Water

Putting Dublin/Agenda 21 into Practice

Lessons and New Approaches in Water and Land Management

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Implementing the new water resources policy consensus:

Lessons from good and bad practices

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Other sections of this book have described the evolution of the "new consensus" on water resources management and, quite appropriately, focused attention on the three fundamental principles embodied in this consensus, namely "comprehensive management", "management of water as an economic good", and "management at the lowest appropriate levels". This chapter reviews relevant experience with water resources management in both industrialized and developing countries and draws some tentative conclusions about the major challenges to be faced in translating the "Copenhagen/Dublin/Rio consensus" into practice.

The experience of industrialized countries: a source of good and bad experience

To a considerable degree, the "Copenhagen/Dublin/Rio consensus" was derived from the success of two (related) cases of innovative water resources management in Germany and France.

Good, old, industrialized country experience

The story starts in the Ruhr Basin in the early part of the twentieth century. The underlying problem was that a small river (the Ruhr, a tributary of the Rhine) became the sewer for a massive concentration of industrial wastes in the most heavily industrialized and populated part of continental Europe. The Ruhrverband (Ruhr

[1] The opinions in this paper are the personal and professional opinions of the author. They do not necessarily reflect the official position of the World Bank and should not be attributed to the World Bank.

Water Association) was founded as a selfgoverning public body in 1913, on a few key underlying principles. The first principle was that all stakeholders (all users and polluters of water including communities, districts, and trade and industrial enterprises) would be members, and that policies would be made by a political body, the "Assembly of Associates", or "Water Parliament". The second principle was that the Ruhrverband would make extensive use of economic instruments (water charges and pollution fees) to finance the investments and other management activities in the Ruhrverband. An associated principle was that water quality objectives were the result of the simultaneous consideration of the benefits of various improvements, and the costs of achieving these. Finally, even in this small area, the Ruhrverband found it appropriate to delegate major functions to municipalities – 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 distribution of water and the collection of waste water).

The Ruhrverband was a resounding success, showing: (a) what the fundamental principles underlying sound water resources management are; and (b) how these principles were turned into a practical management approach in a severely water-stressed area with sophisticated institutional capacity. The model spread rapidly to neighboring industrial areas of the (present day) state of North Rhine-Westphalia, with a total of 12 similar Water Associations formed.

The logic of the Ruhr model was apparent not only to Germans. In 1964 the French parliament passed a new water law. The key institutional innovation in France was the "River Basin Financing Agency", which was faithful to the Ruhrverband principles, appropriately adapted to the legal, cultural and natural conditions of France. In only one respect were the (much bigger) French River Basin Financing Agencies different. Whereas the Ruhrverbund built and operated the waste water treatment facilities, this function was delegated to the municipalities in France (who in turn, often delegated this responsibility to specialized private firms).

Bad contemporary industrialized country experience

The purpose of the above discussion is, obviously, to draw implications for developing countries later in this chapter. But the business of "transfer of experience" is often (inevitably) the task ent-

rusted to professionals with a high degree of contemporary knowledge and expertise, but (with some notable exceptions) little interest in or understanding of the historical context of that experience. More specifically, it will be argued that there are clear signs that major strands of contemporary industrialized country water resources management policies will: (a) prove to be unsustainable and counterproductive in industrialized countries themselves; and (b) constitute, if they are transferred naively, a considerable threat to the development of sound policies in developing countries.

It is most instructive to return to Europe to pick up the story of the Ruhrverband. As described earlier, a central task was to set standards which balanced the benefits of improved water quality with the costs of achieving such improvements. Of particular importance was the fact that the "Water Parliaments" backed up by excellent technical analysis, implicitly took local environmental and economic conditions into account in striking this balance.

Over the past 15 years, however, the situation in the Ruhr has changed in a couple of fundamental ways. There are several factors giving rise to this change. Ostensibly the most important has been the rise of the environmental movement and the resulting higher priority given to the environment at all levels. While obviously a good development in its own right, this change has interacted with a number of other factors in a highly detrimental manner.

The first factor is related to the rise of the European Union. Although nominally committed to the principle of "subsidiarity", in the environmental area Brussels has opted for Europe-wide, undifferentiated standards. Furthermore, for political reasons Brussels has constantly ratcheted up mandatory water quality standards, virtually without consideration for the costs which have to be borne if the standards are to be met. The irresponsibility, and perhaps even deception, implicit in this is summed up in the words of an economist/politician who participated as a European Parliamentarian and Brussels bureaucrat in setting environmental standards for the European Union. When asked about how the costs of meeting standards were factored into the process, he retorted: "If we had told people what these standards would cost, the standards would never have been passed, so we simply agreed not to discuss costs"!

The political economy of this is, of course, more complex than blind irresponsibility. Rather, it can be seen that many interests are served by such a process. The most obvious group are the environmentalists, but there is no deception in their position, which gives an acknowledged uniquely high weight to the environment. Less visible and less forthright is the strong lobby of consultants, con-

tractors and professionals who benefit greatly from the enormous sums of money dedicated to the environment. When asked directly about costs, these groups invariably agree that costs should be taken into account, but they seldom express this opinion in the policy arena.

The outcome of the process in Europe is ideal for these groups. For the environmentalists standards rise continuously. For the contractors, consultants and professionals, resources abound. In the word of a technical manager of one of the most prominent German Water Associations, "I have been working in this business for 35 years. For the first twenty the benefits and costs of every proposal were closely debated. Since the advent of strict and very high standards 15 years ago, we have been awash with money and have been able to build whatever we wish – there have been no limits."

While the European standards apply to all members of the European Union, each country has its own tradition of compliance with legal standards. Among the countries in which the compliance culture is strongest are Germany the United Kingdom. In these two countries, the imposition of European water quality standards have transformed the structure of water resources management.

In England and Wales there were two driving forces behind the 1991 privatization of the water industry. Most obvious was Mrs. Thatcher's belief in the magic of the private sector. Equally important, however, was the fact that the investments required to meet the EEC standards – an estimated $60 billion over a ten-year period – could simply never be raised out of public budgets.

An analysis of the structure of the privatized British water industry would suggest that it was designed to distance consumers from the processes of setting and enforcing standards. Environmental and economic regulation is done by two quite different agencies, with few designed links between the two. By design, consumers were only formally to be involved by the economic regulator. As consumers' bills have skyrocketed, consumer dissatisfaction has risen. Part of the dissatisfaction has been directed at "privatization" (which remains quite unpopular in England and Wales due to its association with rapidly rising bills). But the economic regulator has correctly pointed out that utility privatization in other sectors in the UK has driven down bills, and correctly pointed out that it is the standards themselves rather than privatization *per se* which drives the relentless increase in consumers' water and sewerage bills.

In Germany, where virtually all municipal services are publicly provided, consumer bills are much higher than in the UK, and rising even faster. A typical German consumer now pays about $4

per cubic meter for water and waste water services, a figure which is projected to rise to about $7 per cubic meter for most consumers in the near future, and to an astronomical $15 per cubic meter for a substantial number of consumers! Remarkably, given this fact, very little attention is paid to even estimating the investment requirements accurately, let alone to questioning the implications for consumers or the rationale behind the process. A back-of-the-envelope calculation by an engineer is the basis for the generally-accepted estimate that $200 billion needs to be invested in Germany to meet EU water standards.

There are three responses in Germany and Britain to the growing gap between consumers' willingness to pay and the costs of meeting ever-higher standards. The first and most common response is to assert that costs are not a problem but that the consumers' attitude is. Over and over again one hears comparisons between the cost of a liter of water and a beer or soft drink, and hears of the need to "educate" consumers so that they will happily pay the rising bills. The second response (in Germany and the United Kingdom) is to point out that not all Europeans have the same respect for the law, and to imply that, to varying degrees, many other European countries square the circle by simply disregarding much of the new legislation. The third response is to acknowledge the impossibility of meeting the standards in the stipulated time frames and to stretch the "compliance dates" to some, often distant, future date.

To a substantial degree a similar "set-uniform-standards-and-then-raise-the-money-to-pay-for-them" approach has been taken in recent decades in the United States, where secondary treatment of all municipal waters is required by Federal law. Seventy-five percent of the investment costs of municipal waste water treatment plants constructed under the Clean Water Act were previously funded by the Environmental Protection Agency. As has happened throughout the industrialized world, however, the central government spring has dried up, with costs necessarily being passed to others. In the UK, "the solution" was to pass the costs on to the consumer by privatizing the industry. In Germany, the US and other countries, the costs have been passed down to the local government, for them to pass on to consumers.

Passing the costs down has the great virtue of making the process more transparent, thereby involving local governments and consumers in the process of setting policies. As this has happened, two facts have emerged over and over again. First, there has been vast waste in centrally-subsidized programs, with pork-barrel politics being the rule and huge sums being spent on trivial pro-

blems. Second, insufficient attention has been given to striking a reasonable balance between the benefits and costs of environmental standards. In recent years local governments in the US have increasingly revolted against what they describe as the irresponsibility of Congress in not considering the costs along with the benefits of environmental legislation. More and more vocally, mayors of US cities have questioned these "unfunded mandates", as they are known. Amongst the most celebrated cases in the US is one of particular relevance to this discussion, namely the refusal by the city of San Diego to comply with Federal standards for the secondary treatment of municipal waste water. The case recently went to the US Court in California where the judge, in vivid language, described the Federal requirements as "wasteful, unrealistic and unworkable". The Federal Judge not only did not order San Diego to comply, but praised the city for taking the right stand, and lambasted the Federal Government for trying to force the city to make investments which were, in the opinion of the Court "not in the public interest" (US District Court, Southern District of California 1994).

The European philosopher, Karl Popper, argued persuasively that the fundamental virtue of "The Open Society" is not so much any built-in capacity to do things correctly, as its capacity to learn from failures and make the appropriate corrections. The San Diego case and a wealth of similar examples in related fields is forcing the US Government to go back to the drawing board in thinking about sound environmental policies. In the case of waste water management in coastal areas (which the San Diego case exemplified), the EPA commissioned the US National Academy of Sciences (NAS 1994) to review policies in this area. The outcome of the NAS study is striking – it argues for the development of institutions which involve stakeholders, which consider costs as well as benefits and which take account of local conditions. Although not described as such (since it is not part of the US tradition to look to other countries for inspiration), the model is a strikingly familiar one, namely the Ruhr/French water management model!

The great irony is that just as the US is discovering this model, the original model – the Ruhrverband – has largely been rendered obsolete by the enactment of European standards. While the "water as an economic good" principle is still applied faithfully and to great effect in the Ruhr (all of the costs of the Ruhrverband's costs are raised via charges, with water abstraction fees accounting for about 15%, and pollution charges about 85% of the Association's revenues), the institutional model has been gutted. No longer does

the Water Parliament fulfil its delicate and vital balancing act – for the past fifteen years all it does is ratify the budget necessary to meet the standards!

Good contemporary industrialized country experience managing water as an economic good

The world is not a simple place! There remain some very valuable lessons (on pricing, for instance) even from contemporary practice in the Ruhr. And the French have recently reaffirmed and refined their river basin management system (Cheret, 1994).

More broadly, many industrialized countries have moved well beyond simple (but vital!) pricing policies in an effort to manage their water resources in an economic and environmentally sustainable way.

The core of the new approach to water resources management in arid areas of industrialized countries is a move away from allocation by administrative fiat, to the much wider use of markets and market-like instruments for resource allocation purposes. The most widely-publicized cases are those in the Western US. A wide variety of water markets have emerged, ranging from the well-established trading of permanent rights within particular irrigation districts (such as the Northern Colorado Water Conservation District), to the purchase of rights for environmental conservation purposes, to the temporary use of "Water Banks" for the voluntary reallocation of water from agriculture to cities in times of drought. There have been similar developments in Australia and Spain, where a variety of water markets have been established so that water is voluntarily reallocated to its higher-value users.

In summary, there would appear to be several lessons from this analysis of contemporary water resources management policies in industrialized countries. First, that participatory management making heavy use of market-like instruments has proved to be an extraordinarily flexible, efficient, equitable and environmentally-friendly approach. Second, that it has been possible to build the participatory and market principles into appropriate institutional forms in quite different legal and cultural contexts. Third, that the "set-the-standards-first-and-raise-the-money-later" approach has proved to be hideously expensive and inefficient, and where it has been applied faithfully (as in the Ruhr Basin) it has resulted in the effective marginalization of stakeholders from the policy formulation process.

The perspective of developing countries

In a penetrating recent commentary on reform in Eastern Europe, the Czech Prime Minister, Vaclav Klaus (1994), has noted that, paradoxically the reform process has been least satisfactory in the former German Democratic Republic, where it has been possible to imagine solving problems by throwing money at them rather than by facing the problems fairly and squarely. So, too, it is with water resources management. The mirage of the industrialized country "buy your way out of the problem" approach is not only "not on" in developing countries, but potentially quite dangerous. (Briscoe and Garn, 1994.) Developing countries have no alternative but to give highest priority to the efficient use of limited resources.

To a large degree the two fundamental Copenhagen/Dublin-/Rio principles (described by Torkil Jønch-Clausen, 1994, in the introductory chapter) are no more than the application, to water, of the great ideas of our time, namely democracy and the market. As the democratic and market ideas have swept through the developing world, so too have the developing countries discovered the power of applying these ideas to the problem of water resources management. Let us consider a few examples.

The first interesting phenomenon has been the recognition of a large number of sound resource management approaches which were formally condemned to non-recognition as part of the "black economy". An illustrative case is that of water markets in the dry western Indian state of Gujarat. While government-managed irrigation systems throughout India have been hugely inefficient and environmentally destructive, highly efficient informal ground water markets have emerged spontaneously. As documented in detail by Shah (1993) these markets are complex institutional arrangements (with most farmers being both sellers and buyers, and with peak and seasonal pricing the norm), which provide farmers with a high-quality service (water of the appropriate quality, when needed and where needed) and which use water in an environmentally-sustainable way (with most transmission now done by pipe rather than canal in order to reduce losses).

The contrast with the command-and-control methods used for managing government-run service irrigation systems in India could not be greater. The public irrigation systems provide most farmers with a terrible quality of service for which they are (appropriately) willing to pay very little. Because farmers will not pay, facilities are not maintained, and the quality of service declines still further. In this "vicious circle", allocation is domina-

ted by political considerations and corruption. The poor cannot compete on such a playing field, losses are huge, and the environmental consequences devastating.

Not surprisingly Chile, with its dry climate, with its firm commitment to the use of markets and market-surrogates, and its long – although not uninterrupted! – history of democratic government is a leading innovator in the field of water resources management. The private sector plays a growing role in the delivery of water supply and sewerage services in Chilean cities. And services are provided to the poor without inducing distortionary subsidies, via the targeted provision of "water stamps" (the equivalent to the food stamps used in the United States). Recently, water markets have been introduced for the voluntary allocation of water amongst competing uses. (Rosegrant and Gazmuri, 1994.)

Other countries, too, are starting down the same path. In Brazil, for instance, French style river basin management is being introduced for management of the Rio Doce, the Paraiba do Sul River and the Piracicaba River Basins in the South-East. The progressive state of Ceará is leading the way in the poor and arid North-East in the use of participatory water resources management, increasingly using markets and market-like instruments (as described by Jerson Kelman, 1994, in this book,).

In Eastern Europe, similar processes are at work. Poland already makes extensive use of abstraction and pollution fees, and is in the process of finalizing the legal basis for a French-style participatory water resource management system.

In no cases – industrialized or developing countries – are these changes simple to implement or execute. This is true first and foremost because the natural as well as cultural and social context matters so much. Consider a couple of examples presented in other chapters in this book. With regard to the effect of natural conditions, the Ceará case (described in Kelman's excellent paper, 1994, in this book) is instructive. In adapting the French model to the arid Northeast state of Brazil, a fundamental issue which had to be faced was that the natural locus for decision-making was not the basin (river beds are dry for most of the year) but the reservoir. And the fundamental issue now in Ceará is not water quality management (as it is in France) but the management of quantity. The task facing Ceará is thus to adapt the sound principles it is committed to (participation and management of water as an economic good) to its particular endowment of natural and social conditions.

With regard to the effect of social factors, the excellent paper by Boesen (1994) in this book points out how careful the institutional

design process has to be when administrative capacity is limited, as it is in Tanzania. Boesen shows that a lean institutional structure is imperative, and persuasively argues that the principle governing institutional design should be to develop institutional arrangements only in response to those problems for which people are demanding responses.

These and other examples in this book demonstrate, once again, that the political economy of changes is complex and that there is, therefore, no substitute for political will and leadership. No matter how inefficient systems may be, there are always those who benefit from these inefficiencies and who therefore oppose change. This is abundantly evident in the Indian subcontinent, where inefficiency and petty corruption in the irrigation systems are two sides of the same coin. It is also true for less nefarious reasons. In Poland, for example, local governments have come to rely on abstraction and pollution fees as a source of revenue, and are understandably reluctant to surrender these powers and resources to basin-level agencies.

The challenge of development and the imperative of learning

In the 1940s development was perceived to be fundamentally a process of capital accumulation, with institutions like the World Bank founded to facilitate the process of capital transfer to, and accumulation in, poor countries. In the 1960s Gary Becker and others extended the development paradigm, showing clearly that not just financial but human capital, too, counted. In the 1980s, the outline of a further extension of the paradigm has emerged through analyses like Robert Putnam's meticulous and imaginative work on regional development in Italy (Putman 1994). This work shows that financial and human capital are necessary but not sufficient, and that the soil in which the "seeds" of financial and human capital are planted makes a big difference. More specifically, it has been shown that "institutional capital" is fundamental to the development process.

The development debate has consequently and appropriately, shifted to the question of how to stimulate appropriate institutions for development in general and, in our context, to institutions for the sustainable, efficient and equitable management of water resources. The Copenhagen/Dublin/Rio principles fit firmly into this framework. The first principle deals with institutional

architecture ("management at the lowest appropriate levels", "stakeholder participation", "the development of an enabling environment", "greater involvement of the private sector, communities and users" etc.). The second principle ("managing water as an economic good") deals with the instruments to be used in transmitting information amongst the various actors and, in particular, the greater use of economic instruments in this process.

The two central Copenhagen/Dublin/Rio principles appear again and again as ones that are respected in the sustainable, efficient and equitable water resource management systems, and principles that are disregarded in inappropriate management arrangements. But just as important as the universality of these principles is the fact that application of the principles cannot be a mechanical process but must take account of the natural, cultural, political and social factors which are so fundamental in managing water resources.

The reconciliation of the universal with the local poses an exciting and demanding "learning process". "Universality" means that there are general lessons to be learned; "local specificity" means that great care has to be taken in accounting for local factors in understanding successes (and failures) and in transferring lessons to different natural and social contexts. The papers from Brazil, India, Tanzania, Uganda and Vietnam in this volume show how appropriate water resource management practices are conditioned, on the one hand, by the level of water stress, and on the other, by the institutional capacity of a society. Equally important is the observation that both the natural and institutional factors are subject to change, and often quite rapid change at that. Figure 1 is an attempt at schematically illustrating the relative frequency of different combinations of water stress and institutional capacity. The evolutionary trend is clear. First, water stresses due to problems of both quantity and quality are increasing dramatically throughout the world, both in real terms and because perceptions of these environmental problems change. And, second, institutional capacity can change, often quite sharply, as is evident in the Ceará and Uganda cases discussed in this volume. Accordingly, there is some convergence to the "serious water stress/considerable institutional capacity" quadrant in the lower right-hand corner of Figure 1.

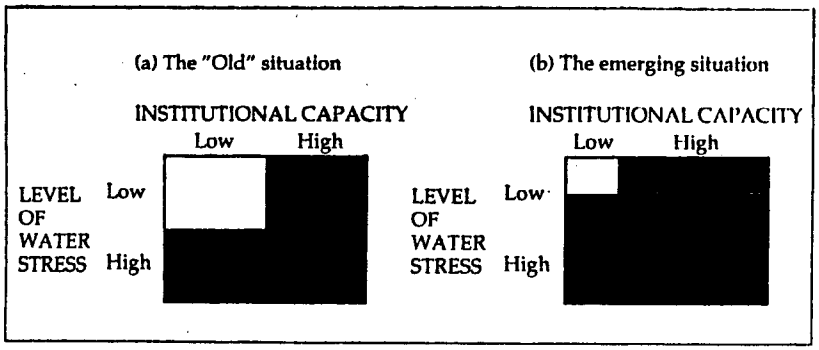

Figure 1. The interaction of water stress with institutional capacity

Conclusion

History shows that the benefits of systematic learning are great both within a particular environment and across environments. The French learned the lessons of the Ruhr experience and applied these productively in their own country. The French experience, in turn, has served as a source of inspiration and know-how for Spain, Poland, Brazil, Peru, Venezuela and many other countries.

Conversely, the costs of not learning are great. The unproductive evolution of water resources management of the Ruhr Basin in recent decades has occurred because innovation has been focused exclusively on technical areas, with the once-productive institutional arrangements ossifying into a non-participatory bureaucratic form.

In conclusion, then, this Special Session of the Congress of the International Water Resources Association clearly delineated the task ahead. The development of sustainable, efficient and equitable management systems is fundamental to the well-being of people and the environment. There is a remarkable global consensus emerging from the Copenhagen/Dublin/Rio process on the key principles which characterise such appropriate management systems. The task now is one of translating these principles into practice in the myriad of natural and social conditions found in the world (World Bank, 1993). It is evident that this will happen most rapidly and effectively if implementation is characterized by a flexible, adaptive "learning approach". This is the task of many - of governments, of the private sector, of NGOs, of communities and, above all, of common citizens. But it is also evident that professionals, including those of the International Water Resources Association, have a fundamental role to play in meeting this historic challenge.

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