The SIST-GIRE Plate-form, an example of link between research and communication for the development

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Abstract

The integrated water management is a challenge for the whole world and particularly in developing countries. It needs the mobilization of researchers, decision-makers, river basin agencies, and generally of all stakeholders.
The mobilization of the international scientific community led to the creation of the Challenge Program "Water and Food" that gather together scientific teams from all over the world on this thematic. 9 benchmark basins have been chosen in the developing countries.

Among its basins, the French Ministry of Foreign Affairs chose 2 basins, the Limpopo basin and the Mekong basin. The Niger basin has been added. A Research Development project named ECHEL-EAU has been implemented and allowed to finance 7 projects on the 3 basins and also some actions on capacity building. These projects produce new tools, new training modules and new methods shared between the 3 basins.
In the same time, the Ministry of French Foreign Affairs supported another project named SIST to set up collaborative platforms. It consists, on an Internet sites, on a set of modules, easy using, for a non-stop documentation and information dissemination and some means of exchange of information and ideas (Forum, Wiki). The users of that platform are researchers and actors of the development.

Some platforms are thematic and, in particular, a platform on integrated water management was implemented. This one is managed by the Niger Basin Authority as president of the African Network of Organisms of Basin (RAOB).

As a matter of course the two projects came closer and they permitted to nourish the platform with new tools, training modules and methods not only achieved in the Niger basin but also on the two other benchmark basins of Echel-eau project. The platform allowed a good valorisation and dissemination of the results on other basins on the African continent.

Résumé

La gestion intégrée de l'eau est un défi pour le monde entier et particulièrement pour les pays en développement. Elle demande la mobilisation des chercheurs, des décideurs, des agences de bassin et en général de tous les usagers. La mobilisation de la communauté scientifique internationale a conduit à la mise en place du Challenge Programme « Eau et alimentation » qui rassemble des équipes de recherche du monde entier sur cette thématique. 9 bassins de référence ont été choisis dans les pays en développement.

Parmi ces bassins, le Ministère français des Affaires Etrangères a choisi deux bassins, celui du Limpopo et celui du Mékong. Le bassin du Niger a été ajouté. Un projet de recherche développement appelé Echel-eau a été mis en œuvre et a permis de financer sept projets sur les trois bassins et des actions de formation. Ces projets ont produit de nouveaux outils, de nouveaux modules de formation et de nouvelles méthodes partagées entre les trois bassins.
Dans le même temps, le Ministère français des Affaires Etrangères a financé un autre projet appelé « projet SIST » pour mettre en place une plate forme collaborative. Elle consiste en un site Internet comprenant plusieurs modules, facile à utiliser pour diffuser des documentations et des informations en continu et des moyens d'échange d'informations et d'idées (Forum, Wiki). Les utilisateurs de cette plate forme sont des chercheurs et des acteurs du développement.
Quelques plates formes sont thématiques et, en particulier la plate forme sur la gestion intégrée des ressources en eau (GIRE) a été mise en place, gérée par l'Autorité du Bassin du Niger en qualité de président du Réseau africain des organismes de bassin (RAOB).
Les deux projets se sont rapprochés et ceci a permis de nourrir la plate forme avec de nouveaux outils, des modules de formation et des méthodes non seulement mis au point dans le bassin du Niger mais surtout des deux autres bassins dans le cadre du projet Echel-Eau. Cette plateforme permet donc une bonne valorisation et une diffusion des résultats de recherche sur les autres bassins du continent africain.

Introduction

The results of research are often disseminate by the way of scientific publications that are rarely be read by the stakeholders. This situation get worse in developing countries where it is very difficult to access to scientific literature because of the poor scientific libraries and isolation of potential readers.
Likewise, it is difficult to maintain capacity of stakeholders. They often use knowledge acquired during the initial training and they have a lot of difficulties to obtain new concepts and new methods.

The integrated management of natural resources and in particular, integrated water management is a new concept.

In West Africa, the reduction of water resource, following the rainfall drops during the last 30 years and the increase of floods asks new approaches in the water management. Water resources are concentrated in some large trans-border river basins (Niger, Senegal, Volta…) and in some large trans-border water tables (Illemeden, Taoudeni…). Except for Cap Vert Islands, each country shares at least one river with one of its neighbor country. This situation produces interdependence in their water resources. Important pressure on this public good could generate conflicts between users having antagonist interests.

In that context, the integrated water management is an essential tool and it is efficient to resolve conflicts, to fight against poverty and for environment sustainability. There is a worldwide dynamic for integrated water management (Rio conference, 1992, World water forum, 2000, 2003, 2006). This dynamic require a capacity building in integrated water management in West Africa in order to speed up the legal and institutional reforms in these countries.

Integrated water management requires specific tools. In one hand, it require tools to manage confident data used to the debates between users and in other hand a negotiation engineering to obtain decisions agreed by all the users.

For that, it is necessary to produce suitable tools by research and to disseminate these tools to the potential users

Echel-Eau project

The French Ministry of Foreign Affairs supported a project named Echel-Eau project whose aim is to develop new tools for a better integrated water management. It operates on three river basins: Mekong, Limpopo and Niger. Mekong and Limpopo are two of the nine benchmark basins of the "Water and food" Challenge program, a worldwide mobilization of research for water productivity. For that reason, the Echel-Eau project is the French contribution to this Challenge program. Niger Basin has been added because of the French commitment on this basin.
Seven research projects have been supported by this project. Most of them are contribution to negotiation engineering. We give an example of these projects: Companion Modeling in Southeast and South Asia.

Companion Modeling (ComMod)

Companion Modeling is an interactive process facilitated by evolutionary models to support dialogue, shares learning and collective decision-making. ComMod strengthens the adaptive management capacity of communities through integrated collaborative modeling and simulation.
The main principle of the ComMod approach is to co-construct simulators integrated various stakeholders' point of view with the end user to examine concrete common resource management problems with them. The ComMod approach can be uses in two different contexts:

- To understand the management of resources in a complex agro-ecosystem, and also
- to facilitate the collective management of these resources with concerned stakeholders by using participatory simulators within platforms for communication and collective learning

ComMod is a constructivist, trans-disciplinary modeling and simulation approach used:

- To understand by integrated knowledge across disciplines (especially ecology and social science) and from various sources (scientific, expert, indigenous), and
- To produce new knowledge via repeated in depth interactions between researchers and stakeholders
- To represent complex system by facilitating the collective construction of shared representation of common problems
- To model them by programming these representations into multi-agent simulators, and
- To support learning and negotiation by simulating resource management scenarios selected by the stakeholders, to access them collectively and evaluate their impacts on the resource and the type of users.

The quality of the process learning up to collective decisions is improved by examining the uncertainties of the situation with all concerned parties. The stakeholders learn collectively by creating, modifying, observing simulations used as a mediating tool. They may also modify their representations of the problem at stake or create new ones. ComMod process aim at the definition of agreed upon action plans which are likely to be implemented thanks to better community mobilization.
Key complementary tools combined in a ComMod cycle and used during field workshops are conceptual models, role-playing games, computerized multi-agents simulations, focused group debates and individual interviews.
The multi-agent systems (MAS) modeling approach is used to understand how different processes in direct competition are coordinated and to mediate the collective search for acceptable solutions to conflicting parties facilitated through exchanges.
MAS are usually used in synergy with role-playing games to facilitated stakeholders participation in the construction of the simulator, to understand its operations, and to criticize researchers' representation of the problem being examined.
These different kinds of complementary models are tolls to improve the stakeholders' capacity to explore the uncertain future collectively and to improve their mutual understanding.

Echel-Eau project supports ComMod for resilient water management in Vietnam and Thailand in Mekong river basin.

The support consists in doctoral studies but also in training courses on the ComMod approach and its use. In particular, Echel-Eau project financed a training on its tools such as role-playing games or multi-agent systems for collective water resource management. These training sessions are made on the Mekong Basin but an agent from Niger Basin Authority (NBA) went to Asia to be trained in ComMod approach. In a second step, this agent helped by researchers from Asia organized a training session for NBA agents. So, Echel-Eau Project allows transferring this approach from one basin to another basin.

Sist project

In the same time of Echel-Eau Project, the French Ministry of Foreign Affairs, implement the SIST project.
This project started from the fact that African research is largely absent from the international scientific arena. Africa's lack of access to information is a major handicap and explains, in part, the increasing isolation of its research from the international arena. It also remains an obstacle to the dissemination of its results. All too often, the work of African teams remains dispersed, isolated and difficult to access for people at all levels: regional, national and international.
This project aims to

- Promote research in Africa by encouraging and developing the exchange, production and dissemination of both scientific and technological information.
- Promote science and technology in the developing countries by helping African researchers to develop their own analytical capabilities in key research areas.
- Facilitate sustainable development by supporting regional research along priorities defined by the countries.

It consists of a building a scientific and technological information system. In this project, there are national components (12 countries involved) and thematic components, one of which is devoted to Integrated Water Management (GIRE).
The SIST project has 4 actions:

- Design of an expertise and information system put up in one of the partner.
- Help to develop thematic networks.
- Training of participants from the developing countries in the use of the SIST computer system, in the creation of scientific information and in the project management.
- Acquisition, generation, dissemination and value extraction of scientific information.

For the integrated water management thematic, an electronic networking has been created and set up at Niger Basin Authority head office. The platform accessible by Internet provides to researchers and actors of development (http://sist.abn.ne/sist) .
The platform is made up for following modules:

- A federated search module.
- Data base hosted by SIST system.
- News by RSS feed.
- Open archive query interface.
- Web site browsers.
- Forum.
- Wiki.

The link between the two projects

NBA is involved on the two projects. In Echel-Eau project, NBA is the coordinator of the Niger River Basin. It is a member of the steering committee of this project where it is one of the final results users.
NBA is also in the steering committee of the SIST project for the integrated water management component.
The conjunction of these two projects allows building a link between these projects.

For that, the most important results of the Echel-Eau project will be set up in the SIST plate form. The following modules will be installed in the plate form SIST.

- comMod methodology and role-playing game, with a pedagogic set.
- role-playing game elaborate in the Limpopo River Basin,
- thesis and MSc dissertations supported by Echel eau project,
- scientific papers,
- courses given for a MSc training in Niger Basin,
- Niger basin water productivity atlas,
- Meeting acts organized by Echel-eau project,
- Results of cohorts organized by Echel-Eau project.

With that link, results from other basin can be disseminated in the Niger Basin and also in other African countries.

A-Conclusion

The linkage between a research project and an information system project using new technology can resolve the problem of dissemination and use of scientific project results. It obliged the researchers to present their results in a suitable form to be included in the dissemination system. Moreover, an Internet platform is a suitable for dissemination results in a large public: isolated researchers, actors in development, decision-maker and other stakeholders. These agents can know and use the latest tools and methodology and also ask questions to the designers. In the case of Echel Eau projects, the scientific results came from other basins and it allows using of results in basins where results are still poor.