

unusable unless it is expensively purified. Far too little attention is paid to the hidden chemical time bombs that are lying in wait in the ground and in sediments. These harmful materials could be reactivated by changed land use or climatic changes.

Thus present-day development of cities is often at the expense of future generations, and the gravest errors of urban history are repeated: the environment is massively damaged to achieve short-term economic advantage and growth, and the profit drawn from this helps to make good the grossest of the environmental damage. Many developing countries are starting to make the same ecological mistakes as the industrialized countries. Cities often grow in developing countries before a solid economic basis exists, and above all before the necessary infrastructure is in place. There are few cities with the resources and personnel to provide their rapidly growing population with clean water and sanitation. As the majority of people will be living in cities for the first time in a few years time (an estimated 60 % by 2025; the urban population will double between 2000 and 2025 in South America, Africa and South-East Asia), the water problem will become more acute.

Mega-cities like the one in the Pearl River Delta between Hong Kong and Guangzhou or Japan's Tokaido Corridor between Tokyo, Nagasaki and Asaka are considered to be a relatively new phenomenon: a number of individual cities have grown together to form regional urban landscapes. Traditional water supply and disposal techniques no longer work because of their sheer size.

All attempts to secure a social and ecological balance on the basis of traditional environment protection measures only increase the imbalance. This means that even greater problems will have to be faced in the future. Changing patterns of employment and social structure can rapidly lead to the decline of cities, to unemployment with all its social consequences and to an inability to cope with toxic industrial waste that has been improperly disposed of.

Even the responsible politicians are gradually realizing that economic development and the condition of the environment, including water availability, can no longer be treated separately. Irresponsible use of water as a resource limits growth and rapidly destroys what has been created. Thus poverty is at the same time both a principal cause and a principal effect of urban water problems.

As globalization proceeds, even today cities are caught up in world-wide economic competition. If sustainable economic development is to be secured, some rethinking is necessary: water requirements must be made dependent on the water that is available on the spot and in the immediate vicinity – water must not be brought in regardless of the environment

and expense. A distinction has to be made between the elemental basic requirement, an additional social requirement and an economic requirement. We should remember the Roman system of water distribution, as it has survived in Nîmes. Here the supplies to public wells, commercial operations, baths and private houses were staggered so that water was obtainable in each case only when supplies were adequate. If water was short, only the basic public requirement was covered.

Water management can only be balanced if social and economic wishes are covered by the quantities of available and renewable water. We have to accept that urban water concepts cannot be based on prefabricated models, whether they are local or imported. Water problems must be solved specifically and within the immediate vicinity for every town, every district and even every neighbourhood. Something that works for a town can be inappropriate in a particular neighbourhood. Realizing this compels us to decentralize responsibility and action. There are many reasons for this. Large supply and disposal systems cost far more than small, autonomous systems. Small units are far less prone to faults. They bring small and middle-sized enterprises together to construct and maintain them, and thus reinforce socio-economic structures. Small, autonomous systems remain able to function because the people running and using them identify with their system and see it as their property. 'Water neighbourhoods' are also better able to take responsibility for preventive measures.

Decentralized water management fails only occasionally, but still does fail because of the structure of the water authorities. They are centrally organized and their responsibilities broken down independently: watering green areas, drinking water or sewage, for instance. As no distinction is made between different uses, this means high costs for water of uniform quality. As well as this, central systems are geared to peak requirements, because they have to cover end-user needs directly at every hour of the day and night. This too suggests a concept in which central water supplies meet a basic load and keep neighbourhood reservoirs full all the time, for example. This opens up new possibilities for reducing water losses, as narrower supply pipe widths can be used, meaning that cladding or smaller pipework can be introduced in existing supply systems.

So solving water problems in town requires a dual system. Technically speaking, local resources have to be used. Rain-water management is the key to the future. Water is part of a cycle in which it is used to water green areas and feed ponds that enhance the value of the immediate environment. Local people take the initiative in small-scale water-neighbourhoods. Public water supplies can then be reduced to covering