CAPACITY BUILDING AND IRRIGATION WATER MANAGEMENT: THE ROLE OF INSTITUTIONS AND HUMAN RESOURCES

ATEF HAMDY (*) - COSIMO LACIRIGNOLA (**)

ABSTRACT

The need to better manage overall water resources coherently and to facilitate allocation of water among all users requires an expansion of national integrated planning. The critical new institutional challenge should be directed to developing policies, rules, organizations and management skills to address both needs simultaneously without constraining the major aims of each. It must be recognized that each country and region has its specific characteristics and requirements with respect to its water resources situation and its institutional framework, therefore, operational strategies for water sector capacity building must be tailormade. Such strategies should be of long term having the main objectives to improve the quality of decision making, sector efficiency managerial performance in the planning and implementation of water sector programmes and projects. This paper will cover the capacity building issue for water resources development and management with particular emphasis on the institutional and human resources issues as well as building marginal capabilities in developing countries.

RÉSUMÉ

La nécessité de mieux gérer toutes les ressources hydriques d'une manière cohèrente et de faciliter l'allocation de l'eau à tous les utilisateurs, requiert la réalisation d'une planification nationale intégrée. Le nouveau défi institutionnel devrai consister à développer les politiques, les règles, les capacités organisationnelles et gestionnaires permettant d'abordre les deux besoins sans quand même entraver les buts principaux de chacun. Evidemment, chaque pays et chaque région gardent leurs caractéristiques et laurs besoins vis-à-vis des ressources hydriques et du contexte institutionnel, ce qui requiert des stratégies opérationnelles pour le développement des compétences dans le secteur hydrique faites sur mesure. Il devrait s'agir de stratégies à long terme et ayant pour objet d'améliorer la prise de décision, la performance managériale du secteur dans la planification et la réalisation des programmes et des projets du secteur. Ce travail traitera du problème du développement des compétences pour l'exploitation et la gestion des ressources en eau se référant en particulier aux problèmes des ressources humaines et institutionnelles ainsi qu'aux développements des capacités manageriales dans les pays en développement.

Capacity building is the process of gaining technical, managerial and institutional knowledge and insight in relation to the socio-economic structure, cultural standards and values of the society concerned.
It aims to increase the flexibility of institutions and society to adapt to the changing circumstances. Specifically, capacity building encompasses the country's human, scientific, technological, organizational, institutional and resource capabilities.
A fundamental goal of capacity building is to enhance the ability to evaluate and address the crucial questions related to policy choices and modes of implementation among development options, based on the understanding of environmental potentials and limits and on needs as perceived by the people of the country concerned.
There is mounting evidence that, in the near future, the major constraint to water resources development and protection will be the limited capacity of the institutions in many countries to absorb financial resources and convert them into worthwhile and sustainable actions and projects (Alaerts et al., 1991). Capacity building is a major aspect of formulating a water resource management strategy.
The Delft Declaration (IHE/ UNDP, 1991) describes capacity building as a global concept and a strategic element in the sustainable development of water resources, and identifies the three basic elements of capacity building as:
- creating an enabling environment with appropriate policy and legal frameworks;
- institutional development including community participation; and
- Human Resources Development (HRD) and strengthening of managerial systems.

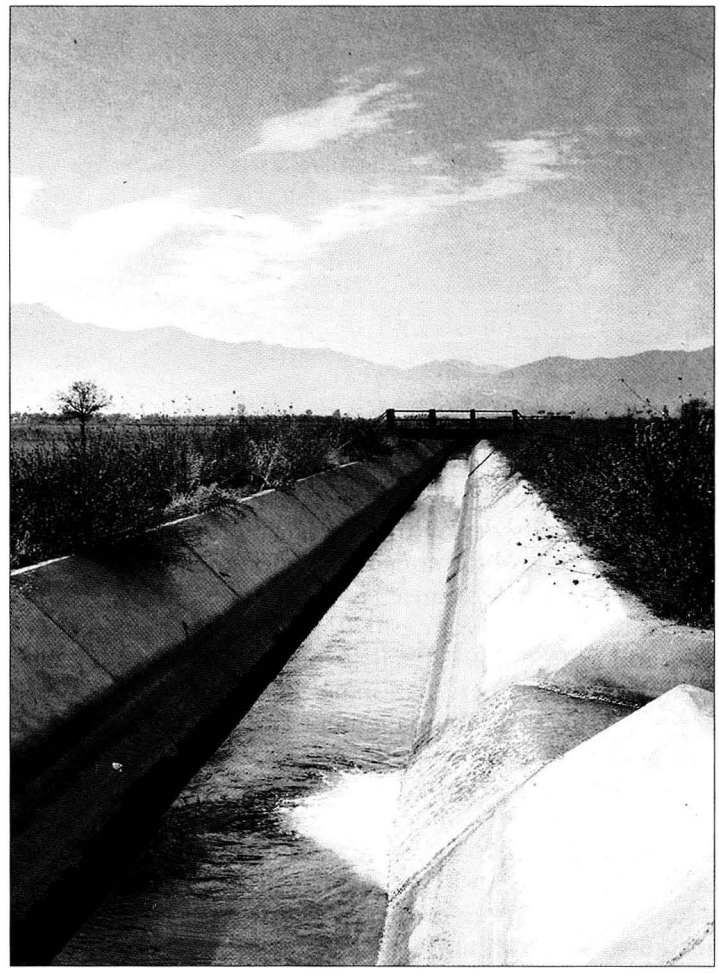
The UNDP's capacity building programme for sustainable water sector development stresses "vertical" capacity building within an individual water sector and "horizontally" between sectors. It recognizes that capacity building is a long-term and continuing process involving all stake-holders.

CAPACITY BUILDING: A GLOBAL ISSUE

The international cooperation agenda for the nineties was shaped by four global meetings, each which looked at the water sector from a different perspective. A common issue in these meetings was the importance of capacity building. The New Delhi Statement prepared at the Global Consultation in India (1990) contained four guiding principles, two of which are directly related to capacity building: "*strong institutions are essential for sustainable development*" and "*capacity building is necessary to make management effective...*". The concept of prospects for capacity building was further elaborated during the UNDP Symposium: "*A strategy for water resources capacity building*", held in Delft, The Netherlands, in June 1991. A major issue addressed in the Delft Declaration is the daunting challenge:
"to satisfy the water needs of the exploding cities, giv-

(*) Director of Research, Mediterranean Agronomic Institute - Bari (Italy).
(**) Director, Mediterranean Agronomic Institute (Bari).

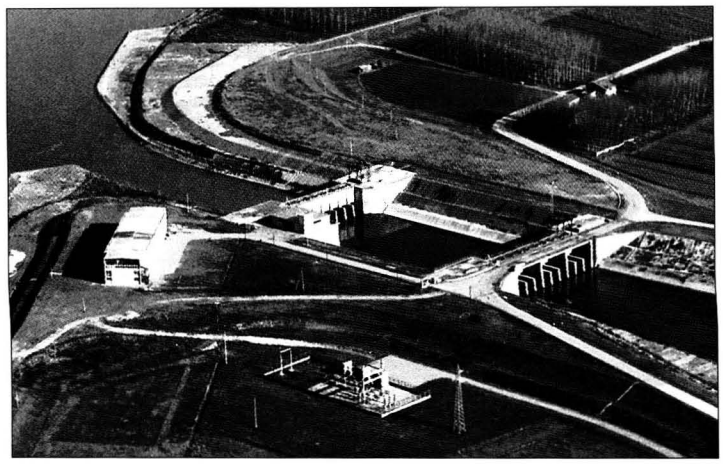
en the equally increasing need for water for irrigated agriculture and the problems arising from urban and industrial pollution. In addition, to do this in a sustainable way, measures have to be taken to protect and conserve water as a major resource and unifying element of our environment. Experience shows that institutional weaknesses and malfunctions are a major cause of ineffective and unsustainable water services. This requires urgent attention to building institutional capacity at all levels. Pressure for improved local delivery of water services suggests that development of institutional capacity be more demand-responsive. Also, the need to manage overall water resources coherently, and to facilitate the allocation of water among all users suggests an expansion of national, integrated planning". Subsequently, on the road to the Earth Summit in Rio (the United Nations Conference on Environment and Development - UNCED), a unique event took place in January 1992 in Dublin, Ireland: the International Conference on Water and the Environment. This Conference made recommendations for action at local, national and international levels. Again, capacity building was recognized as a principal element in the development, use and management of water resources. Finally, the United Nations Conference on the Environment and Development (UNCED, Rio de Janeiro, June 1992) articulated the concept of sustainability in its Agenda 21, which contains numerous recommendations for actions in the water sector from different vantage points. Consistently, the vital role of people, communities and institutions was underlined.



THE NEED FOR CAPACITY BUILDING

Many failures in water resources management are the result of lack of trained staff and weak institutions. Capacity-building has been identified as the missing link in African development (Jayok, 1993).
The lessons learned of the past decade are that technical solutions alone cannot provide the world's population with safe water supply and proper environmental sanitation. Water resources management is one of the most important challenges we face at the turn of the century. How well we manage water will determine our ability to pass on our natural heritage to future generation, maintain human health and feed a growing population. Ismail Serageldin, Vice-President of the World Bank, in his address to the VIII World Congress on Water Resources of the International Water Resources Association (IWRA), held in Cairo-Egypt (1994), highlighted clearly that current water policies and management practices are not sustainable from any perspective: social, economic or environmental. He attributed such failure to the way governments have managed their water resources; and such government mismanagement of water is the greatest cause of serious misallocation and waste. Governments are, unfortunately, subject to shortcomings of their own, and it cannot be assumed that they are always efficient servants of public good. The situation we are facing with its multitude problems all stem from the following principal failures:

- water management is fragmented among sectors and institutions with little regard to conflicts or complementarities among social, economic and environmental objectives. This led to conflicts, confusion and mutually damageing tactics;
- there is a heavy dependence on centralized administration to develop, operate and maintain water systems. Excessive reliance on the government with complete ignoring the public and private sectors for water and wastewater services;
- refusal to treat water as an economic commodity. Indeed, in some countries, irrigation is provided to the farmer free and in many countries there is a strong resistance to effective water pricing;
- finally, current water resources management neglects linking the quality of water to health, the environment and economic development. There is inadequate recognition of the health and environment concerns associated with current practices. The deep analysis of the gov-



ernment's failures in water resources management demonstrates evidently the unability of nations to identify problems and formulate and implement policies and strategies. The main causes to such a situation are in fact the results of the weakness of many governmental agencies and institutions capacity building as well as the lack of trained staff. Many national and local institutions, responsible for water management and water delivery, do not work efficiently nor effectively because of:

- inappropriate policies for water management and unclear definition of the mandates of the institutions;
- lack of resources (inadequate funding and human resources);
- working in an environment that is not conducive for institutions and inhibits job satisfaction;
- inadequate education and training facilities; and
- lack of participation and commitments from communities and customers.

Nowadays, the problems created by inefficient institutions capacity building are aggravated by the speed with which water scarcity and water quality problems have emerged in many regions. Countries constantly need to adapt their policies and associated strategies to new circumstances and challenges. To build capacity, the process of formulating a water sector strategy is perhaps as important as the resulting strategy.

WATER RESOURCES MANAGEMENT AND CAPACITY BUILDING

Review of current trend indicates that we are approaching a water crisis in several regions and in an increasingly large number of countries in all parts of the world. Water resources management can be conveniently considered under two headings: supply management which covers those activities required to locate, develop and exploit new sources, and demand management which addresses mechanisms to promote more desirable levels and patterns of water use. Planning integrates the two aspects and provides the analytical basis for choosing between alternatives. In the past, supply-side approaches dominated water resource management practices. Water itself was physically managed through technical and engineering means that captured, stored and treated water. However, the approach of meeting growing demand by developing new supplies is ending. In our present-day water economy, resource management is shifting away from the goal of new supplies towards that of designing demand -and user- focused approaches that influence behaviour. Provocative measures for managing demand for water will be as critical as investments in new infrastructures. Demand management covers both direct measures to control water use (e.g.: regulation, technology), and indirect measures that affect voluntary behaviour (e.g.: market mechanisms, financial incentives, public education). The mix of demand management measures will vary but in all cases they aim to conserve water through the increased efficiency and perhaps equity of water use. Lessons and experiences of the past two decades indicated that water management must be based on much sounder policies, greater economic incentives for achieving efficiencies and providing water services to the poor and for more effective institutional arrangements than currently exist. Water management and related environmental issues have been the subject of increasing international concern and debate. ICWE (1992) and UNCED (UN,1992) International Conferences called for a new approach to the assessment, development and management of freshwater resources. Those two conferences highlighted a number of principles: water must be managed in a holostic way; institutional arrangements need to be adjusted to allow stake-holder participation in all aspects of policy formulation and implementation, including devolution of management to the lowest appropriate level, the central role of women, and the management of water as an economic resource as well as a resource for meeting basic needs. In 1993, the World Bank issued a comprehensive policy paper focusing on three main elements: first, that water should be viewed as a limited resources to be managed in an integrated manner to meet national objectives — economic, social, security, environmental —rather than as an input into specific sectors; second, that institutional reform and capacity building are critical to sustaining policies, programs and projects, and third, that international water issues should be given particular attention. Those statements call to move away from an emphasis on developing new water supplies toward a focus on comprehensive management, economic behaviour, policies to overcome market and government failures, incentives to provide users with better services, and technologies to increase the efficiency of water use. This new focus on demand stresses integrated water management based on the perception of water not just as a basic human need, but also as an integral part of

the ecosystem, a natural resource, and a social and economic good. This new approach calls for policies that are formulated in the context of a comprehensive analytical framework that takes into account the interdependencies among sectors and protects aquatic ecosystems. Incentives for financial accountability and improved performance should be created through greater use of pricing, decentralization of administration and services, financial autonomy, user's participation and private sector involvement. Implementation of such an approach will require more sectorial integration and will have considerable implications for organisations, staffing, institutional arrangements and corresponding capacity building. Furthermore, consistent rules and regulations and coordination among agencies responsible for water services should be established to ensure policy cohesion and public support. The lessons of collective experience demonstrate that we must make a decisive break from past policies to embrace a new approach in water resource management that is comprehensive, market oriented, participatory and environmentally sustainable. The implementation of the new approach is not an easy task and requires difficult decisions, however, the cornerstone of such an approach is that the national water management strategy should emphasize the aspects of institutional and human resources framework, and should address the medium-to long-term issue of building and enhancing a country's water management capacity. Of importance, also, that the strategy should be developed principally by national experts and should incorporate the views of water resources stake-holders by including them in the formulation process.

Institutional issues

The institutional arrangements for developing and managing water resources are the transmission gears between policy objectives and field-level performance. Whereas policies raise questions about what is to be done, institutional analysis asks who is expected to do it, and with what resources and how are the institutional building blocks expected to interact. The term "institutions" refers to both the set of rules governing water use and to specific organizational arrangements involved in the formulation and implementation of water resources laws, policies, strategies and programmes. Together, the rules form the enabling environment for water resources management. Changes in the rules, organizational arrangements and means of HRD may be required to effectively translate water resources management policies into an action programme. Such changes should provide incentives for improved performance in terms of water resources planning, allocation and operation management.

Institutional deficiencies

Governments in general tend to organize and administer water sector activities separately: irrigation might be under one department, domestic water supply and sanitation overseen by another; hydropower activities managed by a third; transport supervised by a fourth, water quality controlled by a fifth, environmental policy under a sixth; and so forth. These fragmented bureaucracies make uncoordinated decision, according to individual agency mandates that are independent of each other. Too often, different groups of government planners develop the same water source within an interdependent system for different and competing uses. The result often is excessive and unproductive investments, with different agencies developing the same water source for different uses. This project-by-project, department-by-department and region-by-region approach is no longer adequate for addressing water issues and provoked several problems confronting governments in managing their water resources. A few of those are the following:

- Most countries have general water allocation priorities: domestic use, agriculture, industry and electricity generation, in declining order. Some place industry ahead of agriculture. But these general priority statements neither clarify the allocations among specific users nor set priorities under long-term and emergency shortages. The linkages to land-use objectives and geographic location within basins are not defined, resulting in inconsistencies. Water quality considerations are absent in criteria governing the use of an allocation.
- "Safe" drinking water is available to only portions of the population. Unfortunately, much of that is not safe either. Though goals for expanding service exist, funding constraints prevent meeting them. The quality of surface supplies is deteriorating due to urban and industrial waste discharged into waterways. Remedial programs are slow in execution and adequate measures to promote effective waste management, such as pollution charges or standards enforcement, are not in place.
- Most local water agencies do not apply sound business practices. Deficiencies in mid-and long-term planning, budgeting, accounting and financial control preclude them from becoming effective, self-sufficient entities that can maintain their assets.
- Operation and Maintenance (O&M) efforts to sustain the irrigation service have not kept pace with the programs for expanding irrigated area. The rehabilitation needed to overcome widespread construction deficiencies and neglected maintenance overwhelms national budgets, while water-user groups contribute minimally to financing and maintenance.
- Financial responsibilities are integral to a country's institutions. What aspects of resources development and

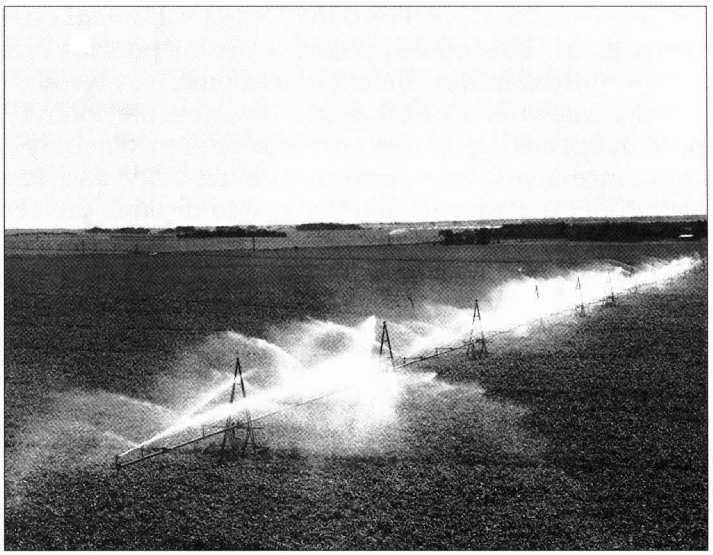
management should society pay for? To what extent should activities be subsidized? If the beneficiaries should pay, what facilities and responsibilities should government relinquish to them? Can for-profit privatization, as applied in some developed countries, be adopted by developing countries?

• The lack of specificity precludes selecting effective allocative mechanisms to enforce the objectives and water rights systems to record actions for the investors and the public affected. Indeed, few effective allocation mechanisms are in place in the developing countries other than what government does or does not construct. Few of these define firm project rights even though the undertaking should have a fifty-year economic life and, may form a much longer base for the affected region. Water conditions generated by scarcity, and pollution of remaining flows on numerous Interstate and international water bodies, are deteriorating with little success in remedying riparian conflicts. Institutional evolution in many countries, nevertheless, has not kept pace with the new impositions on their resources. Special interests and long established customers are powerful constraints. Single-purpose agencies sometimes delays needed cross-sectorial actions. As a result, institutional changes often have been reactions to narrow concerns.

• The relationships among water resources allocation objectives, water allocation mechanisms and water rights are often misunderstood. Allocation mechanisms are proposed without a clear statement of national allocation objectives or understanding of how the mechanisms effect national objectives. And water right systems are formulated without deciding which combination of allocation mechanisms to adopt.

Institutional innovation and change

Fundamental and for reaching problems arise as the demands on a nation's water resources approach the limit of the resources available. Indeed the increasing population density and expanding industrialization are imposing pollution loads on surface and groundwaters that are, in effect, causing sustainable further reductions in the quantities suitable for most uses. Major regions of the world are moving from a phase where water development dominated activities in the water sector to one where sophisticated water management and facilities maintenance dominate. Demands are already straining the resources. In many developing countries they will pit the needs of a doubling population against the existing demands in mere twenty years. The effectiveness of the response to this situation depends directly on the capacity and appropriateness of nation's institutions. Indeed this water dilemma —to produce in a sustainable way with less water —, the increasing complexity of



water resources management, the need for demand management mechanisms, re-allocate existing supplies, encourage more efficient use and promote more equitable water excess have forced most countries to make significant changes in their institutions, to innovate and modify the old and devise new institutions.

Institutional structure and water management challenges

Institutional frameworks are established by legislation that provides basic operative norms. Legislation is inherently incomplete, however, and the formal institutions established by law are always supplemented by informal institutions that can either complement the functions of institutions (such as water use associations — WUAs —) or complete with them. Basic questions about institutional integration include how well institutions function internally and how efficiently they interact with other institutions to carry out the function set by policy. Here several key aspects of institutional structure and operation will be discussed, including centralization/decentralization, the role of the private sector, local - level management, intersectorial water allocation and pricing and environmental capability.

Centralization/Decentralization

Centralization has the advantage of coordination and the ability to provide for integrated development with internal human and material resources. The main disadvantage of centralization are bureaucratic cumbersomeness and slow response. Conversely, decentralized institutions can provide more flexibility and are usually more specialized. Their disadvantages can include poor coordination and redundancy among several different institutions working in a single area, and there is ten-

dency to delegate functions to institutions before they have the mandate.
Optimizing institutional integration depends on distributing functions to the most appropriate level. In this regard, certain functions such as development of national policy and regulatory frameworks have to be carried out at the national or state level. Other functions such as watershed managing planning could be more effectively conducted by decentralization at the regional and local organizations. Decentralization strategies should not be only dimensioned by developing responsibilities to regional and local organizations, but must proceed to include also conducting analysis and planning to ensure the capability of organizations to manage their water resources.

Sectorial water allocation and pricing

Nowadays, with the growing pressure on water resources in many developing countries, it is time that demand management strategies be considered more seriously. Demand management, including water allocation and pricing should be the first issue addressed. One of demand management's key problems is high transaction costs, which include those for research and information, bargaining and decision making and monitoring, enforcement and collection. If the costs of developing new supplies are rapidly increasing and the transaction cost of reallocation of water or demand management is high, what can be done to hold down the costs of providing water? The key is to develop institutional structure that lower the transaction costs of demand management strategies. Here, decentralization could play a very effective role. Countries have achieved better quality services at lower costs by decentralizing the responsibility for delivering water service to local governments and transferring some functions to the private sector, autonomous entities, and community organizations. Decentralization, especially in retail distribution of water, makes it easier to ensure financial autonomy and to involve the private sector and water users in water management. Smaller locally managed institutions, whether public or private, have more effective authority to charge and collect fees and more freedom to manage without political interference. In spite of the importance of decentralization, it must be clear that decentralized water management is not possible without institutional reforms that are sensitive to traditional practices and local realities and are responsive to the new structures. In addition, efficient and effective decentralized water management requires strong government commitment and policy support, establishment of strong legal and institutional frameworks and adjustments to new roles by both water users and the government authorities.

The private sector

Until relatively recently, the private sector participation in water supply and management was limited. However, in the past few years interest in private sector participation has burgeoned, and various innovation forms have emerged. Increasing privatization of water development places substantially different demands on public sector institutions. First, major decisions must be made about which planning, regulatory, and operational functions to retain during privatization. Second, institutional reforms are often needed to facilitate private sector management, such as establishing ownership rights to water resources that encourage their efficient development and exchange. Third, as the English experience shows, major institutional restructuring is often required before privatization can occur (Kinnersley 1992). Last, the private sector is generally less directly concerned with equity and environmental matters, and the public must depend on the sector to respect preexisting public policy frameworks.

Local level management

The need to develop effective local water management dovetails with the trend toward decentralization and privatization. Preliminary field evidence indicates that relatively strong, single function, local organizations have among the highest rates of farmer's satisfaction, long-term sustainability and cost recovery. Increasingly, countries are experimenting with a variety of organizational arrangements where the government retains overall planning and regulatory functions and manages major water infrastructure, whilst delivery of services is being decentralized to the lowest level possible. The Philippines has experimented with a semi-autonomous national agency for irrigation management. More recently, Indonesia has initiated a process of transferring O&M functions in small irrigation schemes to users. Mexico has launched an ambitious programme of transferring the management of entire irrigation districts to water users. Chile has implemented policy reforms to allow tradeable water rights. Cote d'Ivoire, Guinea, Argentina and a number of eastern European countries have experience with privatizing metropolitan water utilities. These different local level management systems are variable by function, structure power, financing, inclusiveness, legal mandate and title to water rights and means of integration with higher-level organization. Therefore, a high priority should be given to a comprehensive and complete analysis, to those institutional structures to enable us to find the most appropriate way for integrating public sector institutions with those local level ones. Nowadays, local-level management institutions are receiving major interest by both international organizations and many developing coun-

tries. However, its implementation success still requires answers to the following related questions: "What factors produce local-level institutional success? How can farm- level institutions be integrated into the irrigation institutions operating at regional and national levels? What legal and administrative arrangements are needed to promote more effective farmer organizations? What functions are best carried out by local groups, and how can they be reinforced? What incentives are needed to promote active member participation in water user groups? For water use association and the private sector, legislation, the rights to water, the framework for action by non-governmental entities and individuals, effective regulatory systems all need to be properly established and very well clarified.

Coordination

The structures for coordinating effective comprehensive water management will be difficult but necessary to establish. Most countries have a multiplicity of public agencies and commissions with overlapping responsibilities for managing water resources, and decisions are fragmented. Institutional arrangements, such as river basin organizations or coordinating committee, needs to be developed that encourage water-related agencies to coordinate and establish mutually agreed priorities for investment, regulation and allocations and to ensure that policy, planning and regulatory functions are separated from operational functions at each level of government. At the national level, these coordinating bodies could be set up but, it is important that they have adequate authority to review water activities and enforce consistency with national strategies. Within many countries, the general approach to intersectoral coordination is through ministerial-level coordinating committees, but these do not always provide optimal coordination. Increased privatization and the growth of environmental regulations are underscoring the need to avoid excessive and possibly contradictory efforts and regulations. Functions are often distributed among many agencies: development of the Chao Phraya basin in Thailand, for example, involves 24 departmental-level agencies under 8 different ministries involved in planning, developing and managing the river basin, with coordination provided by high-level interagency committees (Vadhanaphuti et al. 1992). An alternative scenario is described for Turkey, where the General Directorate of State Hydraulic Works virtually by itself manages all water functions, ranging from power generation to drinking water delivery (Bilen and Uskay, 1992). Many new models of intersectoral coordination institutions are being explored, and evaluating the contrasting experiences of different models, isolating the designs that can be applied to other contexts, and assessing the relative weight of different variables in explaining their success or failure are research topics that will have a high payoff for developing countries.

Human resources development

One important aspect of capacity building is the supply of human resources. There is an urgent need for adequately trained professionals who can work in the multi- sectorial environment of integrated water resources management. In addition to the understanding of technical disciplines related to various water users, the future water resources manager should be knowledgeable about economics, ecology and legal and social analysis in a for more dense complex. Capacity building depends on adequate institutions and insitution depend on human resources. An ideal institutional structure with poor personnel have less potential than an ungainly structure with high quality people. Both success and failure have come from all types of institutions but high-quality human resource staffing and sound institutions are the best assurance of a country's capacity to achieve water sector objectives. HRD covers all actions necessary to develop a qualified and motivated staff in organizations at all levels, and include training and education, staffing plans, career and salary development; and the creation of a stimulating personnel environment within organizations. Although both training and education are essential instruments in long-term capacity building, they have different purposes and time scales. Training is aimed at specific problems, implies shorter contact times and attempts to offer directly applicable skills. Education has a broader remit, covering factual knowledge, insight, applicable methodologies and professional attitude. Twenty years of UN- related experience has led to calls for a fresh look at the educational aspects of HRD. The continuing rise in population and urban concentration call for an increase in numbers of professionals as well as enhancement of their technical and managerial skills, in addition to better conceptual and strategic capabilities. An unequaled demand for provision of new urban infrastructure is forecast over the coming two decades, which will entail rapidly increasing technical and multi-disciplinary complexity. Sector professionals will need to be better prepared for these challenges and this implies that:

- vocational and tertiary level (particularly post-graduate) facilities need to be expanded and improved in quality;
- curricula need to be adapted to be more responsive to key sector problems and teaching methodologies need to be more effective; and
- there needs to be great emphasis on development inter-disciplinary skills and attitudes so that graduates are comfortable and equipped to work in increasingly integrated environments.

Many water-related educational and research programmes can be commissioned from local universities and other educational institutions. A common practice is to have a utility provide the university with funds for senior students to undertake tasks important to the utility, so that all parties benefit. The worth of training may be eroded if individuals are placed in an environment that does not utilize or support their education and therefore staffing patterns must be well understood and opportunities for promotion increased and made commensurate with merit. Also among education and training resources is the International Training Network (ITN) which provides resources that can assist countries in their own training efforts. Finally, training and staff development should undoubtedly have high priority. However, they are unlikely to be fully effective if they are not associated with incentives that motivate staff to improve performance. While the utility concept in principle provides such a framework for rewarding performance and improving incentives and financial accountability, it is usually more difficult to create appropriate conditions in government agencies responsible for important resource planning and management activities. This is an important issue that cannot be avoided. If incentives are inadequate to attract high-calibre planning staff, developing countries cannot be expected to overcome their complex water resources management problem.

Considerations for capacity building

Capacity building looks like a capital but it behaves like circulating money. The more this capital is accurately spent, the more output is yielded. The importance of capacity building is stressed when addressing the differences between the ideal and reality and, in particular, the somewhat artificial phasing of activities of any framework. Creating appropriate conditions to stimulate the capacity building of the participating institutions and the different interest agencies, consideration should be paid to the following specific elements:

- Open-minded, understanding of different feelings, respect for other opinions and confidence in negotiation partners are fundamental elements to formulate sustainable objectives at all levels. Therefore, to create and stimulate open communication, participation and decision making that is easy to verify. These are essential items to achieve support for decisions.
- Develop long term views, particularly in the institutions, about the problems in the natural, the socio- economic and the institutional systems. Be aware of the impact of differences in cultural standards and values.
- Give the administrative and legal system a clear structure. The competencies at federal, national, regional and local level must be clear for institutions, interest groups and citizens. Be aware and recognize the formal and informal network of the administrative and legal systems. These elements are the starting points for adaptations.
- Stimulate self-organisation of the involved interests. It creates a platform to bundle and articulate views and feelings about the different issues. One gets competent discussion partners in the decision making process.
- Data collection of the natural resource systems and impact data of human interventions provide an appropriate base for decision making in water management. Transparent aggregation of available data into effective information supports the formulation of concrete actions.
- Problems should be updated and evaluated periodically to adopt existing plans and to formulate new programmes.
- Water resources institutions should be dynamic and must continuously change if they are to best match the evolving conditions.
- Institutional modifications to any aspect of water development and management should be comprehensive and made in context of devising effective management of all government and non-government functions in the entire water resource sector.
- Partial measures of deficiencies arise from inconsistences in the interlinked legislation, the organizational structure, the rules and procedures and the exercise of public/governmental responsibilities should be formulated in an overall framework to guide all reform proposals and achieve consistency among actions. ●

References

Alaerts G.J., Blair T.L. and Hartvelt F.J.A. (1991) - Procedures and Partners for Capacity Building in Water Sector. In: IHE/UNDP, 1991

Bilen Y. (1992) - Comprehensive Water Resources Management: An Analysis of Turkish Experience. World Bank Technical Paper, n. 175, pp. 143.

ICWE (1992) - Development Issues for the 21st Century. The Dublin Statement and Report of the Conference, 26-31 January 1992. Dublin, WMO, Geneva.

IHE/UNDP (1991) - A Strategy for Water Sector Capacity Building. Proc. of the UNDP Symposium. Delft, The Netherlands. 3-5 June, 1991. IHE Report Series, n. 24.

Kinnersley D. (1992) - Privatization and the Water Environment in England. World Bank Technical Paper, n. 175, pp. 25-29.

Seragelding I. (1994) - Towards Sustainable Management of Water Resources. VIII World Congress on Water Resources of the International Water Resources Association (IWRA), Cairo, Egypt, November 22, 1994.

UN (1992) - Agenda 21 United Nations, New York.

UNDP (1990) - Report on the Global Consultation of Safe Water and Sanitation for the 1990s. UNDP, New York.

Vadhanaphuti, B., T. Klaikayai, S. Thanopanuwat and N. Hungspreug (1992) - Water Resources Planning and Management of Thailand's Chao Phraya River Basin. World Bank Technical Paper, n. 175, pp. 197.

World Bank (1993) - Water Resources Management: A Policy Paper. The World Bank, Washington D.C., Usa.