

FORGING A GLOBAL COMMUNITY TO ADDRESS INTERNATIONAL WATERS CRISES: THE IW:LEARN PROJECT

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In 1998, the tiny Red Sea country of Djibouti had no universities. So when Nasser Abdi decided to advance his marine science education by pursuing a Master's degree, he was faced with two options: he could study overseas, foregoing an opportunity to apply for advancement in his career at the government's Maritime Affairs Division, or stay and work and chance an experimental Internet-based Master's program. Nasser chose the latter. After a seven-week residency at the University of London, he pursued international development courses over the Internet and received "virtual advising" on his dissertation research from a mangrove expert in Southeast Asia.

As a result, Nasser simultaneously realized both his academic and professional goals. He was appointed Djibouti's first National Coordinator in a regional conservation program spanning the Red Sea and Gulf of Aden. Through perseverance in troubleshooting a myriad of technical, administrative, and academic problems, Nasser's success established a pioneering precedent for distance education in Djibouti.

Ying Zhou-Tala works in Beijing, China, helping to coordinate four Northeast Asian countries' protection of the Tumen River watershed. When her office sought new tools to facilitate international collaboration, Ying attended a five-week workshop in Washington, D.C., where she developed skills for generating multi-media CD ROM and Web presentations, as well as for creating new TumenNET Web spaces. Water resource managers throughout the region now use TumenNET's Web-based "virtual workspace" for instant messaging and sharing of planning documents, contact lists, and project links. Meanwhile, she designed TumenNET's public Web site to provide a common face and interface for Chinese, Mongolian, Korean, and Russian officials joining "to protect transboundary biodiversity and international waters and to attract green investment" (TRADP, 2001).

Both Mr. Abdi and Ms. Zhou-Tala are participants in IW:LEARN, the International Waters Learning Exchange and Resource Network. Support from the Global Environment Facility (GEF) launched IW:LEARN as a non-governmental organization (NGO) and offshoot of the United Nations Development Program (UNDP). IW:LEARN now works to build a global knowledge community to protect lakes, rivers, coasts, and oceans.

To facilitate the creation of this community of practice, IW:LEARN: (1) provides training for strategic use of cost-effective communications technologies in international water resources management, (2) identifies and develops relevant distance justifiable learning opportunities,

(3) fosters peer-to-peer (P2P) knowledge sharing among water resources managers, and (4) serves as a focal point for those in search of solutions to international water resources problems.

IW:LEARN's activities flow from the convergence of three global trends: (1) emerging awareness of the transboundary, transnational nature of potential water resource crises and of cooperative efforts to address them; (2) the "greening" of donor agencies international development activities, promoting sustainable progress through integration of environmental and economic issues; and (3) the proliferation of access to affordable information and telecommunications technologies in developing countries.

We introduce below how this confluence led to the emergence of IW:LEARN as a convener for the international waters knowledge community. We then highlight specific activities IW:LEARN has been facilitating within and for the benefit of this community. The article concludes by proposing ways in which water resources managers and organizations in developed as well as developing countries could benefit from and contribute to the IW:LEARN-sponsored international waters knowledge community.

WATER CRISES AND OPPORTUNITIES

Over a billion people on Earth today do not have access to safe water (WHO and UNICEF, 2000). Poor sanitation, agricultural, and industrial processes result in overenrichment and contamination of freshwater and marine ecosystems world-wide (Gleick, 1998; Smith *et al.*, 1999). As their populations increase, many developing nations consequently face precipitous declines in their ability to meet water quantity, water quality, public health and aquatic biodiversity needs (Duda and El-Ashry, 2000; WRI, 2000). This includes deterioration and losses to wetlands, fisheries and coral reefs.

Water does not recognize political boundaries. Forty percent of the world's population lives in river basins shared by at least two nations (Shumway, 1999). The number of international river basins has actually increased from 214 to 261 over the past two decades (Gleick, 2000). Today, more than 30 nations receive at least a third of their water from beyond their borders (USNIC, 2000). In the oceans, multi-national fleets fish intensively in international waters, while ships transport in their ballast water exotic species from one seaport to the next. Individual nations cannot act alone to protect their own waters or arrest threats from these and related

transboundary water problems.

International conventions launched at the Rio Earth Summit in 1992 led the way for international donor agencies to directly address sustainable development and, by extension, management, and protection of international waters. Hence, numerous financial and technical resources are now available to mitigate a growing spectrum of transboundary water crises. At the forefront of these efforts, the World Bank, United Nations Development Program (UNDP) and United Nations Environment Program (UNEP) together created the Global Environmental Facility (GEF) as the world's largest single source of financial support for addressing international waters issues. In subsequent years, GEF and its partners have leveraged nearly one billion dollars in financing to support almost 50 international waters projects, with an additional half billion dollars pledged over the next five years (El-Ashry, 2000). Still, financial empowerment alone will not solve the world's water crises.

Often nations must promote and apply indigenous expertise to address their common international waters problems. Such expertise is limited in many developing countries, however, where water resource management is the jurisdiction of a thin structure of undersupported environmental ministries, regional programs, commercial interest groups, scientific researchers, and NGOs. These organizations generate valuable data, findings, and recommendations. Unfortunately, such knowledge products are often poorly disseminated (Somlyody, 1995). Thus, valuable lessons are lost to the greater community. Such dissipation of learning and knowledge loss are critical weaknesses in the web of international water resource management.

By the same token, GEF's project portfolio encompasses a vast but underutilized wealth of institutional experience and individual expertise. Until recently, GEF international waters and biodiversity projects had no formal means in place to preserve and transfer the knowledge they generated. Newly formed projects have rarely had access to the experience of more established projects. For junior and mid-level personnel, training opportunities are limited or, at best, classroom-bound. Opportunities for cross-project internships, apprenticeships, and international site visits simply do not exist. While international donors cite P2P technical assistance and South-South learning as valuable goals, few practical mechanisms are in place to realize such ideals. Even GEF's implementing agencies - UNDP, UNEP, and the World Bank - encounter difficulties in sharing their information resources across institutions.

Over the past decade, Internet usage has grown explosively. As part of this trend, GEF now invests at least 15 percent of project budgets in information technology. Such financing aims to enhance returns through improvements in inter-institutional knowledge sharing within and between international waters projects. GEF's investment has also helped international waters projects to establish the technological infrastructure for vastly improved communications with their national and international partners.

Meanwhile, a creative boom is underway in the field

of distance learning and knowledge sharing. This has been fostered by a variety of low and no cost software for web based training (WBT) and P2P knowledge sharing. International waters projects have barely skimmed the surface of strategic opportunities to apply these tools to their benefit.

THE INTERNATIONAL WATERS KNOWLEDGE COMMUNITY

As a Web-savvy UNDP/GEF-sponsored project, IW:LEARN is ideally situated to improve management of transboundary water systems by increasing local knowledge sharing capacity across the international waters community. The organization's present activities focus on four core areas: team building, distance learning, knowledge sharing, and development of knowledge products.

In 1998, IW:LEARN began training and mobilizing Web-connected implementation teams. Team members catalyze and carry out knowledge sharing and distance learning activities within and across their respective international waters projects. For example, following IW:LEARN workshops in England and the United States, East African team members succeeded in setting up local area networks (LAN) for Lake Victoria project's offices in Uganda, Kenya, and Tanzania, then later identified supplemental hardware and software to improve inter-office knowledge sharing across the Nile River basin. Thus, these participants learned to evaluate then recommend Web-based tools for programmatic use upon their return home.

A Nigerian team member was inspired by the first IW:LEARN training workshop to employ ICQ.com ("I seek you") software in the Gulf of Guinea Large Marine Ecosystem project, an initiative spanning six West African countries (Nigeria, Cote d'Ivoire, Cameroon, Togo, Benin, and Ghana). He reported:

"ICQ was quite handy during our last Tripartite Review Meeting as it made communication far less cumbersome. We couldn't hold live meetings because of low bandwidth for video and voice communication but we were able to chat with some government officials via ICQ."

After IW:LEARN's fall 2000 workshop, newly trained team members wrote:

"The workshop program was useful in equipping us with the knowledge of existing web tools that can ease the difficulties in communication in most developing countries. It also provided us with the ability to find, test and apply new communication tools on the web, and keep up-to-date with the ever-evolving web communication tools . . . it is hoped that [our offices] will be linked and will be able to take advantage of some of the tools . . . for example, one or more staff can chat with [another] team simultaneously, without having to leave their offices to meet in the same room. Telephone costs can also be reduced by using . . . PC-to-PC

telephoning, which is free and easy to use.”

Obvious efficiencies can be realized through electronic dissemination and remote access to formal information, such as contained within project documents and written reports. The Web has also introduced an overlay of enriched informal communications that is changing the way projects do business. Ongoing experimentation and usage of Web-based communications technologies among team members supports the validity of IW:LEARN training as a catalyst for informal knowledge sharing between international waters projects.

IW:LEARN now aims to integrate participants from an ongoing series of workshops into a unified global implementation team representing diverse international waters projects. This team will help our organization identify, evaluate and customize additional emerging telecommunications tools for use in transboundary water resources management. Regional IW:LEARN workshops will also introduce team-tested technologies to new multi-country projects, while recruiting representatives from those projects to join the implementation team. Through these activities, IW:LEARN will continue to promote global involvement and enhanced capacity across the international waters community of practice.

IW:LEARN's distance learning program targets developing regions where resources are insufficient to provide regional expertise or training to address environmental management needs. In partnership with Royal Holloway College, University of London, IW:LEARN established a distance Master of Science degree program which targets tomorrow's environmental managers in developing and transitional (Eastern European) countries. The distance learning program focuses on sustainable development with an international waters specialization. Having completed an IW:LEARN workshop, students participating in this experimental Master's program returned home with Internet-ready laptop computers to support their distance coursework and to engage their cohorts across the nascent global IW:LEARN implementation team.

Distance learning students participated in a variety of IW:LEARN implementation team activities during the two year Master's pilot program. One of the criteria for dissertation projects was that students' research make a substantive contribution to the particular environmental concerns of their sponsoring GEF project's region. Thus, through their research, students developed international teams to compile references on invasive aquatic species (such as water hyacinth); informed the development of a regional river basin management program; established monitoring transects for previously uncharted mangroves, and, in one case even learned to scuba dive.

Five IW:LEARN team members graduated from the Royal Holloway distance Master's pilot program, concluded in 2000. Among them, a Sudanese student overcame persistently intermittent power and Internet connectivity at his office in Port Sudan to graduate with distinction. He also received a Geography Department prize for his rigorous coral reef ecology study. Another student, working with the East Asia Seas GEF project in the Philippines, created an integrated coastal zone man-

agement WBT module for one of the project's demonstration sites. This training module has since been featured on the project website and may be replicated for demonstration sites in other parts of the region.

In the area of distance learning, IW:LEARN is now developing a catalog of existing online water management programs and courses, as well as other information technology training opportunities. The organization will continue to leverage its resources to help secure financial aid and promote the creation of sustainable regional or country-based financing mechanisms to support students from developing countries. Furthermore, as IW:LEARN identifies gaps in existing distance education programs, the organization may also sponsor development of new international waters distance learning activities.

Knowledge sharing addresses the lack of opportunity and capacity among projects in developing countries to regularly communicate with each other, convey their lessons-learned and collaboratively approach regional or issue-specific problems. IW:LEARN is helping to build bridges for knowledge sharing by providing real-time hands-on demonstrations among implementation team members in field locations and at international waters conferences, as illustrated in Figure 1. In the wake of GEF's first International Waters Conference in Budapest last fall, IW:LEARN is also using eGroups.com tools to establish facilitated electronic lists for practitioners to discuss specific commonly-held international waters challenges (e.g., public outreach, project evaluation, etc.), seek technical assistance, and share perspectives among their peers (IW:LEARN 2001).

IW:LEARN has already codified the knowledge shared at the Budapest, Hungary, conference as a set of on-line proceedings, which will later be transformed into a searchable database of presentations. The organization is also interested in capturing easily referenced topical or regional information on the record of lessons which can be gleaned from past and present projects. Over the next few years, in partnership with UNEP, IW:LEARN plans to develop and launch an International Waters Best Practices database. This activity may be coupled with an award scheme to provide incentive for the database to be “self-populating.”

IW:LEARN is creating a globally accessible Web space that will form the infrastructure for an inclusive global community dedicated to distance learning and knowledge-sharing about international waters. We will utilize this space to promote various knowledge sharing products, including an international waters knowledge needs and resources matching service; collaborative annotated bibliographies of links to international waters projects sites and pertinent electronic lists; and white papers highlighting conclusions from targeted on-line discussions and e-seminars.

IW:LEARN uses new communication technologies to draw upon the intellectual resources of participating projects, UNDP, World Bank, UNEP, and other partners. IW:LEARN and its partners are generating a number of knowledge products, including a methodology for “distaning” regionally-tailored environmental training programs (with IW:LEARN's sister project, Train-Sea-

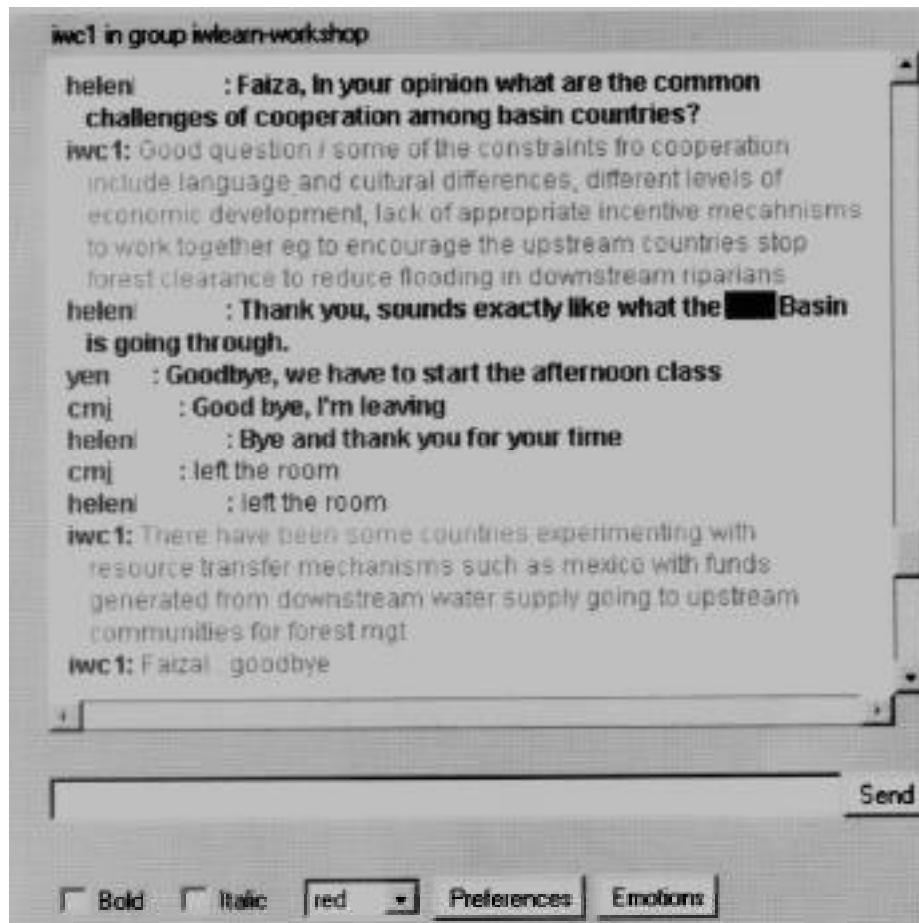


Figure 1. An Example of Real-Time Inter-Continental Knowledge Sharing Between East African and Southeast Asian International Water Project Personnel.

Coast); replicable regional workshops between international waters managers (World Bank); and a variety of on-line short courses on various topical issues (e.g., controlling aquatic weeds, environmental conflict resolution, etc.).

These products will be designed for dissemination via the Web, as well as through “portable classrooms” of stand-alone computers and, where feasible, fax-on-demand or printed paper copies. In these ways, IW:LEARN's knowledge products should be accessible to the full spectrum of water resource managers, encompassing those working at all levels of access to information and communications technologies.

The organization is also developing a “virtual toolkit” from which individual team members and/or project region partners can tailor their own platform for participation in the international waters knowledge community. IW:LEARN is constantly exploring and testing new tools and provides assistance in setting up web-based “virtual offices,” intranets where smaller teams can converse and collaborate in relative privacy. Through our Web spaces,

portable classrooms, and virtual offices, IW:LEARN will provide the international waters projects with a large variety of tested tools and information resources to advance their resource management initiatives. Together these tools will also lay the foundation for a vibrant global community working in concert to protect our world's water resources.

IW:LEARN AND YOU

Team building, distance learning, knowledge sharing, and knowledge production activities together comprise IW:LEARN's approach to building a global knowledge community to manage and protect international waters. To be viable in the long run, this initiative must extend beyond GEF-sponsored projects to eventually engage the larger global community of integrated land and water resources managers as a whole.

IW:LEARN offers water resource managers a variety of community-building and participation opportunities, such as: (1) receiving training in the use of Web-based tools for water resources management, (2) discovering and pursuing professional distance learning opportuni-

ties, (3) participating in thematic knowledge sharing sessions on-line with colleagues world-wide, and (4) obtaining on-line knowledge products to address specific water resource problems.

IW:LEARN also has a vital need for water resource managers to participate in (1) testing and evaluating the utility of new communications technologies for water resource management; (2) advising or participating in international waters capacity-building for individuals and teams through the United Nations' "virtual volunteer" program; (3) providing insights or technical assistance to other water resource managers via electronic lists, Web-based teleconferences, mentoring, or partnership exchanges; and (4) developing distance learning courses, characterizing best practices, and creating other solutions-oriented knowledge products for water resource managers currently without access to such knowledge.

Practitioners need technological access and ongoing advancement in their knowledge in order to sustainably manage international waters. We hope you will join us to share in these efforts to solve our world's water crises. For more information, please visit the IW:LEARN Web site (www.iwlearn.org) or contact IW:LEARN's Director, Dann Sklarew, at the address below. The authors wish to thank the Global Environmental Facility and its implementing agencies for their support of IW:LEARN activities. We also extend our gratitude to the international implementation team members who are the lifeblood of this organization.

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