

What IWMI is doing on content development, courses and distance education and its relevance for GO-FAU Program

Preparation of the Water Resources Module to form part of 3 potential MSc programs at Imperial College is one of the most recent activities that IWMI has been involved in. The material will be made available to 'delivery partners' within the GOFAU program 'consortium'. The three MSc programs that are targeted in this activity are

- MSc Poverty reduction: policy and practice (to be delivered by open and distance learning, ODL, by University of London)
- MSc Agricultural Economics (to be delivered in whole or in part by GOFAU 'delivery partners', i.e. ODL universities and other institutions, primarily in developing countries)
- MSc Agro-ecology (as above).

The development of this module on Water Resources Management draws on the resource and knowledge base available at IWMI. The preparation of this Module involves resource people from IWMI as well as resource people from Imperial College. The main components (considered as units) that will be covered under the Water Resources Management Module are as follows and the units covered by IWMI will provide the content summarized against them:

- *Water resources and scarcity* - This unit provides an introduction to some of the key themes, concepts, and tools associated with water resources of the module. It outlines the necessary hydrological concepts and tools; explores water resources assessment by looking at water availability, water demand as well as various forms of competition for water resources; introduces the concept of water scarcity, with varying forms and indicators for understanding and categorizing water scarcity examined, and the question of whether there is a water crisis posed; the factors driving demand for water and the trends of water resources availability and use; future directions by considering some current options and scenarios for future water resources.
- *Key concepts: assessment and management from basin to user* – Looks at key concepts of assessment and management from basin to user. It outlines the various scales of assessment of water resources and discusses the relationship between the various scales; focuses in on the river basin scale and presents a number of key tools for understanding and assessing water resources at this scale; describes development trajectories of river basins and provides an overview of key issues which affect river basins; introduces the new and prevalent water management paradigm of river basin management; challenges and a general critique are provided in this section and a typology of river basin management models is presented; focuses on Integrated Water Resources Management (IWRM). After exploring why there was a call for a more integrated approach to water resources management, IWRM is defined and described and positive and negative aspects looked at.
- Economics of water use
- *Governance* - Introduces key concepts, challenges, perspectives and issues associated with the governance of water resources. Presents an introduction to the specific challenges of managing water and the issues that frame institutional and policy responses to water resource governance; introduces local and community scale water governance systems as a way to improve the access, efficiency and distribution of water through the active participation of water users; evaluates the limitations of local governance and introduces alternative and complementary mechanisms designed to address those limitations by operating at "higher" scales; examines how factors beyond the water sector including trade policy, increasing appreciation for the environment and urbanization impact water governance; highlights how successful water governance requires a broad understanding of not only water but the larger political economy in which water is used.

- Rural water supply
- *Water use in agriculture I* - Introduces some of the key elements of the role and importance of water resources in smallholder agriculture. Introduces the basic concepts at the farm level by looking at farm productivity and the role of men and women which is essential in understanding the linkages between the livelihoods of the people and poverty alleviation; explores water management concepts and issues in smallholder rainfed agriculture –on which most rural poor depend for their livelihoods -by looking at the best practices available and how best to optimize the available resources; discusses small scale irrigation by summarizing and providing the differences between individual versus community based systems including management styles; the multiple uses of water at the micro level is presented along and the two main competitors of water against agriculture is discussed.
- *Water use in agriculture II* - Provides an introduction to large scale and formal irrigation systems. It introduces large scale irrigations systems and looks at its role in poverty alleviation by analyzing the positive and negative implications in the context of social, economic and environmental needs; describes the types of irrigation systems based on governance and looks at the water sources and implications.; addresses irrigation management by providing guidance on the management steps, design and assessment tools; looks at different options for irrigation financing such as water pricing; explores investments in irrigation – types of investments, drivers for investments, priorities and social and environmental considerations
- *Fisheries and aquaculture* - Provides an overview of the state of knowledge on inland fisheries and aquaculture with particular emphasis on the key issues associated with the management of water resources. It introduces the characteristics of inland fisheries and aquaculture in managed aquatic ecosystems and their potential importance to livelihoods, especially of the poor; describes the range of assessment methods and management options for increasing the productivity of fisheries and aquaculture in managed aquatic ecosystems; major implications in water resource management, governance and policy making are identified and analyzed in the context of multiple users of water.
- *Water for Nature* - Provides an introduction to some of the key concepts and conflicts/issues associated with managing water for nature. It outlines the basic natural resources and its linkages with poverty by identifying the interdependencies and the importance of water in; details the aquatic ecosystems and their ecology by introduction structure, processes and species concepts; describes the services provided by these ecosystems; details the over-exploitation of the services provided lead to ecosystem degradation; summarizes the future scenarios and laying out management responses.
- Policies and practices for implementing change

How it works with various regional capacity development programs?

IWMI has ad hoc involvement in Integrated Water Resources Management (IWRM) courses such as AIT where it was involved in the IWRM Course. Under the Network of Asian River Basin Organizations (NARBO) IWMI has undertaken a capacity building exercise in measuring performance and conducting peer reviews at NARBO through its RBOs. IWMI's involvement in these is usually as a contributor or collaborator but on rare occasions it also leads the program. Advanced International Training Program on Integrated Water Resources Management funded by SIDA was organized by IWMI. This is a 5 week training course where 3 weeks are covered in Stockholm, Sweden and the remaining 2 weeks in Pretoria, South Africa. Participants range from engineers, researchers, government officials to NGO partners, NARS partners and Policy Makers.

What it could contribute to the GO-FAU program in line with what you are already doing?

IWMI could provide content and also use the findings of the Comprehensive Assessment of Water use in Agriculture.

What new activities and course that could be developed with IWMI's content and experience?

With IWMI's multidisciplinary approach and knowledge base, several areas have been identified by IWMI resource persons as potential avenues and they are listed below. These are in addition to expanding on the areas that we are already working given in the first section.

- Policy and water use (for example on biofuels)
- Role of gender in agriculture and water management
- Multiple-use water services
- Local water governance and water law
- Social and Ecological Resilience within Agricultural Landscapes - including a descriptive component to set the scene and then - social and ecological and agricultural assessment tools (taking into account temporal and spatial scales); institutional and governance processes; planning and management approaches (including trade-offs, IWRM, RBOs); responses (including vulnerability and risk assessments, monitoring, as well as response options such as environmental flows within an adaptive framework) and scenarios (current trajectories and plausible futures).
- Water management and agriculture (including fisheries) and ecosystem interactions - the interactions and pros/cons for food and nature (ecosystem services); assessment approaches (assessing the resources, the values and the conflicts); trade-offs and social outcomes or opportunities; ecological outcomes or opportunities; scenarios (including environmental degradation and negative feedbacks on livelihoods and agric).

After working in partnership with Imperial College on the current GOFU program they have also identified IMWI as potential contributors to the preparation of the following where IMWI would adopt a progressive approach to building up of the course modules:

- Water Resources Management module for the University of London MSc in Poverty reduction and policy/GOFU program (as under production).
- Four water modules (the Water Resources Management plus three others) to make up 50% of an MSc (this is based on Imperial College requirements for a Post Graduate Certificate). In this instance one of the modules could be done by WorldFish.
- Eight modules to create a Water MSc. (The current WRM module we are writing is an overview and introduction, so almost each unit could be expanded up to a specialist module).

Bring to attention of the meeting participants another innovative programs that you are aware of or you are involved in.

The Groundwater Governance in Asia project was designed and implemented by IWMI as both a capacity building exercise and a research project. It commenced in 2006 as a 2 year project funded by the CGIAR Challenge Program on Water, Food and Environment. It was designed to employ key public groundwater agencies in both The Yellow River Basin and the Indo-Gangetic Basin in collaborative activity to develop a toolkit for proactive groundwater governance, and to catalyze a change program that encourages these organizations to assume a wider mandate than served so far. Some of the main objectives to this project are:

- To engage 80-100 young and senior functionaries from government, civil society, media and academia in an inter-disciplinary program of classroom teaching combined with applied policy research in groundwater governance.
- To develop and implement a classroom-based training program for a well-rounded, inter-disciplinary, problem-solving worldview amongst groundwater managers, researchers and media fellows.
- To complement the classroom-based training program with a cross-cutting research component whereby the junior research fellows would undertake primary fieldwork-based inter-disciplinary research in several locations within IGB and YRB, while the senior

research fellows would take tours to USA and Australia to acquaint themselves with groundwater governance in developed countries.