

THE WORLD BANK

Transportation, Water, and Urban Development
Department

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**IMPLEMENTING THE
WATER RESOURCES MANDATE
OF AGENDA 21:
THE PROMISE AND THE CHALLENGES
FOR OECD COUNTRIES**

April, 1994

A background paper for
The Development Assistance Committee of the OECD
prepared by

The Water and Sanitation Division of the World Bank

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I. Why Is the Subject of Water so Important?

A Basic Development Issue

The Rio Declaration on Environment and Development, adopted at the conclusion of the United Nations Conference on Environment and Development (UNCED) on 13 June, 1992, opens with these words:

"Human beings are at the center of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature."

Such phrases, resonant as they may be, ring somewhat hollow when we consider that:

- Over one billion people in developing countries do not have access to potable water, particularly the rural poor
- 1.7 billion have inadequate sanitation facilities
- Unsafe water is implicated in the deaths of more than 3 million people and causes about 900 million episodes of illness each year¹

The situation is the more poignant and tragic in that, in many cities of the developing world, the poor — often dependent of water vendors — pay at least ten times more than the rich for a liter of water.² In a sense, the poor subsidize the rich, as is demonstrated graphically in recent data from Latin America. In the Dominican Republic, for instance, for every dollar of subsidy received by a poor person in the form of water supply, a rich person receives three dollars. And for every dollar of subsidy received by a poor person³ in the form of sewerage services, a rich person⁴ receives seven dollars! Available data suggest that this inequality in the benefits of

¹ cf. Michel Petit, presentation to World Bank Conference on Environmentally Sustainable Development, Sept. 30th, 1993. See also *The World Environment, 1972-1992: Two decades of Challenge*. Published for UNEP by Chapman and Hall, pp 95, 96

² See John Briscoe's article: *Poverty and Water Supply: How to move forward*, published in *Finance and Development*, December 1992, IMF and World Bank.

³ A person in the bottom 20 percent of the income profile

⁴ A person in the top 20 percent of the income profile

subsidies is particularly severe where services are rationed and is thus more severe in poor countries and for sanitation services.

Currently nearly one-third of the world's inhabitants live in countries with severe water problems. The world's most poverty-stricken countries are those most affected by drought and other water problems. These countries are often those with the highest rates of population growth and where demographic pressures on water, as on other resources, are likely to be acute.⁵

The provision of potable water and adequate sanitation is, by any yardstick, a basic development issue. A society which fails to meet such basic needs fails in one of its primary purposes. Today one in three people in the developing world still lacks these most basic requirements for health and dignity.⁶

If potable water and adequate sanitation is central to the individual's health and well-being, it is by the same token central to national development. All the newer indices of human progress, e.g. those including social as well as economic indicators, stress the importance of 'access to safe water' and 'access to health services.'⁷

There is, moreover, a strong correlation between the availability of such basic health-related infrastructure and declining fertility. A very large majority of the world's population lives in countries where the government's official policy is to reduce rates of population growth and to alleviate the problems posed for the nation, for families and for individuals by continued high fertility rates. Reducing mortality rates can offer a positive contribution to reducing fertility rates. Progress on basic health-related measures, such as the supply of clean water, sanitation and sewerage, can be seen as

⁵ See *Population and Water Resources: A Delicate Balance*, by Malin Falkenmark and Carl Widstrand. *Population Bulletin*, Vol.47, No.3, November 1992, published by the Population Reference Bureau.

⁶ See Agenda 21, Chapter 18, para 47

⁷ See for example the recent series of UNDP reports containing a Human Development Index.

the essential underpinning of effective national strategies for sustainable development, strategies which include action in the field of population and family planning as the vital third side in the Population-Development-Environment triangle.

There are many other good reasons for stressing the importance of water resources for people and for countries. One-third of the world's food production comes from irrigated land. Since 1950, the irrigated area has grown by 2.5 percent — a key factor in allowing food production to keep up with the growth in food demand. The expansion of irrigation has accounted for over one-half the increase in global food production. But it is now becoming increasingly difficult to sustain this expansion. The lowest cost and highest benefit investments have been made already. The costs of new irrigation infrastructure are rising rapidly and there are growing environmental concerns about irrigation projects and the dams which serve such projects, as exemplified by the controversies surrounding the Narmada and Three Gorges projects. Whatever the rights and wrongs of individual cases, the practical reality is that new irrigated areas are unlikely to be a major source of new food supplies.⁸ Rather the focus, as we shall see later, must be on more efficient utilization of water both in existing irrigation systems and elsewhere.

Irrigated agriculture is the largest user of water, accounting for 73 percent of total withdrawal.⁹ In the 1980s, approximately 270 million hectares of land were irrigated, and almost half were in the developing countries. But a large share of irrigation water is wasted. It is not uncommon for 70 to 80 percent of the water diverted to irrigation systems to be lost to the atmosphere or to seep into the ground before reaching the fields.¹⁰

Water is a basic lubricant of industrial development. Factories use it for cooling, processing, generating steam to run equipment, and as a transporting agent. Though water used in industry accounts for 6 percent of total withdrawal at the present time, both domestic and industrial use is growing much faster than agricultural demand.

The pressure on water resources does not come purely from the demand side; domestic, agricultural or industrial. It is not purely a function of growing populations and growing per capita demands. Water availabilities — the supply side — may be affected by man-induced changes, for example the impact of large-scale deforestation or afforestation (giving rise to so-called "green deserts") or of erosion and increased run-off on the ability of an aquifer to be replenished. Discharge of domestic sewage and industrial waste into nearby water-bodies and contamination of watersheds with pesticides, fertilizers and other agrochemicals from drainage systems are all evidence of how human activities can have the effect of diminishing the resource base itself. Water may be a renewable resource, but if the use or contamination rate exceeds the renewal rate, it is effectively mined or depleted no less surely than deposits of fossil fuels are mined or depleted.

By some estimates, the amount of water made unusable by pollution is almost as great as the amount actually used by the human economy¹¹. In 1950 human demand for fresh water was only about one-half the amount of water that was accessible. Today, the figure is nearer three-quarters.

Water can also be seen as a primary vehicle of many environmental values. The Statement adopted at the International Conference on Water and the Environment held in Dublin in January 1992 summarized this eloquently:

"Water is a vital part of the environment and a home for many forms of life on which the well-being of humans ultimately depends. Disruption of flows has reduced the productivity of many such ecosystems, devastated fisheries, agriculture and grazing, and marginalized the rural communities which rely on these. Various kinds of pollution, including transboundary pollution, exacerbate these problems, degrade water supplies, require more expensive water treatment, destroy aquatic fauna, and deny recreation opportunities."

The International Dimension

When the UN's current secretary-general, Dr. Boutros Boutros-Ghali, was Egypt's minister of state

⁸ Michel Petit, op. cit, p.2

⁹ Malin Falkenmark et al in *Ingeniera Sanitaria* — Vol XLIV — No 1 and 2, Jan-June 1990

¹⁰ Falkenmark and Widstrand, op. cit., p.14

¹¹ See p. 56, *Beyond the Limits*, by Donella H. Meadows, Dennis L. Meadows, Jorgen Randers. Chelsea Green Publishing Co, 1992

for foreign affairs, he was reported to have said: "The next war in our region will be over the waters of the Nile, not politics." Nearly 47 percent of the land area of the world (excluding Antarctica) falls within international water basins that are shared by two or more countries. There are 44 countries with at least 80 percent of their total areas within international basins.¹² As countries find that their own water resources have been, or are likely to be, exploited to the full, or even over-exploited, they may increasingly look to sources beyond their borders. Yet the use of those same resources may already be an integral part of another country's (or countries') plans or programmes. The signature of the Indus Basin Treaty in 1960 helped avert conflict between India and Pakistan in the post-War period. Current tensions in the Tigris-Euphrates watershed may be alleviated through the display of goodwill and imagination on all sides.¹³ The problems of the Jordan may be subsumed in wider Middle East peace arrangements.

But for every positive achievement in international or regional or bilateral cooperation, there has been an underlying potential for conflict. With the increases in population already envisaged for many regions of the world (even in those regions — such

as East Asia — where there have been considerable successes in reducing population growth and fertility rates); with the increases in per capita demand of those same populations; with the pressures on supply already discussed, including those of pollution — it seems likely, if not certain, that the risk of conflict between nations and between peoples will increase rather than diminish over the coming years — unless positive steps are taken now to develop a new approach to water resources management.

In summary, having adequate water is vital for individual health and well-being; it is vital for industry and agriculture; it is vital for growing cities and urban areas. The many and varied environmental services that an effectively-managed water resource can supply are essential for both economic and ecological reasons. Peace itself, or at least the avoidance of conflict, may be critically dependent on the ability of different national, social or ethnic groupings to share a water resource amicably between them.

There are so many good reasons for getting it right. So what is going wrong now? And how can things be done better than they are?

¹² UNEP, *op. cit.*, p 99

¹³ See Chapter 6, *Hydropolitics, of The Last Oasis: Facing Water Scarcity*, by Sandra Postel, published by Earthscan, London.

II. A Framework for Improving Water Resources Management

Water resources, for all of the reasons cited above, must be better managed. Current practices are not sustainable from either an economic or an environmental perspective. In recent years a remarkable consensus has emerged on the key problems:

- Fragmented public investment programming and water sector management which fails to take account of the interdependencies among agencies, jurisdictions and sectors. Such fragmentation has led to wasteful investments and uncoordinated management.
- Excessive reliance on over-extended governmental agencies that have neglected the need for economic pricing, financial accountability and user participation.
- Underpricing of water and lack of cost recovery, resulting in excessive and wasteful water use, misallocation, and unviable water service entities. A recent review of World Bank-financed projects showed that the effective price charged for water was only 35 percent of the average cost of supply, while for irrigation water the effective prices cover an even smaller share of average costs.¹
- Over-centralization of the delivery of water services and the lack of stakeholder, community and private sector involvement, yielding a vicious cycle of unreliable service, low willingness to pay, and a further decline in the capacity to provide service.

The above observations are not, in themselves, especially novel: the issue of water resources has been the subject of increasing international attention since the United Nations Water Conference held in Mar del Plata, Argentina, in 1977. What is novel is the maturing of the international discussions on the subject. For decades international gatherings have been content to elaborate long lists of desiderata,

giving little attention to the difficult decisions and tradeoffs involved to implementation and realism.

Hand-in-hand with the recent consensus on the nature of water resource management problems, a corresponding consensus has emerged on the core principles which must guide the resolution of these problems. These principles have been most clearly and succinctly articulated in "the Dublin Statement" of the International Conference on Water and the Environment, which was convened to provide technical guidance to the UNCED deliberations.

Dublin stressed the need for a **holistic approach** to the effective management of water resources, with particular emphasis on: the need to consider the costs which users impose on one another and on the environment; the need to take account of water-land interactions; and the need to manage the resource in its "natural" context, the river basin.

Dublin emphasized the importance of developing an **enabling institutional environment** which: assigns responsibility for management of specific tasks to the lowest appropriate level; ensures the involvement of stakeholders in the formulation of policy at all levels; and provides for the use of a variety of organizations — public, private and non-governmental — in developing efficient, accountable sector organizations.

Dublin also emphasized that **managing water as an economic good** is an important way of achieving efficient and equitable use, and of encouraging conservation and protection of water resources.

What is encouraging is that the focused, practical "Dublin principles" have proved to be hegemonic, both at the global level (where they have formed the core of Chapter 18 of Agenda 21, and underlie the Political Statement from the Interministerial Meeting on Water and Sanitation in Noordwijk, Holland, in March 1994).

¹ Michel Petit, op. cit, p.5

III. From Principles to Practice: What Are the Priorities for Developing Countries and for the OECD?

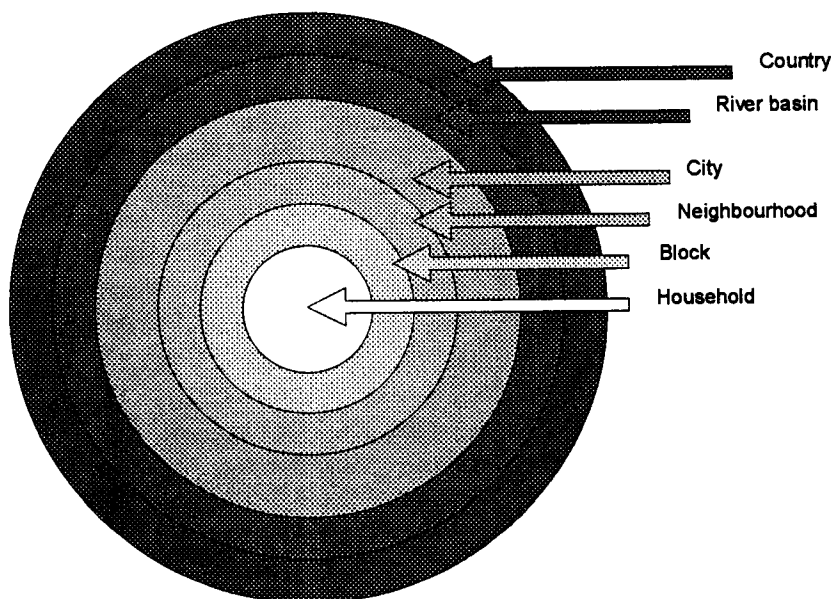
In considering possible actions by OECD countries, it is useful to first go back to basics, and consider the different levels at which water-related decisions are made (Figure 1).

To illustrate the implications of the “decision-making rosette” (Figure 1), it is instructive to consider how water supply and sanitation services, and water resource management activities should be financed.

The fundamental axiom of public financing prescribes that costs should be assigned to different levels in this hierarchy according to the benefits accruing at different levels. This would suggest that the financing of sanitation, sewerage, and wastewater treatment be approximately as follows:

- Households pay the bulk of the costs incurred in providing on-plot facilities (bathrooms, toilets, on-lot sewerage connections);
- The residents of a block collectively pay the additional cost incurred in collecting the wastes from individual houses and transporting these to the boundary of the block;
- The residents of a neighborhood collectively pay the additional cost incurred in collecting the wastes from blocks and transporting these to the boundary of the neighborhood (or treating the neighborhood wastes);
- The residents of a city collectively pay the additional cost incurred in collecting the wastes from blocks and transporting these to the boundary of the city (or treating the city wastes);
- The stakeholders in a river basin — cities, farmers, industries and environmentalists — collectively assess the value of different levels of water quality within a basin, decide on what level of quality they wish to pay for, and on the

Figure 1: Levels of decision-making on water resources



distribution of responsibility for paying for the necessary treatment and water quality management activities.

In practice, of course, there are complicating factors to be taken into account (including transactions costs of collection of revenues at different levels, and the interconnectedness of several of the benefits). What

is striking, nevertheless, is that the most innovative and appropriate forms of service provision and water resources management (see the Orangi and Condominium examples in Boxes 1 and 2, and the Ruhrverband and French River Basin Management System in Box 3) follow the above logic to a remarkable degree.

***Box 1: How and when poor people demand sanitation services, and how to meet these:
The case of the Orangi Pilot Project in Karachi, Pakistan***

In the early 1980s, Akhter Hameed Khan, a world-renowned community organizer, began working in the slums of Karachi. He asked what problem he could help resolve. People in this area had a relatively satisfactory supply of water but now faced "streets that were filled with excreta and waste water, making movement difficult and creating enormous health hazards". What did the people want, and how did they intend to get it, he asked. What they wanted was clear — "people aspired to a traditional sewerage system... it would be difficult to get them to finance anything else." And how they would get it, too, was clear — they would have Dr. Khan persuade the Karachi Development Authority (KDA) to provide it for free as it did (or so they perceived) to the richer areas of the city.

Dr. Khan then spent months going with representatives from the community petitioning the KDA to provide the service. Once it was clear that this would never happen, Dr. Khan was ready to work with the community to find alternatives. (He would later describe this first step as the most important thing he did in Orangi — liberating, as he put it, the people from the demobilizing myths of government promises.)

With a small amount of core external funding the Orangi Pilot Project (OPP) was started. The services that people wanted were clear; the task was to reduce the costs so that these were affordable and to develop organizations that could provide and operate the systems. On the technical side, the achievements of the OPP architects and engineers were remarkable and innovative. Coupled with an elimination of corruption, and the provision of labor by community members, the costs (in-house sanitary latrine and house sewer on the plot, and underground sewers in the lanes and streets) are less than \$100 per household.

The (related) organizational achievements are equally impressive. The OPP staff has played a catalytic role — they explain the benefits of sanitation and the technical possibilities to residents and conduct research and provide technical assistance. The OPP staff never handled the community's money. (The total costs of OPP's operations amounted, even in the project's early years, to less than 15 percent of the amount invested by the community.) The households' responsibilities included financing their share of the costs, participating in construction, and election of a "lane manager" (who typically represents about fifteen households). The lane committees, in turn, elected members of neighborhood committees (typically around 600 houses) who manage the secondary sewers. The early successes achieved by the Project created a snowball effect, in part because of increases in the value of property where lanes had installed a sewerage system. As the power of the OPP-related organizations increased, they were able to bring pressure on the municipality to provide municipal funds for the construction of secondary and primary sewers.

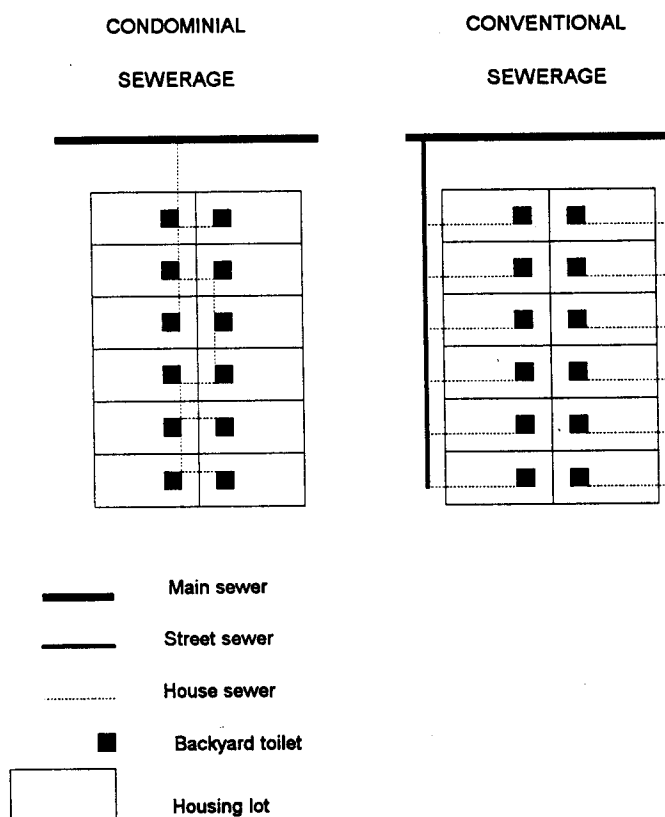
The Orangi Pilot Project has led to the provision of sewerage to over 600,000 poor people in Karachi and to attempts by at least one progressive municipal development authority in Pakistan to follow the OPP method and, in the words of Arif Hasan "to have government behave like an NGO." Even in Karachi, the mayor has formally accepted the principle of "internal" development by the residents and "external" development (including the trunk sewers and treatment) by the municipality.

The experience of Orangi demonstrates graphically how peoples' demands move naturally from the provision of water to removal of waste from their houses, then their blocks and finally their neighborhood and town.

Box 2: The condominial sewerage system in Brazil

The "condominial" system is the brain-child of Jose Carlos de Melo, a socially committed engineer from Recife. The name "condominial" was given for two reasons. First, a block of houses was treated like a horizontal apartment building — or "condominial" in Portuguese (see Figure 9 below). Second, "Condominial" was a popular Brazilian soap opera and associated with the best in urban life! As is evident in Figure 9 below, the result is a radically different layout (with a shorter grid of smaller and shallower "feeder" sewers running through the backyards and with the effects of shallower connections to the mains rippling through the system). These innovations cut construction costs to between 20 percent and 30 percent of those of a conventional system.

Figure 2: Schematic layouts of condominial and conventional sewerage systems



The more fundamental and radical innovation, however, is the active involvement of the population in choosing their level of service, and in operating and maintaining the "feeder" infrastructure. The key elements are that families can choose: (i) to continue with their current sanitation system; (ii) to connect to a conventional water-borne system; or (iii) to connect to a "condominial" system. If a family chooses to connect to a condominial system, it has to pay a connection charge (financed by the water company) of, say X cruzados, and a monthly tariff of Y cruzados. If on the other hand, it wants a conventional connection, it has to pay an initial cost of about 3X and a monthly tariff of 3Y (reflecting the different capital and operating costs). Families are free to continue with their current system (which usually means a holding tank discharging into an open street drain). In most cases, however, those families who initially choose not to connect eventually end up connecting. Either they succumb to heavy pressure from their neighbors, or they find the build-up of wastewater in and around their houses intolerable once the (connected) neighbors fill in the rest of the open drain.

Individual households are responsible for maintaining the feeder sewers, with the formal agency tending to the trunk mains only. This increases the communities' sense of responsibility for the system. Also, the misuse of any portion of the feeder system (by, say, putting solid waste down the toilet) soon shows up in a blockage in the neighbor's portion of the sewer. This means rapid, direct and informed feedback to the misuser! This virtually eliminates the need to "educate" the users of the system in the do's and don'ts, and results in fewer blockages than in conventional systems. Finally, because of the greatly reduced responsibility of the utility, its operating costs are sharply reduced.

The condominium system is now providing service to hundreds of thousands of urban people in Northeast Brazil and is being replicated on a large scale throughout the country. The danger, however, is that the clever engineering is seen as "the system". Where the community and organizational aspects have been missing, the technology has worked poorly (as in Joinville, Santa Catarina) or not at all (as in the Baixada Fluminense in Rio de Janeiro).

Box 3: Water resource financing through river basin agencies in Germany and France:

The Ruhrverband:

The Ruhr Area, which has a population of about 5 million, contains the densest agglomeration of industrial and housing estates in Germany. The Ruhrverband is a self-governing public body which has managed water in the Ruhr Basin for 80 years. There are 985 users and polluters of water (including communities, districts, and trade and industrial enterprises) which are "Associates" of the Ruhrverband. The highest decision-making body of the Ruhrverband is the assembly of associates, which has the fundamental task of setting the budget (of about \$400 million annually), fixing standards and deciding on the charges to be levied on users and polluters. The Ruhrverband itself is responsible for the "trunk infrastructure" (the design, construction and operation of reservoirs and waste treatment facilities), while the communities are responsible for the "feeder infrastructure" (the collection of wastewater).

The French River Basin Financing Agencies:

In the 1950s it became evident that France needed a new water resources management structure capable of successfully managing the emerging problems of water quality and quantity. The French modeled their system closely on the principles of the Ruhrverband, but applied these principles on a national basis. Each of the six river basins in France is governed by a Basin Committee (also known as a "Water Parliament") which comprises between 60 and 110 persons who represent all stakeholders — national, regional and local government, industrial and agricultural interests and citizens. The Basin Committee is supported by a technical and financial "Basin Agency". The fundamental technical tasks of the Basin Agency are to determine (a) how any particular level of financial resources should be spent (where should treatment plants be located; what level of treatment should be undertaken, etc.) so that environmental benefits are maximized and (b) what level of environmental quality any particular level of financial resources can "buy". On the basis of this information, the Water Parliament decides on (a) the desirable vector of costs and environmental quality for their (basin) society, and (b) how this will be financed (relying heavily on charges levied on users and polluters). The fundamental financial task of the Basin Agency is to administer the collection and distribution of these revenues.

In the French system (in contrast to the Ruhrverband) most of the resources which are collected are passed back to municipalities and industries for investments in the agreed-upon water and wastewater management facilities.

The Implications for the OECD

The question facing the OECD countries is a straightforward one, consisting of two parts. First, what are the responsibilities and actions which, in terms of the above "rosette" are indispensably performed at the highest (international) level? And, second, how do actions taken by External Support Agencies (ESAs) support actions at different levels in developing countries that are consistent with the new consensus articulated in the Dublin, Rio and Noordwijk declarations?

Issue 1: Occupying the moral "high ground"

A necessary, but insufficient step is that the ESAs first get their own houses in order before they tell others to do so! The action of ESAs is most productive when they can show that they have made the (always difficult) water resource management changes which they now recommend to developing countries.

In the past many OECD countries, like developing countries, have managed their water resources very poorly. Today the situation, while far from perfect, has improved dramatically. Many OECD countries are moving toward water resources management systems which are consistent with the Dublin principles. For example:

- The Ruhrverband, the most heavily industrialized area of Germany, is an example where the Dublin principles have been applied successfully for 80 years;
- The French River Basin Financing Agencies have been operating for 30 years, also very successfully; and
- In the Western United States water markets are now widely used as an instrument for managing water resources more effectively.

At the operating level, too, commercially-oriented utilities are now the order in all industrialized countries, with very substantial and rapidly expanding involvement of the private sector in France, England, Wales, Spain and Portugal.

These successful changes in OECD countries are important not only for moral reasons, but also because they provide a powerful base from which developing countries might learn. To cite just one important example, consider the twin issues of water quality standards and expenditures on water quality management.

In many OECD countries the approach followed has been to set universal standards and then to raise the funds necessary for financing the required investments. As is becoming increasingly evident, such an approach is turning out to be financially infeasible, even in the richest countries of the world. In the United Kingdom, the target date for compliance with the water quality standards of the European Community is being reviewed as customers' bills rise astronomically to pay the huge costs (over \$60 billion this decade) involved. And in the United States local governments are revolting against the unfunded mandates of the Federal Government. A particularly pertinent case is the refusal of cities on the Pacific coast to spend the resources (\$3 billion in the case of San Diego alone) required for secondary treatment of sewage. The National Academy of Sciences of the United States has advocated rescinding the "secondary treatment everywhere" mandate and developing an approach in which the costs and benefits are both taken into account in the management of sewage in coastal areas.

In a few countries — with France the outstanding example — a different model has been developed. In these countries, institutional arrangements have been put into place which (a) ensure broad participation in the setting of standards, and in making the tradeoffs between cost and water quality; (b) ensure that available resources are spent on those investments which yield the highest environmental return and (c) use economic instruments to encourage users and polluters to reduce the adverse environmental impact of their activities.

In the present context the key point is that the experience of OECD countries, appropriately analyzed and packaged, provides a rich basis of experience from which developing countries can learn many valuable lessons.

Issue 2: Developing policies consistent with "the new consensus"

An essential requirement for translating the new consensus into action on the ground is for ESAs to develop policy statements which:

- Translate the global principles into policies which are specific to the ESA;
- Do so in a participatory way, involving all the relevant stakeholders (including, for instance, governing boards, management, and staff of the ESA, and the developing countries with whom the ESA works).

One example of "good practice" in this regard is the development of the Water Resources Management Policy Paper of the World Bank (Box 4).

Issue 3: Ensuring that cooperation and support to developing countries are consistent with these policies

Once ESAs have developed and articulated policies which are consistent with "the new consensus", the next requirement is translating these into action. This process typically comprises several steps.

Step One is the translation of the policy statement into operational rules or directives. Again the World

Bank provides an example of "good practice". Box 5 presents the Operational Policies Note which provides Bank staff with specific criteria to be used in translating the general policy paper into practice.

Step Two is the key one, namely of working with developing countries in translating these principles into actions on the ground.

In the past this has often been seen as an issue of "conditionality", with resource flows from the ESA being "conditional" on actions by the recipient. It is now generally understood that this adversarial relationship severely undercuts the policy goals which are being sought. The corollary is that there is now broad acceptance of the importance of the "ownership" of policies by developing countries themselves and recognition that without such ownership policies can and will not be sustained.

And here a vital and very promising development is the high degree of participation which has characterized both the development of the international policy consensus and the development of policy positions (such as the World Bank's Water Resources Policy Paper described above).

The ideal implementation environment is thus one in which the developing country itself decides that it

BOX 4: A "good practice" example: The World Bank's Water Resources Management Policy Paper

The World Bank's World Development Report (WDR) for 1992 focused on the environment and development. The report identified water resources management as a major issue for environmentally sustainable development. In part stimulated by the discussion on the WDR, and in part stimulated by the then-upcoming Rio Conference, the World Bank's Board instructed Bank management to prepare a water resources policy paper for the Bank.

The preparation of the paper took almost two years. It was a process characterized by a vigorous internal debate involving a large number of staff members at all levels. The authors of the paper also followed an innovative approach with regard to the external community. Prior to the initiation of the work a high-level professional meeting was held, getting opinions from professionals and policymakers, primarily from developing countries, on the key issues to be addressed in the paper. And at several stages in the course of the paper drafts were discussed with external groups comprising representatives of professional associations and other non-governmental agencies.

This highly participatory process meant the expenditure of much energy and time. However, it meant that the paper which finally emerged was one which gained a wide degree of acceptance within the Bank, among the Bank's clients, and in the NGO community. In the present context an important implication was that when the Bank advised its borrowers to encourage participation in the setting of water policy, it could legitimately claim to have practiced what it preached!

wishes to reform its water resources management policies in a particular way, and in which it then solicits cooperation in translating this into a reality. In such a context external support agencies can play the appropriate role. They can direct resources, both financial and human, to providing such support.

An example of "good practice" (Box 6, overleaf) is the support given by Denmark and other Nordic countries to Uganda in developing an approach to water resources development. The key point is that the Uganda initiative is not something imposed by Denmark on Uganda, but rather an organic meeting of the minds between the two countries on this issue.

Box 5: The World Bank's Operational Policy Note on Water Resources Management



THE WORLD BANK OPERATIONAL MANUAL

OP 4.07

July 1993

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Operational Policies

Water Resources Management

1. Bank¹ involvement in water resources management entails support for providing potable water, sanitation facilities, flood control, and water for productive activities in a manner that is economically viable, environmentally sustainable, and socially equitable.
 2. The Bank assists borrowers in the following priority areas:
 - (a) Developing a comprehensive framework for designing water resource investments, policies, and institutions. Within this framework, when the borrower develops and allocates water resources, it considers cross-sectoral impacts in a regional setting (e.g., a river basin).
 - (b) Adopting pricing and incentive policies that achieve cost recovery, water conservation, and better allocation of water resources.
 - (c) Decentralizing water service delivery, involving users in planning and managing water projects, and encouraging stakeholders to contribute to policy formulation. The Bank recognizes that a variety of organizations—private firms, financially autonomous entities, and community organizations—may contribute to decentralizing water delivery functions. Thus it supports projects that introduce different forms of decentralized management, focusing on the division of responsibilities among the public and private entities involved.
 - (d) Restoring and preserving aquatic ecosystems and guarding against overexploitation of groundwater resources, giving priority to the provision of adequate water and sanitation services for the poor.
 - (e) Avoiding the waterlogging and salinity problems associated with irrigation investments by (i) monitoring water tables and implementing drainage networks where necessary, and (ii) adopting best management practices to control water pollution.
 - (f) Establishing strong legal and regulatory frameworks to ensure that social concerns are met, environmental resources are protected, and monopoly pricing is prevented. The Bank requires legislation or other appropriate arrangements to establish effective coordination and allocation procedures for interstate water resources.
- These issues are discussed in the project documents.
3. Individual water lending operations are explicitly linked to the country's priorities for reform and investment and to the Bank's program of support.
 4. If inadequate progress by borrowers in these priority areas leads to serious resource misuse and hampers the viability of water-related investments, Bank lending is limited to operations that provide potable water for poor households or conserve water and protect its quality without additionally drawing on a country's water resources.

1. "Bank" includes IDA, and "loans" includes credits.

Note: This document is based on *Water Resources Management: A World Bank Policy Paper* (Washington, D.C.: World Bank, 1993). It complements OD 4.01, *Environmental Assessment*; OD 4.02, *Environmental Action Plans*; OD 4.20, *Indigenous Peoples*; OD 4.30, *Involuntary Resettlement*; OD 7.50, *Projects on International Waterways*, and OD 14.70, *Involving Nongovernmental Organizations in Bank-Supported Activities*. It also draws on OMS 2.22, *Financial Performance Covenants for Revenue-Earning Entities*, and OMS 3.72, *Energy, Water Supply and Sanitation and Telecommunications*. Questions should be addressed to the Director, Agriculture and Natural Resources.

These policies were prepared for the guidance of World Bank staff. They are not necessarily a complete treatment of the subjects covered. Additional copies of this document are available on a self-serve basis in the Institutional Information Services Center (IISC), in E 3200.

Box 6: Water Resources in East Africa — the Nordic Initiative and the Entebbe Report

A major pre-Dublin activity was “the Nordic Initiative on water resources management”. This initiative involved about 50 people from both ESAs and developing countries, who worked together to formulate some key principles which were more or less directly incorporated into the Dublin Statement. Several of the participants were from Nordic countries, and several were key policymakers from East Africa.

As a follow-up to Dublin/Rio, and as part of the ongoing Nordic Initiative, an East African Water Resources Seminar was held in Entebbe, Uganda, in May 1993 as a next step in translating the Dublin/Rio principles into practice in that region. The Seminar was attended by 60 people, among whom several had participated in the Nordic initiative since its inception and had played key roles in Dublin.

The outcome of Entebbe were recommendations to the countries on the following key issues:

- The roles and functions of different management levels
- Cross sectoral integration mechanisms and guidelines
- Economic analysis, pricing and charging
- The legal and planning framework
- Water resources assessment, monitoring and information management and
- Capacity building

What is significant about the Entebbe Report is that it represents continuity with the Copenhagen/Dublin/Rio work which had gone earlier, and constituted ongoing support to committed developing countries in translating the Dublin principles into practice in their countries.

Participation, at many levels and in many contexts, is the key to implementing “the new consensus”. It is vital that “participation” not be considered as something automatic, or that it be merely a slogan of political correctness. Rather, it is vital to recognize that there are three key pre-conditions for successful participation. Participation must be able to make a difference, participation must be informed and capacity must be built for participation. Each of these is elaborated on below.

The “participation must make a difference” principle means that major decisions on policy, on priorities and on mechanisms must be affected by such participation. The “participation must be informed” principle means that high priority must be given to providing user-friendly, relevant information to all stakeholders relevant to a particular decision. This requires a culture of accountability and transparency, ranging from the five-year investment programs of basin agencies to the operational performance of water companies.

The “capacity building” principle is crucial. Of overriding importance is the construction of an “enabling environment”, in which there are incentives for individuals to “do the right things”. Once this is done, there is much that can be done to enable them to “do things right”. In the water resources, this action necessarily takes place at a variety of levels. At the most macro level, managers and technicians need to be trained to understand the core elements of macro (say basin-level) water resources management. Here, as described earlier, the best starting position for an ESA is to have good practice in its country. Accordingly a particularly effective source of capacity building on water resources management has been carried out by France, in adapting the French river basin system to the realities of several developing countries and countries in transition. Box 7 outlines the nature of French support to Brazil at the river basin level.

Box 7: French-Brazil Cooperation — the Rio Doce Project

The French River Basin management system is the industrialized country “model” which most completely embodies the Dublin/Rio principles. In translating these principles into practice there are two particularly large cultural changes which have to be made — involving stakeholders in making policy, and the use of economic instruments for generating investments and managing the resource.

Given these fundamental cultural issues, a particularly important form of cooperation involves twinning arrangements in which professionals from the French basins work with counterparts in developing countries. The French government is financing several such efforts, in Indonesia, Peru, Venezuela, Poland and other countries.

An interesting example of such cooperation is that of the development of a river basin approach in the Rio Doce River which includes parts of the states of Minas Gerais and Espirito Santo in Brazil. A four-year cooperation effort between the Governments of France and Brazil started by doing technical work on the basin. This work had several direct and indirect objectives. The direct objectives were to produce the sort of information which is produced by the basin agencies for the basin committees in France. Principal among these are:

- Simulations of the effects of different levels of investment on environmental quality;
- A procedure for ensuring that resources for water resources management at the basin level are used for the highest priority purposes; and
- The levels of user and polluter fees which might be imposed on municipal, industrial and agricultural users of water and land.

The indirect objectives were equally important. Principal among these is stimulation of a cultural change along two axes — in legitimizing the process of management by stakeholders and in the use of economic instruments. Accordingly the project paid a lot of attention to stakeholder participation in formulation of proposals, even though there was no certainty that the basin concept would eventually be put into practice.

Through this ingenious process legitimacy of the approach was, indeed, established. The national water law is now being rewritten so that the basin financing approach is allowed. And it is expected that the Rio Doce will be an early application.

Building on the success of the Rio Doce cooperative effort, similar efforts are being undertaken in the Rio Paraiba basin (including parts of Sao Paulo and Rio de Janeiro states) with support from the Government of France and in the state of Ceara in Northeast Brazil (with support from the World Bank).

At lower levels, too, there is much to be done in terms of capacity building. Once again a key is to have the incentives right, both for individuals and for institutions. An impressive example here is the training that is done by private water sector operators when they obtain long-term operating contracts in developing countries. In the longest-standing concession contract in the developing world — in Abidjan, Cote d’Ivoire, where the system was put in place in 1960 — management was initially dominated by French nationals. For several reasons — including the legitimate political motive of

generating a domestic constituency for the system, and because the cost of a national manager is a fraction of the cost of a foreign one — the company which was awarded the concession contract engaged in a vigorous training effort at all levels. Over the 30 years of the concession, despite a very substantial expansion in service, the number of foreign nationals in the company declined from about 40 to about 10. Similar intensive training programs are a feature of similar contracts in other countries. When such “enabling environments” are in place, then a whole variety of other capacity-building

initiatives can and should play a major role in development cooperation. A good example is the range of capacity-building efforts executed by the UNDP. These range from the stimulation of domestic training centers and training networks (via the International Training Network and other programs), to "partnerships" for sharing knowledge of successes and failures (such as the new UNDP/World Bank "Utilities Partnership"). An important recent development (at the Interministerial Meeting on Water and Sanitation in Noordwijk, Holland) is the recognition that water and sanitation capacity building is a legitimate element of UNDP's Capacity 21 initiative which was mandated at UNCED.

Issue 4: Learning

The fourth and final issue in translating "the new consensus" into practice is that of learning. There is little doubt that "the new consensus" principles are appropriate. Where there is great uncertainty is how such principles can and will translate into practice in particular economic, social, cultural and environmental situations. What is clear is that finding answers in particular circumstances is a very formidable challenge, requiring an intensive process of assessing what is working and what is not working, understanding the reasons for both success and failure, and drawing lessons from these. It is also clear that this learning process will be more efficient if it is systematic, disciplined and rigorous. And finally it is clear that this learning has to take place at a variety of levels, ranging from the international community to local communities. It is an important task of the ESAs to stimulate such a learning culture in the developing countries. And to do this convincingly and successfully it is essential that the ESAs themselves approach the long-term task of successful implementation with this learning focus. Box 8 outlines an approach being taken

within the World Bank to develop such a learning process on water resource management issues.

Issue 5: Internationally shared river basins

All of the above actions are actions which ESAs can and should take in support of appropriate activities at "more central levels" in the "responsibility rosette" shown in Figure 1. There is only one set of issues for which "the lowest appropriate level" is the international level, and this is with respect to internationally-shared river basins and aquifers.

International issues related to the sharing of mutual water resources are important as a possible source of conflict between riparian countries. In several regions of the developing world, water already plays an important role in international conflicts. Particularly where water resources are a limiting factor for development, conflicts are likely to arise. In the future, under the influence of population growth and economic growth, these conflicts are likely to become more numerous. International rules on the use of water of international rivers have been developed long ago, the Helsinki rules, and a law is under preparation but this issue is not likely to be solved through international law by itself.

In such situations the OECD countries can, first and foremost, behave well and point to their own "good behavior" as a model to be emulated in developing countries. In this context agreements on joint management of water resources (such as the agreements governing management of the Rhine River and the Great Lakes) are of enormous importance both in the moral sense and as practical examples from which lessons can be learned. Where political circumstances are appropriate (as in the ongoing discussions on peace in the Middle East), the OECD countries can act as honest brokers and facilitators in helping riparian countries come to equitable and enforceable agreements on the management of international waters.

Box 8: The World Bank's Water Resources Learning Group

Why a Learning Group?

In May of 1993 the World Bank's Board approved the Water Resources Management Policy Paper. On the basis of the Policy Paper, OP 4.07 was issued in June 1993.

The Policy Paper has been widely praised both because of the process used in formulating it and because of its content, which closely parallels that endorsed by the international community in the Dublin Statement, and as reflected in chapter 18 of Agenda 21 of the Earth Summit in Rio.

The big question which now faces Bank staff and borrowers is translation into practice of the fundamental principles of the Bank Policy Paper, i.e., "...The adoption of a comprehensive policy framework and the treatment of water as an economic good, combined with decentralized management and delivery structures, greater reliance on pricing, and fuller participation by stockholders."

This process of operationalizing the Policy Paper raises a large set of substantive issues, on many of which relatively little is known. Accordingly, the World Bank instituted a Water Resources Learning Group in late 1993. The basic objective of the Learning Group is to use the material emerging from the Bank's operational support activities to learn about the substantive issues which emerge in applying the Policy Paper, and to analyze and disseminate these so that implementation can be improved.

What Questions Would the Learning Group Address?

The work of the Learning Group can be thought of as a matrix in which there are issues on the vertical axis and places (countries/basins etc.) on the horizontal axis. Some sessions of the Learning Group focus on a place (Tanzania, say), describe the substantive issues (how to integrate agricultural, hydro, water supply and environmental concerns; water as an economic good; stakeholder participation and other institutional issues, etc.) and describe how the operation or research work is addressing these. In other instances the session of the Learning Group focuses on a particular issue (say, water markets) in a variety of settings.

Over time the Learning Group will "fill out the matrix". That is, the Learning Group expects to develop a detailed understanding of the substantive issues in different contexts, and detailed information of what has been learned about these issues in a variety of settings.

The "Cultural" Objectives of the Learning Group

The issues of water resources management are inherently contentious and are ones on which a wide range of interpretations is often possible. What the Learning Group hopes to achieve is a spirit of "respectful contentiousness". The objective is an open discussion of substantive issues, not simply information on what is being done. And presenters expect, and generally welcome, challenges to the approach they have taken to the substantive issues.

Outputs From the Learning Group

Several "outputs" are anticipated from the Learning Group. First and foremost, Bank-financed projects which have water resources components should be substantially improved as a result of the critical discussion in the Learning Group. Second, the discussions at the Learning Group are giving rise to joint, cross-sectoral work on particular aspects of water resources management (to date including work on the opportunity cost of water, and users' groups in both irrigation and water supply). Third, since in May of 1995 Bank management has to report back to the Bank's Board on progress on implementing the policy paper, the discussions at the Learning Group would be oriented explicitly to (a) getting a "map" of relevant Bank operations and (b) developing a clear, substantive understanding of experience developing through operations support work.

Conclusion

Massive improvements can be made in health, economic efficiency, equity and the environment through better management of water resources. The good news is that there is a clear “new policy consensus” regarding the principles for financially and environmentally sustainable development in this area. The bad news is that this will require fundamental and often difficult and contentious changes in practices that have been long established and in which large vested interests are at stake.

The OECD countries have an enormous opportunity to help developing countries realize the benefits of putting these principles into practice, and are well-positioned to do so. This DAC meeting can make a signal contribution to implementing Chapter 18 of Agenda 21 by providing developing countries with the sorts of supports described in this paper.

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