The Water Challenges of Megacities

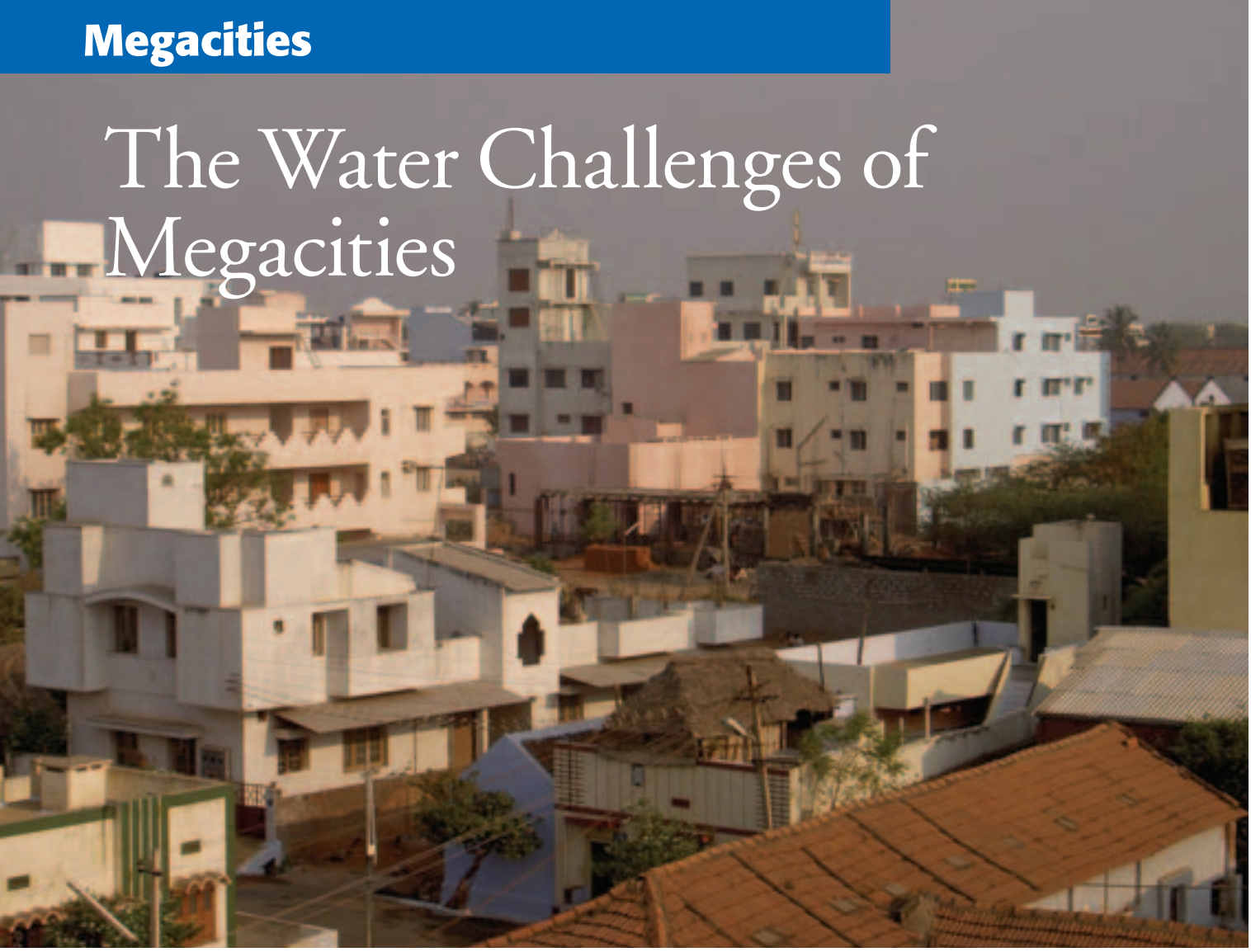

Photo: Mats Lannerstad

From the dawn of history, as the human population has continuously increased, so have the water and wastewater disposal requirements. Water management was not a serious problem as long as the population numbers were low and concentrations of the people were not high. As the population started to increase dramatically during the post-1950 period, and the rate of urbanisation began to accelerate, provision of clean water and safe disposal of wastewater and stormwater for the megacities of developing countries became increasingly more complex and serious.

The rate of urbanisation has increased significantly during the past 50 years. In 1950, about 30 % of the global population lived in urban areas: the corresponding estimate at present is nearly 50 %. This trend is expected to continue during the foreseeable future. These global figures are averages: they mask wide disparities from one country to another. For example, in 1950, in Nigeria, less than 10 % of the people lived in urban areas. At present, this proportion is approaching 50 %.

Rapid growth poses problems

The rapid growth of the megacities of the developing world has posed major water planning and management changes. In 1994, of the 10 larges cities of the world, only 3 were in developed countries. By 2015, the latter number is expected to decline further to two, one of which will be Tokyo. However, whereas Tokyo's population is estimated to increase by less than 5 percent during this period, cities like Jakarta, Indonesia; Karachi, India; Lagos, Nigera; and Dhaka, Bangladesh are expected to grow by 60 to 75 %.

Urbanisation and growth of megacities are not new phenomena: cities such as London or New York started to grow in the nineteenth century. However, two important differences should be noted between the past and the present developments.

The first is the rate of growth. The development of the megacities of the developed countries was a gradual process. Thus, much of the population growth in cities like London and New York was spread over a century. This enabled these cities to progressively and effectively develop the necessary infrastructures and management capacities for all their water-related activities and services.

In contrast, the megacities of the developing world witnessed explosive growths during the post-1950 period, and especially after 1960. For example, the population of the Mexico City Metropolitan Area increased from 3.1 million in 1950 to 13.4 million in 1980, a 425 % increase in only 30 years. This expansion still continues as the city's population has now exceeded 18 million. These megacities simply have been unable to manage explosive growth rates. They had to run faster and faster to stay in the same place!

Expansion not supported by economic growth

The second major difference is that as the megacities of the industrialised countries expanded, their economies were growing concomitantly. Accordingly, these urban centres were economically able to harness financial and human resources to provide their residents with the necessary water-related services. In stark contrast, economies of the developing world have mostly performed poorly during the period of this

rapid urbanisation. High public debts, inefficient resource allocation, poor governance, lack of investment capital, and inadequate management capacities have ensured that the needed infrastructures could not be built on time, and the existing facilities could not be properly maintained. In addition, living conditions are particularly harsh for the large part of the urban population, maybe about a third, who live in areas which are not planned and where public services are lacking or rudimentary, with extensive air, water, land and noise pollution, and with major impacts on the health and welfare of the megacity-dwellers. The problem is further compounded by skewed income distribution, high unemployment and underemployment, pervasive corruption and increasing crime rates.

Fundamental for megacities in different ways

The main problem of megacities often stems from the fact that the rates of urbanisation have often far exceeded the capacities of the national and local governments to plan and manage the demographic transition efficiently, equitably and sustainably. There is thus an urgent need for additional water and sanitation services, either from governments but more probably in partnership with other responsible actors. However, even though continuing urbanisation poses a major challenge in providing adequate water services to the megacities, its importance and contribution towards the development of stronger and more stable national economies should not be underestimated. In 2000, it was considered that the urban areas of the developing world, which contained some 30 % of the total population, contributed with nearly 60 % of the total GDP, and played an equally important role in terms of social development and cultural enhancement. Thus, the urbanisation process presents both opportunities and challenges.

Besides water supply, sanitation, stormwater and wastewater management, water is fundamental to megacities in many other aspects. For example, the number of humans exposed to floods tripled from 1970s to 1990s, and is around 2 billion today. The major factor behind this development is the congestion of hundreds of millions of people in mushrooming cities on deltas and floodplains of the tropics and the semi-tropics. In contrast, many megacities have developed in desert and semi-desert regions and face opposite problems with water – they feel scarcity very specifically in their everyday lives.

Regarding food, megacities also devour enormous amounts of provisions which have to be imported from the countryside, often far away. Megacities alone import as much virtual water as what crosses national borders in international food trade.

Megacities require massive quantities of energy as well. On average, a megacity dweller consumes 5 to 10 times more energy compared to the national average. Furthermore, all large-scale electricity generation requires tremendous quantities of water, either as hydropower or for cooling, as does bioenergy production. Thus, water is an important prerequisite to satisfy the energy requirements of megacities, an issue that has been basically ignored by the water profession.

Provision of clean drinking water, wastewater collection and disposal and stormwater disposal have now become serious problems for most megacities, ranging from Manila in the Phillipines to Mexico City, and Calcutta, India, to Cairo, Egypt. Indeed, there is also a mounting need to improve services to industry and service sectors. Fortunately, in many urban centres, progress is being made, new and innovative approaches are being successfully applied, and water institutions in certain countries are undergoing radical transformation. Many of these success stories, even with the current information and communication revolution, are mostly unknown and undocumented.

World Water Week focus on megacities

Because of the challenges posed by total water management in megacities, a special seminar will be convened within the framework of the 2004 World Water Week in Stockholm. Leading experts from important urban centres (Ahmedabad, Cairo, Dhaka, Istanbul, Jakarta, Mexico City, Riyadh, Sao Paulo and Tehran) have been specially invited for a session on south-south information, knowledge and technology exchange and transfer.

For more information on the seminar, visit www.siwi.org or contact Dr. Cecilia Tortajada at thirdworldcentre@att.net.mx or Dr. Olli Varis at olli.varis@hut.fi.

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