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**Economic and Social Commission for Western Asia (ESCWA)**

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**A GENERAL FRAMEWORK FOR REVIEWING AND DEFINING  
POLICY AND INSTITUTIONAL FUNCTIONS  
IN WATER RESOURCES MANAGEMENT**

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## 1- INTRODUCTION

If Integrated Water Resources Management is to be conceptually useful to a wide range of practitioners, it must be generalisable as to *location* (India, Morocco, California...) and *scale* (country, basin, sector, scheme, water user association). If all we can say is that approaches are location specific and variable but should be “appropriate”, then we really add nothing to knowledge!

The framework presented here captures the essentials that are addressed in all successful and sustainable water resource management situations – from hill farmers in Nepal and the Andes through the warabandi system of northern India to the successful (but diverse) river basin authorities in Australia, France, and the US.

Within this generalised framework, solutions will be tailored and responsive to local conditions – several of the identified steps may be done in a variety of ways (by government, by government agencies, by the private sector, by agents hired by users, by the users themselves). The framework readily accommodates “participation” – and perhaps illuminates that discussion by easing the identification of *who* might participate in *which* step – rather than just asserting that participation (by implication, participation of everybody) is “good”: it is not.

The note is in three parts: first a section is quoted from a published version of the framework; second, a development of the framework that was presented at the ICID-UK Annual Research Day in 2004 is reported, and third, an attempt is made to locate and define IWRM within this framework.

### 1. SUCCESSFUL WATER RESOURCES DEVELOPMENT – A SOLVED PROBLEM?<sup>1</sup>

It is a little remarked fact that many countries in the world have developed and controlled their water resources productively and sustainably over decades, sometimes centuries, to the benefit of their populations, providing essential supplies of water for municipal, domestic, industrial, recreational and agricultural use and protection from the negative impacts of excess water through drainage systems and flood control works.

That is not to say these countries face no problems. At the margin, there are always local or temporary shortages, new environmental concerns, and new priorities to be accommodated. But literally hundreds of millions of people expect and receive some or all of the following services:

- potable water, directly from a tap, 24 hours a day
- irrigation services, defined in terms of timing, reliability and quality
- protection from flood events
- stability of environmental areas
- water for recreational purposes – fishing, sailing, or swimming
- assured streamflows for navigation.

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<sup>1</sup>Non-State Actors and Water Resources Development – An Economic Perspective, Chris Perry, Non-State Actors and International Law, Issue 1, Vol 3, 2003

Of course, supplying water costs money, and water can only be supplied if it exists – so there are financial and physical limits to the feasible water service. But these constraints have, in the successful countries, not prevented the specification and delivery of a service that both the providers and the recipients understand, respect and benefit from. Such expectations are found in countries with vastly differing levels of climate, income level and water availability per capita.

In parallel with this success story international conferences, research organizations, web discussion forums and academic journals promote new solutions to the water crisis (privatisation, participatory management, stakeholder involvement, treating water as an economic good, “livelihood analysis”, sustainable development, gender awareness). An objective observer might conclude that sustainable water resources management is one of the great solved mysteries of our time, if only the conferees, researchers and other participants in the debate would analyse the common features and underpinnings of success rather than dissecting the symptoms of failure.

#### The Essential Elements of Productive and Sustainable Water Resources Management

This paper sets out a discernable pattern<sup>2</sup> observable in “successful” scenarios, and generally missing in “unsuccessful” scenarios. These essential elements are found wherever water management is effective, and absent – in whole or in part – where water management is ineffective, as manifested by disputes about entitlements, chaotic supply schedules, over-exploitation of resources, pollution, and deteriorating infrastructure.

The elements may be bundled and sliced in various ways. One version consistent with the author’s experience, is as follows:

- a) Clear and publicly available knowledge of resource availability — in time, and space. (*Hydrology*)
- b) Policies governing water resources development. (*Politics*)
- c) Policies assigning priorities among users for the developed water. (*Politics*)
- d) Translation of those policies into allocation rules and procedures such that the water service to each user/sector are clear for any hydrological circumstance. (*Laws*)
- e) Defined roles and responsibilities for provision of all aspects of the specified water service. (*Institutions*)
- f) Infrastructure to deliver the specified service to each user. (*Hardware*)

Each of these elements will be discussed in more detail below, but a few initial observations may be useful:

- First, there is a hierarchy and interdependence among the elements – roles and responsibilities cannot be defined unless the water service is specified; infrastructure must be consistent in sizing and control features with the service to be delivered; procedures for allocation depend entirely on the assignment of priorities; and the service must be related to the available resource – no point in allocating 100 units if only 90 are available!
- Second, this hierarchy and interdependence has important implications for the design of interventions to address unsuccessful management: if everything is in place except the rules are not

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<sup>2</sup> For an introductory discussion, see C. J. Perry, *Determinants of Function and Dysfunction in Irrigation Performance, and Implications for Performance Improvement*, Water Resources Development, (Journals Oxford Ltd.) Vol 11, No. 1, 1995, pp 25-38 and for a broader analysis see Harald D. Frederiksen and Rodney J. Vissia, *Considerations in Formulating the Transfer of Services in the Water Sector*, International Water Management Institute, Colombo, Sri Lanka 1998

followed, an intervention that enforced order might be successful. If there are no rules for allocation, then introducing participatory irrigation management (to pick a random fad) will have little chance of sustained success because every other element will be functioning (at best) in an ad hoc mode, unrelated to the need for defined responsibilities in system operation and maintenance that participatory management requires.

- Third, formulating a successful water management system is a multi-disciplinary effort, involving scientists, politicians (and their multi-disciplinary advisers, including economists), lawyers, institutional specialists, and engineers. Each discipline has a specialist contribution to make, and it will be rare that a comprehensive solution can be determined without the input of each discipline and concomitant respect for each specialist from the others disciplines.

## **2. THE BASIC TASKS AS ABC...<sup>3</sup>**

For ease of reference, the activities listed above may be summarised by the following A-E list:

- A) Assessing the sustainable resource availability
- B) Bargaining through the political system to establish allocations, priorities and related political issues
- C) Codifying the agreed allocations, priorities and related arrangements into laws and regulatory frameworks
- D) Delegating powers to various organisations charged with responsibilities for managing the resource
- E) Engineering facilities capable of delivering the services to the various sectors/users entitled to receive water

It is relevant to note that disciplines (engineering, management, social sciences...) have distinct roles in various – but not all – steps. Too often in recent years respect among disciplines is reduced by failure to observe these boundaries, so that, for example, the hydrological basis for much of the content of the World Commission on Dams was coloured by unproven ideas from a social scientist.

The system will continually evolve as pressures – demographic, climatological, economic, etc change. But a well formulated system will be capable of responding to predictable events (severe droughts or floods, increased urbanisation) without recourse to political review.

Interventions at any scale (building a dam to enhance water availability; introducing farmer management; privatising domestic water supply; drilling new wells) will require usually require amendments throughout the hierarchy of to be successful, and such amendments will generally flow in the same direction – there is a dependant relationship between each step, and failure to recognise these dependencies is the most common reason for failure of many interventions.

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<sup>3</sup> Extracted from “Successful Water Resources Management: a Solved Problem?, keynote address to ICID-UK Research Day, Wallingford, 3 April 2003

### **3. WHERE IS INTEGRATED WATER MANAGEMENT?**

IWRM is a relatively new idea designed to capture various ideas about how water should be managed—participatory, sustainable, holistically are typical words identified with the concept. The danger is that IWRM can mean all things to all men (and women), so that communication is in fact inhibited rather than enhanced by the idea. (There is an exactly parallel, if narrower, debate ongoing about “irrigation efficiency”).

In relation to the framework identified above, I would argue that IWRM is what you get when the sequence of activities (from A to E) is in place and functional, and that the main point at which “integration” takes place is the political bargaining process that determines the allocation of scarce water resources, and that the discipline of ensuring that that process respects the actual availability of water is a primary challenge in many countries.