the presented material was merged into one section, however care was taken to keep the content unchanged.

Introductory, it should also be mentioned that the GIWA proportionally to other participating institutions has received a greater focus in the following presentation, as GIWA for this conference also had the status of being the main object for discussion. Regarding information sources the report is based on documents and verbal presentations and discussions from the conference.

2.1 Introductory remarks on IWRM from the GIWA horizon

Dag Daler, Scientific Director UNEP/GIWA

The Global International Waters Assessment (GIWA) is a five year old project initially addressed by The Global Environmental Facility (GEF) and implemented by the United Nations Environmental Programme (UNEP) and the University of Kalmar (UoK). The main object of the project has been to define priority settings of the most emergent transboundary water problems in international waters - freshwater as well as marine and coastal waters. These priority settings will then be used as a basis for development of remedial and mitigatory actions.

The GIWA approach is methodologically divided up into two parts, a former consisting of scaling and scoping, based on the GIWA environmental issues³, followed by a causal chain analysis where critical driving forces are defined and brought further to a concluding policy option analysis. In the assessment process a holistic perspective is applied, illustrated by a transboundary approach reaching over waters boundaries and scientific disciplinary boundaries as well as political international boundaries. Also intertwined, as a way to appreciate and integrate specific differences of knowledge in the assessment process, each of the 66 sub-regions is being assessed by task teams with local connections familiar with the local circumstances (for further information see GIWA methodology at www.giwa.net).

² Of which GIWA was the first and VASTRA the second.

³ Giwa environmental issues: 1) Modification of stream flow; 2) Pollution; 3) Changes in the water table; 4) Microbiological pollution; 5) Eutrophication; 6) Chemical pollution; 7) Suspended solids; 8) Solid wastes, 9) Thermal pollution; 10) Radio nuclides; 11) Spills; 12) Loss of ecosystems; 13) Modification of ecosystems or ecotones, including community structure and/or species composition; 14) Over-exploitation; 15) Excessive by-catch and discards; 16) Destructive fishing practices; 17) Decreased viability of stock through pollution and disease; 18) Impact on biological and genetic diversity; 19) Changes in hydrological cycle, 20) Sea level change; 21) Increased UV-b radiation as a result of ozone depletion; 22) Changes in ocean CO2 source/sink function. These environmental issues will also be assessed taking account of socioeconomic different kinds of impacts.

2.1.1. GIWA experiences

Although applying an IWRM approach in the GIWA activities, a general caution to this concept should be addressed, “too often integration is a proxy without deeper implication” it was argued. The main challenge would, in order to reach sustainable development, be to fully integrate socioeconomic and environmental decision making. Important factors in reaching this goal will include existence of financial possibilities, stakeholder willingness as well as a break down of the still prevailing sectarian thinking. The importance of national planning was also emphasized; a planning that should cover *all* aspects of activities having impact on water resources. A question that also can be connected to an issue raised elsewhere in the presentation, the one of keeping the legal instruments in line with water management process, as these have come to show both overlap and lack in legal enforcement. Another important aspect within this context is to raise and maintain a high public awareness; in absence of this and with lack of involvement of public participation, there has been a tendency of commercial interests to overshadow environmental considerations. Involvement of non-governmental organizations (NGOs) and other community based organizations will fill a valuable role here.

Regarding GIWA results severe trends in many thematic areas have been identified. Among the major concerns⁴ identified in the sub-regions over-exploitation followed by destruction of ecosystems and biodiversity have generally been rated as being among the most severe. However to be able to keep information like this updated the importance of a follow-up, within a range of at least 5 to 10 years is emphasized.

Another issue raised, building on experience from the GIWA project was the question of developing indicators sensitive over for threat levels, including both environmental and socioeconomic issues. Also raised was the need of keeping these two kinds of variables in balance, and not privileging the former over the latter as often has been the case. Connected to the issue of indicators it was also argued that it would be of advantage if these could be formulated in a not too complicated way so as results could be reassessed fairly easily. Here it was also touched upon the question of monitoring, where again the importance of integrating different societal levels was emphasized in order to "bringing the message throughout the whole area". In regard of policy option analysis, attention was also drawn towards the issue of defining indicators able to measure "successful management".

In relation to policy options, the final stage of the GIWA methodology, a call for higher specificity was also raised, so as to for example to be able to in a more detailed way point at specific issues in the policy and administration processes. An increased awareness of what kinds of options that actually are available, and how these might vary both within and between societies were also requested. Issues that put direct attention on how indicators of workable policy options ideally could be developed; a process where interlinkages between both environmental and social issues further again was pointed out.

⁴ GIWA five major concerns includes in a general way the GIWA 22 environmental issues, see note three. The GIWA major concerns are: 1) Freshwater shortage; 2) Pollution; 3) Habitat and community modification; 4) Unsustainable exploitation of fisheries and other living resources; 5) Global change.

Concerning other more externally related variables, as for example surrounding prevailing political realities, it was further argued that an inclusion of the defined United Nations Millennium Development Goals⁵ (UN MDG) into the process should also be made, as well as continuous updating of GEF priorities and changes in and availability for funding.

2.1.2. GIWA challenges

During the presentation a number of challenges, seen in the light of a future development of the GIWA approach in IWRM were brought up. One possibility presented was the continuous development of productive demonstration sites; sites that could be of great value in a further development of training and capacity building in the form of for example “training the trainers”. Here, by including linkages from regional to global scale, and by developing a training program specially tailored for the place-specific circumstances based on earlier GIWA experiences, some positive results were expected to be achieved. This approach combined with some innovative tools in illustrating the message, could be a plausible suggestion for future GIWA activities. By taking a similar approach a high degree of stakeholder inclusion, from economists to administrators and policy makers, would also be made possible. Proceeding in this way it would be possible for GIWA to take a unity sector approach, an urgent approach otherwise lacking in many other places.

Realizing that there are numerous assessment programs active in the field of IWRM, the possibilities for increased coordination were also addressed. A suggestion proposed for increasing the efficiency of activities would be to increase the coordination and cooperation between these projects, by for example bringing together data from different assessment projects including Global Marine Assessment (GMA), World Water Assessment Programme (WWAP) and Global Strategies for Marine Environment Protection (GESAMP).

After the GIWA presentation followed some comments and questions from the participants. Among others the issue of taking an integrated perspective was discussed. It was expressed that measures from different kinds of assessments in many cases differ, and to be able to take benefit from each others, progress must be designed to connect all these kinds of differing measures; “there are differences in communities and these should be over-bridged”, it was argued. In this context difficulties in reaching out to policy managers, as they “move in different circles” and often do not have time to engage, were also expressed. However from another perspective it was also recognized that different ways of approaching information could be a positive thing, as it could be useful in giving “perspective” to research, exemplified by for example approaching an issue from other countries or from other kinds of institutional settings.

⁵ which were stated to include 1) Eradicate extreme poverty and hunger, 2) Achieve universal primary education, 3) Promote gender equality and empower women, 4) Reduce child mortality, 5) Improve maternal health, 6) Combat HIV/AIDS, malaria and other diseases, 7) Ensure environmental sustainability, 8) Develop a global partnership for development.

2.2. Global Environmental Facility and IWRM for tomorrow

Sara Gräslund, JPO/GEF International Waters

The Global Environmental Facility (GEF) was originally created as a response to a growing need of coordination in meeting global environmental challenges in a sustainable manner. From the start in 1991 the GEF today encompasses 176 member nations and has provided USD 4.5 billion in grants to developing countries and countries with economies in transition. In distributing this support GEF follows the principle of incremental funding, which means that its grants are complimentary to already existing initiatives and programs. More specifically, the GEF provides the incremental costs to projects designed for local benefits to also incorporate mechanisms to achieve global environmental benefits into the design.

In the field of International Waters⁶(IW) GEF is focusing on supporting increased collaboration between countries with common environmental concerns in their international/shared waters, supporting capacity building of institutional arrangements, and supporting implementation of measures to address transboundary environmental concerns. The three main agencies responsible for implementation of the GEF projects are The United Nations Development Programme (UNDP), The United Nations Environment Programme (UNEP) and The World Bank (WB).

One important approach for GEF activities in international waters is integration of water/natural resources management through cross-sectorial collaboration. Balancing competing needs for water is extremely important to reach all the UN Millennium Development Goals, and here GEF is supporting governments in handling competing interests in national and transboundary water bodies through cross-sectorial approaches to natural resources management. In the present process of developing national IWRM plans, the possibilities to incorporate transboundary concerns should be considered. Experience from GEF IW projects has also shown that building partnerships based on the entry point of a need for joint management of shared water resources could have significant benefits for regional security as a result of avoided conflicts.

Very briefly the GEF IW foundational work can be divided into three steps; (i) development of a project idea; (ii) joint fact finding about the shared water body through a Transboundary Diagnostic Analysis (TDA); (iii) and preparation of a Strategic Action Program (SAP) for the region. This foundational work enables an initial framework for multi-country watershed collaboration, followed by creation of Inter-Ministerial Committees within each participating country, and development of an agreement on a regional SAP. Thereafter, the countries start the implementation of the agreed actions in the SAP.

⁶ The GEF is working with six planet-wide environmental concerns: Climate Change, Biological Diversity, International Waters, Stratospheric Ozone Depletion, Persistent Organic Pollutants and Land Degradation/Desertification

One GEF IW “Cross-Project Learning” initiative recognized to be of much importance has been the IW:LEARN project, which is facilitating exchange of information between IW projects as well as non-GEF activities in international waters. The project includes project staff exchanges, courses and e-fora on themes such as project management, regional coordination and thematic knowledge (e.g. aquifer knowledge and management). For a full presentation of these activities see www.iwlearn.net.

In relation to this presentation of GEF activities a question was raised on how GIWA results have been reconnected into the GEF IW work. It was explained that these results hopefully in an increasing way would be used in the future as further projects and programs are developed. Also the competition for funding has increased due to a higher demand from developing country governments for GEF IW projects.

2.3. IWRM in the perspective of HELP

Mike Bondell, HELP/UNESCO

The program of Hydrology for the Environment, Life and Policy (HELP), is a project located under the implementation of United Nations Educational, Scientific and Cultural Organization (UNESCO). The “HELP approach” can in short terms be described as a program developed as a counter-reaction to what can be defined as a “Paradigm Lock”; a kind of stigma where processes of hydrology and activities of managers and stakeholders have been isolated from each other as consequences of lack of proven utility and disaggregated institutions. To bridge this situation the HELP program instead focus on connecting these two areas. This is done by “consolidating experimental hydrology to improve existing models” and by “developing strategic and innovative science which build on managers and policy-makers concerns”. The basic aim of the project is to work towards a global network of catchments in order to improve links between hydrology and needs of the society.

A central part of the method used by HELP is the “integrated alternative” where links among landscape systems are explored and questions on interaction are raised. Described in a brief way the HELP process can be divided into two major steps of which the first step consists of a comprehensive assessment of today’s knowledge, from physical, socioeconomic and legal to cultural baseline information. Then, in a second step, the collaboration between stakeholders and scientists to determine a chosen research plan is started, followed by implementation of research in collaboration with scientists, managers and stakeholders. Working in this kind of partnership approach connecting research, community and government, principals of Integrated Catchments Management will be ensured. However, although partnership approaches today is a well known concept, there still seems to be some vicious circles prevailing in the integrated project management. There might be possibilities to break these circles if stakeholder consultation and participation would be allowed and induced right from the first phase and not left out to the last phase in the process.

To get an approval to start a HELP basin project five kinds of categories have to be fulfilled: (i) from acknowledgement of the suitability of the proposing organization and referred basin;

(ii) to the relevance of the stated purpose to the HELP program; (iii) the adequacy and feasibility of the proposed activities; (iv) a confirmation of commitment to provide resources and cooperation; (v) and a contribution to promoting HELP values. For more details see www.unesco.org/water/ihp/help.

As implementation of the HELP program proceeds, a number of HELP basins divided on the basis of specific characters have been established. Based on these different characters also different kinds of spectra within IWRM are made visible from the establishment of Demonstration basin groups, Operational basin groups, Evolving basin groups, Proposed basin groups and the groups of Associated HELP Activity (AHA) Integrated in all these HELP basins are the criteria of processes of social learning in solving the problems. In all, the HELP project covers now an area of 69 basins spread out globally in an interconnected “HELP Global Network”.

Built on experiences generated in the HELP process it has been possible to define four sections based on challenges. The first and overarching section concerns difficulties to implement the concept of HELP across the wide spectrum of socioeconomic and sociocultural contexts. The second section raises issues concerning dialogue with stakeholders; integrated approaches for water law, policy and science; implications of scientific research in case of lacking scientific infrastructure; indicators of basins "vulnerable" to global change; and questions regarding choice of techniques when separating climate – human related impacts on the hydrological cycle. In the third section the role of hydrological information in water law and policy is addressed, a question which also has been illuminated in other HELP literature. Finally in the fourth section; issues as the upstream-downstream problematic, both from a technical, management and policy perspective are addressed, as well as scientific gaps within the Water and Food Policy issues; and how it might be possible to define a HELP approach in regard to national and transboundary basins policy issues, in case where intra and inter basin conflicts are raised.

During the presentation some issues to be addressed to the scientific community were raised. Here among other things it was argued that today's status of modeling now has surpassed the field testing; that the number of field experiments addressing hydrology at mesoscale still was limited; that an increased focus on water quality linked with the hydrological process would be of value; and that impacts might be expected by the declining support for long-term monitoring. Elsewhere it was also expressed that for a long time there has been a problem with good field research, and that good monitoring is lacking. Connected to these issues it was also argued that science in some way has to be influenced to take on an increased integrated catchments approach, an issue that might sound controversial, however recognizing that science activities already today are under impact, the question is rather of what kind...

Connected to earlier discussions on the importance of reaching a high degree of involvement of stakeholders in the management process, it was here again emphasized that there has been a problem to reach stakeholders, and the category of policy managers was especially mentioned. These actors situated in a totally different community, can be difficult to involve. Trying to bridge this gap, the HELP approach has made an effort to mobilize the scientific community in reaching out to break down this stigmatizing situation. In regard to stakeholder

inclusion one lesson shared was the potential in working out from the basin level itself and up towards the government. In this way, it was argued, it could be made possible to mobilize support in the county and reach progress.

2.4. IOI and Ocean Governance: Mediator between the different worlds

Dr Werner Ekau, IOI-Operational Centre Germany

The International Ocean Institute, IOI, a non-governmental organization, is consisting of a network of 25 centers spread worldwide⁷. The main objective of IOI activities are based on a twofold definition, both ensuring the sustainability of the ocean as "the source of life" in upholding and expanding the principle of the common heritage as defined in the United Nations Convention on the Law of the Sea, as well as promoting the concept of "Pacem in Maribus-Peace in the Ocean" through management and conservation for the benefit of future generations.

Main focus for IOI activities are spread over three fields: Ocean Policy Research & Development; Awareness & Communication; and Training & Capacity Building, the latter section is pursued under the brand "OceanLearn". In proceeding these activities IOI could play a role as a mediator between different worlds, both between developed and developing countries as well as between science and society.

Methodologically IOI has taken their starting-point in the LME conceptualization of management. After adapting this to IOI interests and objectives the main approach includes the following six factors: Pollution and ecosystem health; Fish and fisheries; Governance; Socioeconomics; Productivity; and Ocean services.

The IOI's competence spread over the worldwide centers has been used for merging knowledge and expertise, to later be redistributed in outcomes within IWRM activities; activities that mainly consists of two kinds. One part is made up by Training & Education activities, in providing courses via one of the IOI-centers and by support supplied by the "IOI OceanLearn". The other part focus on Consultant activities, using expertise of IOI-staff in development of research and training programs and by involving the numerous IOI experts in policy development. During the presentation it was also suggested that IOI in these activities would have possibilities to contribute to the GIWA process.

⁷ Among others IOI-Australia: Responsible Fisheries policy; IOI-Brazil: Ecological development of harbors; IOI-Canada: Ocean Law; IOI-Germany: Sustainable use of coastal resources; IOI-India: Coastal village development; and IOI-South Africa: Community based mariculture.

2.5. GWP's role in facilitating the IWRM policy adoption and implementation

Dr Björn Guterstam, network officer GWP Secretariat Stockholm

The Global Water Partnership (GWP) was established 1996 by initiative from the United Nations Development Programme (UNDP), the World Bank, and the Swedish International Development Cooperation Agency (SIDA). The initial foundation of the project derives from ideas and values addressed in the Dublin principles. The project that is given a long term character has a timeframe of 21 remaining years, aiming at global water security in 2025. Main financial partners of the project are United Kingdom, Netherlands, Sweden, Canada, Norway, Denmark, Germany, France, Finland, Switzerland, and Spain, all together giving GWP activities a yearly budget of minimum US \$8 million.

GWP has today reached a partnership status of more than 600 organizations, 13 existing Regional Water Partnerships, 30 Country Water Partnerships (CWPs), three Provincial Water Partnerships in China, one River Basin Water Partnerships under establishment; and 30 Area Water Partnerships (mainly in water stressed, smaller river basins of South Asia). Focus in these partnership building activities is set on local initiatives by stakeholders. The characteristics of these activities are that "GWP supports as a facilitator, but is not in the driving seat".

Following the GWP Work Programme 2004 - 2008, it is based on five outputs formulated as: (i) Facilitation of IWRM policy and strategy at relevant levels; (ii) Development of IWRM programs and tools in response to regional and country needs; (iii) Linkages building between GWP and other frameworks; (iv) Establishment and consolidation of GWP partnerships at relevant levels; and (v) Effective development and management of GWP network. The GWP Work Programme is intended to assist in implementing IWRM in a growing number of countries and regions.

The immediate objective of GWP activities are thus to ensure an implementation of IWRM in a growing number of countries and regions. For this purpose the following definition of IWRM is used: **"IWRM promotes the coordinated development and management of water, land and related resources in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems"**. In order to implement IWRM, GWP promotes "alliances building" across sectors and disciplines and across institutional roles. A vital part in GWP activities, as expressed under the presentation, will therefore be to facilitate policy and strategy development. The GWP activities are fully harmonized with the water components of the World Summit of Sustainable Development (WSSD) and the UN Millennium Development Goals (MDGs). During the presentation GWP made the remark that GIWA may very well complement IWRM expertise of GWP with its global water and environment expertise.

Building on experience achieved within GWP a couple of remarks were given. Firstly, IWRM is a way forward to set "the delicate balance" between the two areas of water for livelihood and water for the ecosystems. Secondly, the question of providing sufficient infrastructure in order to meet the UN MDGs and World Summit on Sustainable Development (WSSD)

outcomes from Johannesburg 2002, concludes that "By far the largest increase in funds will be required for the treatment of wastewater...", (Camdessus report). Thirdly, the GWP experience in partnership building, is the result of committed efforts by water stakeholders, that fills a gap on the road towards meeting the goals of WSSD and the MDGs

2.6. Challenges Ahead - a Swedish Perspective on Integrated Water Resource Management

Anna Jöborn, VASTRA.

VASTRA, defined as a Swedish research program funded by MISTRA, has for a nine year period conducted research from a multi-disciplinary approach with the attention of developing strategy for sustainable water management in the special case of eutrophication in the Rönne river basin.

A main purpose of the VASTRA approach has been to in an integrated way create an increase in knowledge, methods and tools related to water management processes. Focus for activities has been directed towards the societal "response processes", including actions as reducing, handling and solving the eutrophication problem. Doing this, the research team has applied the format of a "Water planning cycle" consisting of four interconnected elements: (i) Monitoring; (ii) Assessment and characterization; (iii) Environmental goals; and (iv) Planning and implementation of measures, elements of which all are being put into relation to the processes of public participation.

A special feature with VASTRA is their methodological appliance of focus-group discussions, covering the areas of the Rönne river basin. Basic intentions behind applying this approach were partly due to test models and methods for river basin planning, but also to include discussions on the value of water, public participation and cooperation, test the focus-group approach as a medium as such for mutual learning between stakeholders and researchers, and to test the social acceptability for various IWRM tools among different stakeholders. Tools mentioned to have been included in the research process were synthesis making of alternative organization, conflict resolution mechanisms and public participation; catchments valuation methods and synthesis of policy instruments; dynamic nutrient flow models for catchments and models for arable land, lakes and wetlands, and an integrated decision support tools for catchments management.

Compared to earlier presentations, emphasized here was also the value of involving end users and stakeholders respectively. However, extra emphasize was also put on making stakeholders involved into the research process – right from the very beginning. Here it was argued that a high involvement when defining crucial matters as needs and demands of instruments for the creation of knowledge, methods and tools could make an important difference. Complex problems demand complex solutions, it was further added; an expression illustrated by the evolution of the VASTRA approach where research process have been moving from basic research to multi-disciplinary research to finally arrive at an approach conceptualized as "**mutual learning processes**". In connection to this, the issue of

transferability, also this emphasized in earlier presentations, was again raised. However, here the question was rather if specific research findings could be applicable in other river basins or not; an issue to be considered taking the high variability of context into account.

Other issues also highlighted in earlier presentations, including questions like difficulties of communication between science and the society; knowledge transfer from science to policy makers and other stakeholders; and achievement of higher quality data from river basins globally, were again brought up as a final part of the first VASTRA presentation.

2.6.1 Models as a tool for stakeholder dialogues, problems and possibilities: What we have done in VASTRA and what we have learned

Lotta Andersson, VASTRA.

In the second presentation from VASTRA a more strictly methodological approach was taken, discussing the appliance and use of research models. A general first action to take, it was argued, is to provide a common platform; “models will only bridge in dialogues if there is a confidence in what they provide” it was expressed. Aspects to be taken for consideration could include an approach sensitive to change in environmental conditions, spatially as well as temporally. If risks of letting biased perceptions block the discussions could be minimized in this way, the potential of remedies could be increased.

The use of a communicative way instead of simply informing the stakeholders gives the research approach a fundamentally different character. Attention should also be paid so that the problem will be addressed at relevant scale, which also raises the issue of different processes being dominant in different scales. Acknowledging this, the research process cannot just be about scaling up and down based on “literature values of parameters” obtained from plot experiments. In recognizing the fact that no optimal model exists, the method of calibrating against internal variables was suggested. Here variables also should be defined as to be sensitive over for uncertainties and changes.

During the discussion the issue of participants agreeing on that the knowledge used for IWRM would be the best achieved knowledge today was raised. Here it was also expressed by the GIWA representatives that this kind of illustration of making uncertainty visible, as done in the presentation, could make up one of the new tools included for training and education. Making it possible in this way to illustrate uncertainty with varying data as for example seasonal changes, giving new insights to the problem, should be put under consideration. More specifically related to models it was also added, that models will not have the possibility to give us solutions, but will have the capacity to address visible gaps, and thus, possibilities for actions.

3. Discussion on "Fully Integrated Water Resource Management" in a Global and Transboundary context - from River Basins to the Sea"

As basis for the discussion three suggestions considering GIWA future activities were launched. The first considered a refinement of the GIWA methodology, based on the GIWA experience achieved. The second proposed future GIWA activities to focus on the development of pilot sites, including defining and implementing Root cause analysis and Policy option analysis, to be used as knowledge transfer mechanism to other sites and projects. The third suggested a further development of the GIWA capacity building and training structure, applying a holistic perspective for a diversity of stakeholders.

To increase the accessibility of knowledge expressed during this session the following sections has been structured thematically in relation to these points. This structure is, however, to be considered only as a pedagogical tool, as the expressed ideas in many ways should be understood as interconnected with each other.

3.1. Methodological considerations

During the discussion many issues related to methodological approaches were raised. From one point of view the need to develop methodologies that could be used in a simple way in assessing environmental concerns as exploitation and degradation were emphasized. Another methodological aspect creating a high degree of attention, was the importance of including aspects of change into assessments, and here the issue of climate change was taken as an example. In relation to this a question was also raised on how it might be possible to separate natural biological changes from anthropogenic ones; a question followed by the pragmatic comment that in either case the issue will always be about acknowledging the change, and we will just have to adopt to it.

Further the imperative of high stakeholder inclusion, ranging from politicians to direct resource users, was raised; an effort that also was argued to improve the balance in the scientific approach, the crucial balance between science and socioeconomical perspectives. Related to this a question was also raised whether “an analysis of the analysis” had been performed, implying that there might be regional differences connected to ex social/ethnic background, which would render the analysis to give different conclusions. Regarding parts of the second section of the GIWA methodology, the Policy Option Analysis, it was also mentioned how differences in the criteria used, e g applying principles of equity or efficiency would affect the analysis.

Concerning issues connected to the methodological outcome, questions on how governments might react in response to the GIWA results, whether decision makers would acknowledge the results and whether they would accept the situation or not, were raised. Here the importance of stakeholder inclusion was addressed; a measure that also might be an important step to address the issue of increasing willingness of decision makers to cooperate, and not only give “lip-service”, as it was added elsewhere. When communicating the message

however, attention should be drawn to make sure that the message really is taken into account. In this process different levels of languages could be used, and the approach of focusing on making stakeholders “disseminated and communicated” was emphasized.

Another issue directing attention to methodological design in a broader perspective, was how it methodologically could be made possible to complement also other existing programs and projects; an issue that brings up the question of coordination and cooperation. Here among other things it was mentioned how difficult it had proved to be to integrate the activities of different IWRM institutions. One reason mentioned was simply argued to be the prevailing competition within the field. A suggestion to get around this could be to create “win-win” situations, and it was expressed that “the secret of success is to come together and make each other dependent on the mutual activities”, to create situations where both parties would get something out of the partnership.

3.2. Demonstration sites and transfer of knowledge

Regarding the issue of implementing policy options, suggestion number two for the GIWA future, the question was raised whether such an approach would not be very time consuming, subsequently bringing up the suggestion of demonstration objects. The target for such an activity would be focusing on smaller demonstration objects, as for example local governments or local decision making. Taking this approach, it would be possible to apply the concept of IWRM in practice; a concept that many times seems to have become a buzz word within the management community. In this case a smaller demonstration object could help us to in detail observe these critical mechanisms.

3.3. Capacity building and training structure

Issues connected to suggestion number three for future GIWA activities, arouse much attention. Here many of the comments generated referred to the GIWA experiences, and suggestions were made to keep up the activity within the regional teams familiar with the environmental problems in the specific areas; “this is a resource not to be lost!” one of the participants pointed out, an existing capacity that should be acknowledged.

In relation to the discussion on capacity building it was added that other activities might be better suited for the purpose, as for example technical agencies or more conventional mutual capacity building activities. As a response to this the special potential with the regional task teams was brought back again, pointing out the potential in building on already generated knowledge and on the GIWA results; to allow the regional groups to define the model of training for the actual local community. It was also added that if GIWA could have the possibility to define these needs, other forms of actors could then enter the process as assisting partners. Possibilities to use the GIWA regional reports as a mean for increasing public awareness were also mentioned. GIWA has the experience and competence and it is

important to underline this; possibilities exist to draw on the GIWA results for a long time, as there is a need for strong environmental expertise and strong reliable contacts, it was further argued.

Further opinions launched in the discussion on capacity building were that besides natural science there is also a need to address and increase the socioeconomic competence for the future e.g. to develop socioeconomic, cultural and political experiences. In connection to this, it was also suggested that a mechanism for experience sharing between different actors in capacity building should be developed and included in a proposal for future activities. As a comment to the discussions on the preservation and future development of activities within the local task teams it was added that the low funding and consequent financial situation had weakened the task teams – a consequence that also had made some of the GIWA activities more difficult.

4. Conclusions and recommendations – proposed components of a GIWA second phase project

Based on the discussion above a number of bullets were identified as emergent issues to be addressed for the transition into a phase two of the GIWA project.

4.1 Refinement of methodology

- The ecosystem-based assessment approach for drainage basins and LME's should be refined.
- The issue of climate change as an aspect should be considered in future assessment methodologies.
- Further analysis of identified weaknesses in the current assessment should be made, for example how regional differences might affect the outcome.
- The maintenance of the regional teams should be considered as they are an asset for the process.
- A high involvement of decision-makers and politicians at an early stage of the assessment should be ensured; a criteria for deeper studies regarding alternative policies.
- Particular concern should be given to causal chain analysis and policy options.

4.2. Demonstration sites and transfer of knowledge

- The testing of Root Cause Analysis and Policy Options can be implemented in small demonstration areas being neither very time consuming nor costly.
- GIWA future projects should build on achieved results, consolidate knowledge and take care of the expert networks.
- The results of the GIWA should be disseminated and communicated to stakeholders.

4.3. Capacity building and training structure

- Consideration should be addressed to socioeconomic assessments and cultural background emphasizing the importance of training of experts.
- Close cooperation with IOI, HELP/UNESCO, GWP and other similar projects should be an aim, and could be enforced by increasing synergies and “win-win” situations instead of competition.
- A mechanism for sharing of experiences, capacity building and training structures should be developed.
- The training should develop the necessary expertise in providing a holistic understanding of the problem. There is a need to cover the interface between the scientific, administrative and policy dimensions to address socioeconomic and political root causes. For this purpose the politicians are a key target group, however allying a stakeholder diversity is also very important.

4.4. Useful internet sights

WebPages

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|----------------|--|
| ▪ GIWA: | www.giwa.net |
| ▪ GEF: | www.gefweb.org |
| ▪ HELP/UNESCO: | www.unesco.org/water/ihp/help |
| ▪ IOI: | www.ioinst.org |
| ▪ GWP: | www.gwpforum.org/servlet/psp |
| ▪ VASTRA: | www.vastra.org
www.vastra.org/eng/eng_index.asp |

Acknowledgements

The financial support from The Regional Council, Kalmar County, the City of Kalmar, International Ocean Institute, Graninge Foundation, Global International Waters Assessment and the University of Kalmar is greatly acknowledged

