

Water Management in Megacities

At a full-day seminar during the World Water Week in Stockholm, August 16 – 20, some key features of megacities from the developing world were discussed in depth. In this context, a megacity is considered to have a population of 5 million or more. Special attention was given to the challenges related to the provision of clean water, and wastewater and stormwater disposal, and the effectiveness of policies that have been pursued to deal with these basic and vital functions of city life. In excellent overviews, the very rapid growth of megacities in the South during the last half-century, their roles in societal developments, implications in terms of pressures on natural resources, environmental consequences and management options, were synthesised. Practical examples from Jakarta, Sao Paulo, Istanbul, Mexico City, Johannesburg, Dhaka and Bangkok, illustrated the widths and depths of water-development-environment interactions.

Rapid urbanisation and emergence of megacities

In terms of pace, magnitude and consequences, the contemporary growth of the urban population and, what might be called the “urban conglomerate system”, is unprecedented. A few figures may illustrate this extraordinary swift transformation in demographic terms and settlement patterns. During the coming decades, almost the entire population growth in the world is likely to be in the urban population, primarily in sub-Saharan Africa and Asia. Between 2000 and 2025, the increase of the global urban population is estimated to be about 2 billion, or roughly 95% of total population increase in the world. In one generation, the additional urban population is roughly equal to the combined populations of the two most populous countries of the world at the turn of the century, China and India. The prevailing characterization of countries in Africa and Asia as “rural” is therefore less and less valid. As noted during the Seminar, the current urbanisation in the South is quite different from urbanisation that took place in Europe, United States and Japan. Level of urbanisation in Latin America is close to the situation in the latter category. Even then, in terms of water provision and environmental issues, the situation in Latin America is close to that of Asia, and the most affluent parts of Africa.

The rapid emergence of megacities is a striking facet of urbanisation. In 1975, there were 22 cities in this category, by 2000, there were forty, and it is expected that by 2015, there will be about sixty megacities in the world. A troubling trend is that the most rapid growth of urban centres is taking place in the economically weakest countries and in regions where water resource endowments are limited, technical and management capacities are comparatively poor, and institutions are relatively weak. All these makes successful water management in megacities of the developing world a most challenging and complex task.

The massive increase in the population of megacities has been continuing for some decades. For example, the population of Mexico City Metropolitan Area (MCMA), which is a loosely connected conglomerate of Mexico City proper and 34 municipalities, increased by 17 to 18 million people between 1950 to 2000; from around 3 to about 21 million. Similarly, Sao Paulo, consisting of the City of Sao Paulo and 39 municipalities, had a population of 300,000 at the beginning of the 20th century: today, it accounts for

about 18 million people. These two megacities are among the largest urban conglomerations of the world, which have expanded at a very fast rate. Various examples presented at the Seminar did, however, illustrate a similar trajectory in other megacities of the developing world.

Water provision and environmental sustainability are key challenges

Irrespective of the size and sophistication of a settlement, provision of clean water and safe disposal of wastewater remain basic necessities, for daily survival and for virtually all economic activities. With the continuing high growth rates of the megacities, the provision of adequate amounts of safe water becomes increasingly complex and expensive. For all the cases considered during the seminar, it was shown that water sources in the vicinity of the cities are inadequate. Supply to Johannesburg is somewhat special. Unlike most other big cities, it is neither located by a river, nor by the sea. Water provision to Johannesburg, Mexico City, Istanbul and many other megacities in the world is increasingly arranged through long distance water transfers. Beijing represents an extreme case. Within a few years, it is expected to receive water from Chang Jiang (Yangtse River), about two thousand kilometres away. Tapping of groundwater is often done before sophisticated surface systems could be built. Excessive pumping of groundwater in Jakarta, Dhaka, Bangkok and Mexico City have resulted in the lowering of the groundwater tables, sometimes up to one metre per year, with severe problems of land subsidence, apart from increasingly high, economic and social costs. For coastal cities, the lowering of groundwater results in salt-water intrusion, often contributing to irreversible damage to the qualities of water in the aquifers.

Megacities transcend borders

With increasing distances to the sources of water, the formal reaches of megacities are expanding. It is already impossible to arrange supply within a river basin context in many cases. Similarly, the economic significance and political power of megacities in the context of overall national development, implies that bulk supply of water will be secured through national policies and financial arrangements, rather than through corresponding institutions at the local or regional administrative levels. As emphasized during the Seminar, the growth of megacities has therefore seriously constrained the current concept of river basin management, from both supply and wastewater disposal considerations. For the management of water and wastewater and, generally, the downstream aspects, the physical river basin where the megacities are located, will remain the logical and most important in the management context.

It was also shown that megacities are increasingly becoming the interface of a country with the globalised economy and culture, rather than being closely connected to the surrounding rural hinterland as was often the case in the past. Hence, megacities are hubs in super-national complexes in several ways: in terms of water, energy and material fluxes, as well as in terms of socio-economic and political developments, and environmental and security considerations.

Economic giants

It has been estimated that the urban areas of the developing world, which contained some 30 percent of the total population, contributed to nearly 60 percent of the total GDP at the turn of the century. Johannesburg, for instance, is the economic engine not only for South Africa, but also it generates some ten percent of the GDP of the entire African continent. In many countries, the urban economies of megacities are by far the most important in terms of governmental revenues, employment opportunities and directions of national developmental policies.

Social deprivations

A particular feature of megacities is related to the combination of a highly sophisticated part, with modern industries and technologies, five star hotels, administrative offices, financial and commercial institutions, universities, research centres, etc., and a part, which is characterised by a lack of planning and hazardous living conditions in socio-economic terms and also in terms of the physical environment. In the megacities discussed at the Seminar, these informal areas, which are literally mushrooming, make up some 30 to 50% of the population. In spite of deplorable living conditions, and in the absence of a systematic policy for resource utilisation and environmental care in this part of the urban conglomerate system, it still plays very important roles in social, economic and political terms. It was noted that in Latin America, eight out of ten jobs are in the informal sector. It is likely that the formal sector in megacities and in others parts of the economy, may not have the capacity to absorb more than a fraction of the increase in the labour force in the years to come.

It is difficult to imagine a transparent policy and an active involvement of representatives of water users and other interested groups in water management in megacities, especially in the informal settlements. But there are interesting cases where public participation is seen as a constitutional right and where the say and the decisions of local constituencies are part of the management. In, Sao Paulo, for example, citizens are exercising their rights by organising themselves into associations, which pressurise the political class to provide more funds to improve the urban environment. Public participation in policy-making and project implementation and management is very high on development agendas all over the world. It was emphasised during the seminar that the reliance on the public sector, i.e. the government or municipality, as a monolithic institution has proved fallacious.

Environmental degradations

An increasing supply of water to households, industry and other activities of the megacities, means that the volume of wastewater is increasing concomitantly. Rivers within and around megacities of the developing world have often become open sewers. Apart from wastewaters and other liquid wastes, cities generate substantial amounts of solid wastes. Garbage, both toxic and non-toxic, is a nuisance and a health hazard in living quarters and in the streets, pavements and it clogs drainage channels. Dissolved substances seep into the ground, or are transported through the flow of water and with the wind, rather than through proper disposal arrangements. Figures presented at the seminar showed that only a fraction of the urban wastes generated is taken care of in an

organised manner on a regular basis. For Mexico City, for example, it is estimated that less than 10% of the wastewater generately is properly treated, and disposed of at present.

Financial crises

The increasing challenges with the provision of clean water, wastewater and stormwater disposal, lingering poverty and the enormous environmental threats, imply that huge investments are required for the water sector in the coming years. With a host of investment requirements for all the developmental sectors, there is a considerable backlog of essential investments in the water, sanitation and waste disposal sectors, which require priority attention. The possibility to secure funding for the required investments is hampered by the widespread societal view that water services should be free, or heavily subsidised. For some of the investments in waste management, it is also difficult to identify who should pay, when and by how much.

Transfer of management responsibility

The combination of challenges indicated above has resulted in a management crisis, which requires a critical assessment of the existing dominant model for urban water management. In virtually all countries, the public sector has been the sole agent for policy formulation, execution and evaluation. Both in terms of mounting difficulties to mobilise enough of investment funding and in terms of organising the services in an efficient manner, the current situation is far from satisfactory. Even in countries and cities that have had strong economic growths, the situation is deplorable. For instance, in Jakarta, the capital of Indonesia, which had a very strong economic growth for about 30 years, i.e. before it was hit by the Asian financial crisis in 1997/98, only about 41% of the population were served by an organised water supply. Another noticeable shortcoming was that about 57% of the water in the distribution system is still unaccounted for. Such high losses due to unaccounted for water is not uncommon in many other urban centres.

With shortage of investment funds and poor institutional capacity, the government operator in Jakarta was not able to increase coverage or service level. Like a number of other municipalities in various countries, the responsible city government of Jakarta negotiated with private operators in an effort to improve water supply and wastewater disposal. A number of objectives were specified, and contracts signed in 1997 with two well known international operators; Thames Water International, UK, and Lyonnaise des Eaux of France.

So what has been the experience thus far? Most of the objectives and agreements have only been partly reached. One major reason is the Asian financial crisis, which hit the entire region before the signing of the contracts. For Indonesia, the GNP per capita was cut by about 40% in only four years, which resulted in a ban on any increase in fees for water services, even though escalating costs necessitated such increases. In Jakarta, as well as elsewhere, it is painfully clear that a takeover of management responsibilities by the private sector involves very complex issues and changes, many of which may be impossible to forecast.

A general experience and recommendation, for Jakarta and other similar cities, is that it is crucial to have an independent and strong regulatory agency. An independent regulatory agency should have the authority to ensure that the obligations of the big contracting partners are being adhered to. The significance of a regulating agency is illustrated by the fact that the number of such agencies has increased quite rapidly. In 1996, there were only a few of these institutions, while by the year 2000, the number had increased to some 900 agencies in 185 countries.

Concluding remarks

Water decisions are among the most critical ones in shaping the future of the megacities. In terms of economic significance, social and cultural transformations, political factors and environmental issues, megacities have a special role to play. The Seminar highlighted the challenges and also pinpointed some of the most earnest attempts in water management that are pursued to deal with these challenges.

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