

CHAPTER NINE

SAFE WATER FOR THE DEVELOPING WORLD: RHETORIC AND REALITY

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“To deny people their human rights is to challenge their very humanity.”

Nelson Mandela

Introduction and Background

Since the very dawn of history, water has always been noted as one of the fundamental requirements for human and ecosystems survival. Many early civilisations developed near major rivers like the Nile, Tigris-Euphrates, Indus and Yellow River. In earlier times, major clusters of human population were few and scattered, and the ranges of human activities were limited. Water was plentiful, especially compared to its total demand, and of reasonably good quality. Accordingly, water was not a major consideration, unless there were prolonged droughts or severe floods.

As the population increased over the centuries, and the range and extent of human economic and commercial activities expanded, especially after the Industrial Revolution, available water sources came under increasing pressure, both in terms of quantity and quality.

The global population and associated economic activities increased significantly during the post-1955 period. This, plus continuing poor water management in nearly all countries meant that the world was using not only steadily increasing quantities of water for all purposes but also more and more wastewater that was being discharged into the environment with limited or no treatment. By the late 1960s, continuing

indiscriminate discharges of inadequately treated wastewaters into rivers, lakes, groundwater and coastal seas had seriously deteriorated their qualities and ecosystems.

By the early 1970s, many water bodies in Western countries were seriously polluted, endangering human health and the environment. Major rivers like the Trent in England, the Rhine in Europe and numerous others in Japan, United States and Canada were severely contaminated. In the United States, the water quality of the Cuyahoga River had become so bad that it was officially declared to be a fire hazard (Ohio History Connection, n.d.). Major lakes, like the Great Lakes between Canada and the United States and Lake Biwa in Japan, were undergoing serious eutrophication due to phosphate and nitrate discharges from agricultural and domestic runoffs. Groundwater was becoming increasingly polluted by domestic, industrial and agricultural wastewaters. Significant increases in red tides were observed in coastal areas due to discharges of inadequately treated wastewaters.

These developments meant that the global water demands for various uses were advancing while concurrently the amount of water available for various uses was declining because of increasing levels of contaminations.

Between the late 1950s and early 1970s, the health costs of water pollution in the industrialised countries became a serious social and political issue. The Minamata disease was officially discovered in Minamata City, Japan, in 1956, due to discharge of wastewaters containing methylmercury from the chemical plant, Chisso Co. Ltd. This disease resulted in 1,043 deaths, and several thousand others were affected.

Similarly in 1968, the Japanese Ministry of Health and Welfare officially declared *Itai-Itai* disease (it hurts-it hurts) because of the cries of intolerable pain of the stricken victims. The disease was caused by chronic cadmium poisoning due to inadequately treated wastewater discharges from the Kamioka Zinc Mine owned by Mitsui Mining & Smelting Co Ltd in Toyama Prefecture.

Poor domestic wastewater treatment practices led to the seventh cholera pandemic which started in 1961, in Sulawesi, Indonesia (Hu *et al.*, 2016). It then spread to the Korean peninsula, Southeast Asia, Indian subcontinent, Middle East and North Africa. Thus, by the early 1970s, the world became increasingly aware of the importance of good quality water

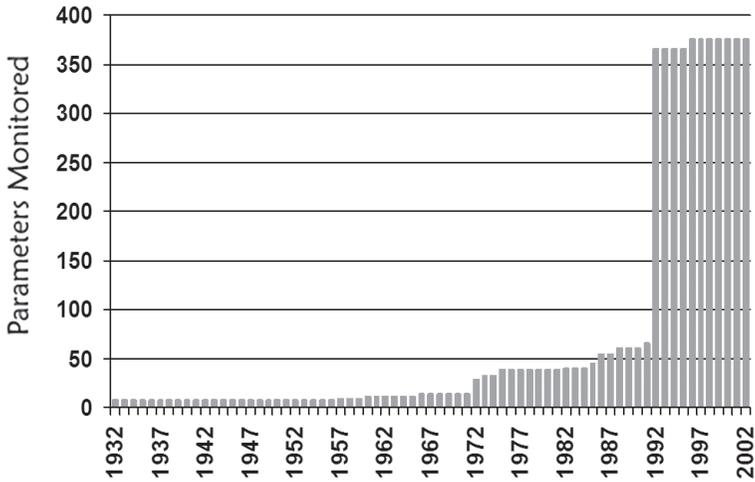


Fig. 9.1 Number of water quality parameters monitored, Ottawa 1932–2002.

Source: Biswas, 2007.

for human consumption. This realisation that good water quality is important because of human health and environmental considerations led to the monitoring of an increasingly larger number of water quality parameters in the industrialised countries. Figure 9.1 shows how the number of parameters monitored for the city of Ottawa, Canada, exploded during the 1972–2002 period (Biswas, 2007). An overwhelming majority of cities in the industrialised world shows similar monitoring trends from 1972.

Water: Basic Human Need or Human Right

Since the early 1970s, the International Labour Office (ILO) has been working on a basic human needs approach. It published a report entitled *Employment, Growth and Basic Needs: A One World Problem* (ILO, 1977). This report identified five basic human needs: food and water, clothing, housing, education and public transportation. One can of course argue whether these are the most essential basic human needs or there are others. The report also noted that the basic requirement for life is food and water.

If all the resolutions and declarations that have been adopted by the United Nations since 1970 are analysed, it will indicate that these have

regularly vacillated between declaring water as a basic human need and human right. In fact, these two terms have often been used interchangeably in the various UN declarations and resolutions, without any clear understanding of either the two concepts, or their implementation requirements. The general approach during the 1970s and 1980s was basically inconsistent.

In November 2002, the Committee on Economic, Social and Cultural Rights that was established by the United Nations to oversee the implementation of the Covenant on Economic, Social and Cultural Rights presented a document (General Comment No. 15) during its 29th Session in Geneva, 11–29 November 2002. This document reinterpreted Articles 11 and 12 of the Covenant, and concluded that under this Covenant water can be considered to be a human right. In addition, some other international agreements can also be interpreted to promoting this view. Under Article 11, the General Comment noted:

The adequacy to water should not be treated narrowly, by mere reference to volumetric quantities and technologies. Water should be treated as a social and cultural good and not primarily as an economic good. The manner of the realization of the right to water must also be sustainable, ensuring that the right can be realized by present and future generations.

In retrospect, the discussions on water as a human right were kept alive during the 2002–10 period primarily by human rights professionals (in contrast to water professionals) and activist NGOs who were against water pricing and private sector involvement in the water sector.

James Wolfensohn, a former President of the World Bank, noted in 2005, that to some governments who constituted the Bank's shareholders, "the very mention of the words human rights is inflammatory language" Wolfensohn, 2005: 454. The problem was also complex because the word "rights" often had different meanings to different constituencies. Furthermore, understanding and interpretation of rights varied widely between different interest groups.

Discussions on water as a human right have focused almost exclusively on domestic water use, which accounts for only about 10% of total global water use. Other types of water uses like for agriculture, energy production and generation, industry and nature have been mostly missing from this debate.

Any objective analysis will indicate that the possibility of a treaty-based approach to establish water as a human right was, for all practical purposes, near zero, at least for the first few decades of the 21st century. Thus, to make further progress, in 2010, during the 64th General Assembly of the United Nations, Bolivia introduced a resolution that would recognise human rights to water and sanitation. The voting for the resolution indicated the complexity and acceptability of the issue. Voting in favour were 122 countries, none against, 41 countries abstained, and 29 countries were absent. Among the important countries that abstained were Australia, Austria, Canada, Denmark, Israel, Japan, Netherlands, Korea, Sweden, Turkey, United Kingdom and United States.

It should be noted that nearly all the countries that abstained felt obliged to explain why they had abstained. Each country started their statement by confirming that they strongly support the idea that every human being should have access to clean water and sanitation. Most pointed out what they were doing to achieve this goal.

Thus, United States said safe and accessible water supplies furthered the realisation of some other human rights. However, the resolution described right to water and sanitation in a way not reflected in existing international law since there is no right to water and sanitation in an international legal sense. Australia pointed out that when new human rights are recognised, consensus is essential. This, regrettably, was not the case for the resolution. United Kingdom abstained due to both substance and procedure. There was insufficient legal basis for declaring or recognising water or sanitation as a freestanding human right, nor was there evidence that they existed in customary law. Other countries put forward similar reasons for abstaining.

In our view, given the current geopolitical landscape, acceptance of water and sanitation as a freestanding treaty-based human right is not possible in the foreseeable future. Furthermore, General Assembly resolutions are simply advisory in nature and not binding as those by the UN Security Council. Even Security Council resolutions are often flouted by many countries because of lack of enforcement clout.

The fact that not a single country opposed the General Assembly resolution indicates every country agrees that access to clean water and sanitation are desirable goals. Equally, 70 countries that did not support

by abstaining or by not being present meant that there was no consensus on this new derived right. The absence of consensus was specifically stressed by countries like Australia, Canada, France, Norway, United Kingdom and United States as one of the reasons for abstaining.

Countries that voted for the resolution also expressed some reservations. Colombia pointed out that the resolution established “an unsuitable precedent” in human rights matters. It noted that its Constitutional Court had noted that protecting the right to drinking water was not appropriate in situations where human life was not dependent. States were obliged only to ensure delivery of public services. Singapore, another country that voted in favour, said that discussions on the right to access to clean water and adequate sanitation should continue. However, the scope and obligations of the nation states needs to be clarified. Argentina, which also supported the resolution, explained that main human rights treaties were pillars of the country’s legal order. The relevance of access to clean drinking water had been recognised by many of its legal instruments (Pope Francis, 2017). However, it is the main responsibility of the states to ensure its citizens had access to safe drinking water and sanitation.

An objective analysis of the General Assembly debate indicates that every country supported the view that all human beings should have access to safe water and good wastewater collection and treatment. Thus, the main issue hinges around not whether access to clean water is desirable but rather how to achieve this goal.

An important concern for some of the abstaining countries was that they were not sure what are likely to be the legal implications if they accepted this new right. Some countries were concerned that they may be sued by their citizens for compensations since they may not be able to meet the obligations for decades. Others were concerned that adopting this right may mean provision of clean water and proper wastewater treatments free or at highly subsidized rates which they cannot afford. There is no question many countries are unlikely to subscribe to this concept until their responsibilities and accountabilities are clarified (Biswas, 2007).

It is also important to note the distinction between two types of human rights: civil and political rights and economic, social and cultural rights. The implementation requirements for these two types of rights are very different. Civil and political rights can be endowed upon individuals by ensuring

that the governments do not interfere with them. These rights generally do not require appreciable budget to be granted, nor do they need major institutional realignments to be properly enjoyed. They are comparatively easy and economic to implement, given the necessary political will.

In contrast, economic, social and cultural rights, including access to clean water and proper sanitation, will require active interventions and appropriate machineries at all levels of government. This will mean formulation of national, regional and/or municipal policies, and then ensuring functional institutions exist so that these rights can be enforced. Appropriate budgets should be available in a timely manner, and also in perpetuity to the institutions responsible for implementing these rights.

Thus, implementation of an economic, social and cultural right like access to clean water and sanitation will not be cost-free. On the contrary, its implementation will require very substantial financial resources in perpetuity as well as adequate technical, managerial and administrative capacities and continued strong political support. Since water supply and sanitation are municipal responsibilities, it will require direct support and involvement of all levels of governments. This is seldom easy. For such an enabling environment to develop in any country, it will be necessary for the citizens to demand this right continuously and vociferously. Equally they must be willing to pay the costs of the necessary services directly to the utilities and/or indirectly through taxes. Unless this enabling environment is assured, progress is likely to be slow in ensuring universal access to safe drinking water (Biswas, 2007).

Challenges to Implement Safe Drinking Water as Human Right

To ensure that every person has access to safe drinking water and proper sanitation, there are many important myths and challenges that must be taken care of. Only the major challenges will be discussed here.

What Is Safe Water?

It is essential to decide what is meant by “safe” water and “proper” sanitation. It is then necessary to decide how much water is needed by each

person to lead a healthy life, both in terms of quality and quantity. Thereafter, it will be necessary to consider financial requirements and presence of functional institutions with necessary managerial, technical and administrative capacities.

The most important issue in this context is what is meant by “safe” water and “proper” sanitation. Sadly, an honest and objective discussion of such a fundamental issue has been conspicuous by its absence over the past four decades. A brief historical background is necessary to understand how we have arrived at the present unsatisfactory situation.

Even though access to clean water and proper sanitation was known to be an important development issue, surprisingly this concern was not reflected in the national and international political agenda till about the mid-1970s. It was first discussed seriously during the United Nations Conference on Human Settlements, in Vancouver, in 1976 (Biswas, 1978; UN, 1976). The Conference was concerned with the fact that in developing countries “nearly two-thirds of the population do not have reasonable access to safe and an ample water supply”. It requested in recommendation C.12 “urgent” actions in terms of:

- “programmes with realistic standards for quality and quantity to provide water for urban areas”;
- “reduce inequities in service and access to water”;
- “promote efficient use and reuse of water”; and
- “take measures to protect water supply sources from pollution”.

The Vancouver Declaration considered water to be a basic human need. The concept that water is a human right was not raised (Biswas, 2007). The Vancouver resolution on water was picked up by the United Nations Water Conference, in Mar del Plata, Argentina, in 1977 (UN, 1977). Discussions during this Conference vacillated between water as a basic need and as a human right. In Resolution I, it stated: “All people have the right to have access to drinking water in quantities and of a quality equal to their basic needs” (Biswas, 1978).

It then went on to recommend that “the decade 1980–1990 should be designated the international drinking water supply and sanitation decade”. It suggested that the countries should “establish standards of quality

and quantity that are consistent with the public health, economic and social policies of Governments”, and also, importantly, “that those standards are observed”.

Like the 2010 resolution on water as a human right, the Vancouver and the Mar del Plata Action Plans were approved by the UN General Assembly. However, unlike the water as a human right these two were approved with significantly fewer countries abstaining or not being present.

It should be emphasised that in all the discussions leading to and during the UN Water Conference the requirements for drinking water was clear: it must be **safe** to drink without any potential adverse health impacts and must be easily accessible.

Regrettably, following the Mar del Plata Water Conference, the UN devised a meaningless term “improved” sources of water which really has no practical value. What happened during the post-1980 period is that UN organisations and all the development banks started to use this meaningless term “improved” sources of water extensively, even though it had no real relation to quality. Over the last 35 years, all these organisations have collated data from national governments on access to water. Basically, as long as people receive water, irrespective of their quality, they are assumed to have access to “improved” sources.

If quality and accessibility of water are not considered, then 100% of people in the world always have access to water: otherwise they would not survive. The important issue that has been lost during the past 35 years is that the entire emphasis has been to provide water of any quality to the people of the developing world and then estimating how many people have access to these “improved” sources.

What is even more disheartening is that all the major international organisations like UNICEF, WHO, other UN agencies, World Bank, etc., have used the term “improved” sources of water, “safe” and “clean” water interchangeably. Consider the latest (2015) update on progress on sanitation and drinking water (UNICEF and WHO, no date). The very first paragraph of this report notes “access to safe drinking water”. In the second paragraph it mentions “improved drinking water”. Throughout this report, “clean”, “safe” and “improved sources” of water have been used interchangeably. This has been the standard practice since the early 1980s for

all the international organisations. Thus, not surprisingly, an overwhelming majority of the people all over the world now believe “improved” sources of water is actually “clean” or “safe” water (Tortajada and Biswas, 2018).

On 12 March 2012, UN Secretary General, Ban Ki Moon, proudly proclaimed in a message to the Sixth World Water Forum, in Marseille, France, that: “Last week we announced that the world has met the target of reducing by half the proportion of people without sustainable access to **safe** drinking water” (my emphasis). Sadly, nothing is further from the truth (Martínez-Santos, 2017).

The latest update by UNICEF and WHO claims that “only” 685 million people now do not have access to improved or clean sources of drinking water (UNICEF and WHO, no date). They further estimate that in 2015, the following percentages of urban populations in different developing countries had access to “improved” sources of water: Bangladesh 87%, Brazil 100%, Egypt 100%, India 97%, Iran 98%, Malaysia 100%, Mexico 97%, Nepal 91%, and Pakistan 94%. These are impressive figures except for the fact that an overwhelming majority of the citizens in these countries do not dare drink water from the tap because of poor quality.

Let us consider only South Asia, with a population of some 1.7 billion people. Except for a medium-sized town in India, Jamshedpur, people nowhere in South Asia, either in urban or rural areas, have access to clean water that they consider safe to drink. Thus, to say only 685 million people do not have access to safe water is at best an exaggeration and at worst deliberate misinformation to mislead the global debate. In fact, estimates made by the Third World Centre for Water Management indicate that some 3.5 to 4.0 billion people in the world do not have access to water that is safe to drink. This is at least five times more than the WHO-UNICEF estimate.

Currently in all the South Asian countries and an overwhelming majority of the developing world, households do not receive a safe and reliable 24×7 water supply. Accordingly, in order to have acceptable drinking water available, households have to take charge of their own water supply by each becoming a mini water utility. Water is provided by the utilities for about 3 to 5 hours per day. Each household collects water when it is available in an underground tank. It is then pumped to an overhead tank. Thus, even though the supply is intermittent, each household

converts this intermittent supply to 24-hour continuous water availability through their own individual efforts.

Since quality of water supplied by utilities in most cities of the developing countries leaves much to be desired, each household has been forced to develop its own process to treat the water received so that it can be made safe to drink. Thus, most households have their own individual treatment processes which are installed and maintained by the private sector.

In addition, the quality of water in many third world cities has progressively deteriorated because both surface and groundwater have been steadily contaminated by known and unknown pollutants from discharge of untreated, or partially treated, domestic and industrial wastewaters.

Over the past decades, the number of middle-class people in the developing world has steadily increased. They are now more literate and also have more access to information compared to previous generations. They are more aware of the potential impact of the poor quality of water on family health and hygiene. They thus make their own arrangements to treat water received from the utilities and make it safe to drink.

A decade or more ago, the quality of water supplied by utilities was reasonable so that households could use simple treatment processes like filters to improve their quality. With steadily declining water quality, along with increasing affluence and literacy, average households in major cities like Delhi are now using sophisticated treatment processes like membranes to get drinking water. Membranes were originally developed for desalination of sea water. Now they have become an integral part of domestic household treatment processes in many cities and even rural areas to make water drinkable. A major problem with membranes is that at household levels they are very inefficient. Membrane treatment produces 60–70% of wastewater which is basically thrown out.

The residents of most Third World cities currently receive free or highly subsidised water which is mostly undrinkable. The supply may be free but the coping costs for converting intermittent to continuous supply, and then make water drinkable are quite significant. This has created a “lose-lose” situation. Water utilities from Delhi to Lagos now do not have financially sustainable models because of low water pricing, while the coping costs of individual households are quite high. Thus, both households and utilities have become long-term sufferers.

Improved Sanitation

The world is facing an equally strange problem with a similar concept of “improved” sanitation which really does not mean much. As it is used now, this simply means availability of toilets without much attention to how wastewater is collected, stored, treated and disposed of in an environmentally acceptable way. For several decades now, developing countries, international organisations and aid agencies have focussed on construction of toilets, with septic tanks and low-cost sanitation for collecting and disposing wastewater. Sadly, “improved” sanitation does not include collection, proper treatment and disposal of wastewater in any sustained fashion.

Consider Patna, capital of Bihar state, India. With over two million people, it is the 18th largest urban agglomeration in the country. Currently, only about one-fifth of households are connected to a sewer system. The rest depend on septic tanks and low-cost sanitation. Its sewage treatment plants, like in most parts of the developing world, suffer from poor operation and maintenance practices. Thus, wastewater quality, even after treatment, leaves much to be desired. The balance of 80% of its households depends on septic tanks and other low cost sanitation. Because of poor construction and maintenance of hundreds of thousands of individual septic tanks, shallow groundwater is becoming increasingly contaminated with regular discharges of inadequately treated wastewater. Also, septic tanks are cleaned by small and untrained private operators every 2–4 years. They basically suck in the wastes and then dump them in public lands, forests, water bodies or open drains. The city has no standards for these private operators for discharge of such wastes. They basically dispose of waste in ways that are most economical to them. Since the city depends primarily on groundwater, its quality is progressively deteriorating because of such waste-disposal practices.

Because of rapid urbanisation, the Patna Master Plan expects the region to have over six million people by 2031, a three-fold increase in only one and a half decade. Such rapid growth rates will most certainly overwhelm the city finances and management capacities, including construction of new water supply and wastewater management facilities and their proper maintenance.

There are two major problems with the current focus on improved sanitation and not wastewater management. First, cities will be discharging more and more wastewater into the environment without adequate treatment. This will contaminate water bodies that are sources of water to downstream communities. Second, as cities grow, historically their water requirements have increased as well. In the past, they have increased their water availability by tapping additional sources of water further and further away. Currently, other neighbouring urban centres are growing and they are also planning to obtain extra water from the same sources that are often already over-allocated. While this practice has worked reasonably well in the past, it has now become a serious problem. Thus, not only for health and environmental reasons but also because of exhaustion of new sources from which water can be obtained economically, urban centres now must consider treating their wastewater properly in order to reuse it regularly. There are simply no other long-term solutions. Wastewater must now be considered a new source of water as well as energy.

The concept of “improved” sanitation is another meaningless semantic invention. In 2015, it was estimated that 2.4 billion people globally do not use “improved” sanitation (UNICEF and WHO, no date). However, if one considers what is the percentage of people in developing countries that have access to good wastewater treatment and disposal facilities, an objective estimate will be about 15–20%. Thus, for all practical purposes, like “safe” drinking water, UNICEF-WHO estimates of access to sanitation have given the world a very rosy but erroneous picture. The situations are significantly worse than what the UN has estimated and currently accepted globally.

Water Needed per Person per Day

From empirical studies, it is evident that not only quality but also quantity of water used has an important impact on human health (Biswas, 1981). How much water does an individual need per day? There are no easy answers even for basic survival, let alone for a healthy life. There is also a major difference between what is needed and how much is actually used. Water needs for basic survival depend on various factors, including body

size, physiology, climate, type of work being conducted and hygiene. Normally, for basic survival, daily water needs could be 4–6 litres.

Survival needs are very different from health needs which are significantly higher. Information on the minimum amount of water needed to maintain good health under different conditions is scarce. Some indications can be obtained from a ten-year study carried out in Singapore between 1960 and 1970. This attempted to correlate domestic water use in terms of waterborne diseases in Singapore hospitals. It indicated that as per capita water use went up, disease rates declined. However, there did not appear to be much improvement beyond daily use of 75 litres per person. This could be considered the “social minimum” for the city-state (Biswas, 1981). Current water use in Singapore is 151 litres, twice the “social minimum” amount.

In the absence of similar studies elsewhere, it is difficult to say how much clean water people need for a healthy lifestyle. The recommended daily per capita water requirements are mostly plucked from thin air, without any serious studies. At present, they range from 40–200 litres. The Indian standard BS1172 recommends for communities of more than 100,000 people, it should be 150–200 litres per day. Unquestionably, this is high. The upper figure of 200 litres is more than twice the water required if it is used efficiently. Figure 9.2 shows that in several European

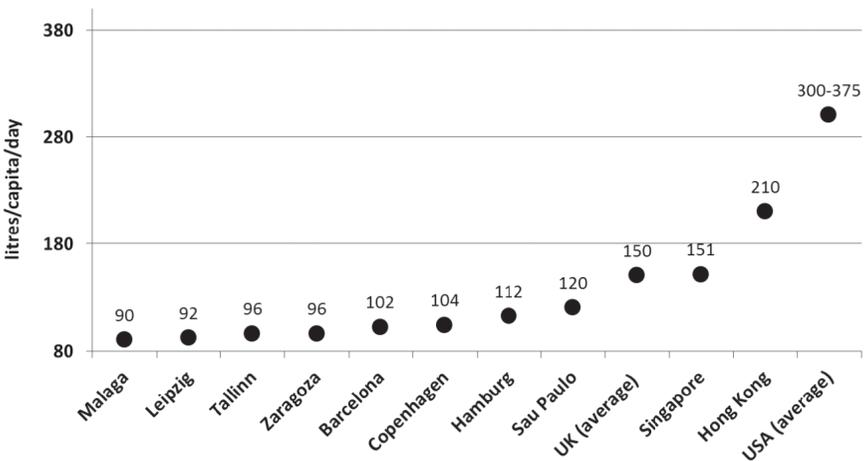


Fig. 9.2 Daily water consumption per capita.

Source: Third World Centre for Water Management.

cities, daily per capita water use is now between 90–100 litres. Such efficient levels of water use allow the inhabitants of these cities not only to have a healthy lifestyle but also to reduce costs. It ensures that less water has to be treated for drinking, which means less wastewater is produced that needs to be treated. Serious reductions in per capita daily use will only be possible through pricing, economic incentives, public awareness, environment ethics and behavioural changes. It will also need strong and sustained political support.

If domestic water use can be brought down to 90–120 litres per capita per day, and wastewater can be properly treated and reused, clean water as a human right can be implemented in even in the most water-stressed cities of the world. Currently, domestic water use accounts for about 10% of global water use. Thus, if water use can be made increasingly efficient, there is absolutely no reason as to why every citizen of the world cannot have enough clean water not only now but also by 2050 when the global population is estimated to be around 9.7 billion.

Equally, with current knowledge, management practices and technologies available there is absolutely no reason why cities of 200,000 people and more cannot have a viable and sustainable financial model which could provide safe water as their right (Biswas *et al.*, 2018). Consumers must be willing to pay for this service directly through tariffs and/or taxes. Right to water does not mean that all human beings can have as much water as they wish, whenever they wish, free. Rights come with responsibilities. Free or highly subsidised water, as the experience from all over the world shows, will never ensure that every person has daily access to 90–110 litres of clean water. Only poor and/or large families, whose water bill exceeds 2% of the household income, should receive targeted subsidies.

Private Sector or Public Sector

Over the past two decades there has been a serious debate as to who should provide water to the people: public or private sector. It has been primarily an ideological debate, with limited practical relevance. Some feel water is a human right, essential for survival and thus should be available to everyone free or at highly subsidized costs.

The fact is, as noted earlier, water is a derived human right and not a treaty-based right. Even for treaty-based human rights like food and health,

there are no similar contentious debates as to whether food and health services, including medicines, should be available to everyone free. Water seems to have a mystic of its own where proponents and opponents of public or private sector have been at loggerheads for decades as to what is the best for society. Proponents of private sector claim its involvement will ensure efficient water provisioning. This is not necessarily correct. The world's two most efficient water utilities, Tokyo and Singapore, are managed by the public sector. No private sector has come close to their performance. Equally, a large number of public water utilities are truly inefficient.

Accordingly, which sector provides the best service to society is not a meaningful debate. Instead, the discussion should focus on whatever sector in a specific city can provide clean water reliably and cost-effectively to its entire population, including the poor. The appropriate sector should be allowed to do so. Irrespective of which sector provides the water, it has to be properly priced, with targeted subsidies to the poor, so that the utilities have a viable and sustainable financial model with limited political interferences.

During the post-1990 period, private sector concessions to run water utilities have increased steadily. By 2015, the number of people served by the private sector had increased to well over 1.1 billion (Fig.

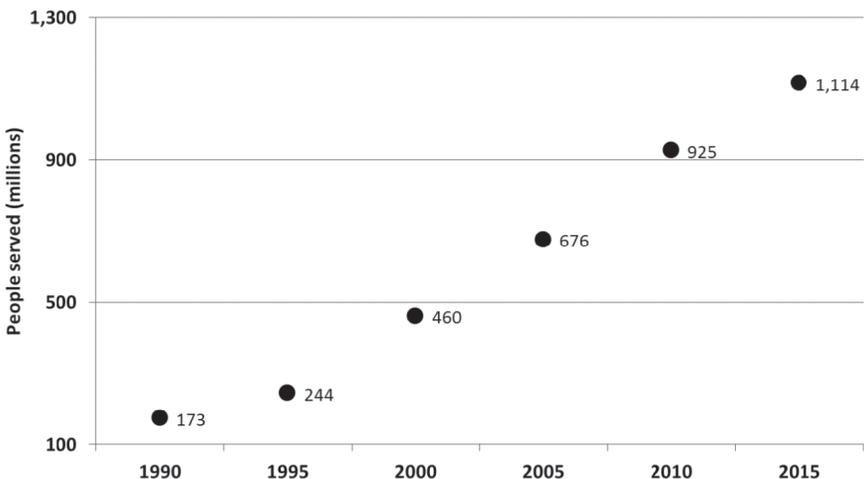


Fig. 9.3 Millions of people served by private sector concessions.

Source: David Lloyd Owen, personal communication, 2016.

9.3). This is not surprising given the poor levels of services from numerous public water utilities where their management, work programme and finances are regularly interfered with by public officials having one eye on the next election. Populist short-term policies are often not the most appropriate for the long-term proper functioning of water utilities.

In addition, governments in most developing countries do not have enough budgets to invest in updating dilapidated water supply and sewer systems, let alone provide for very substantial investments needed to account for new water and sewer systems. The problem is especially serious for sewer systems since they are now totally inadequate to meet the needs of the present population, let alone the escalating demands due to rapid urbanization. Nor do most municipalities have capacities to manage this expansion. For these and many other reasons, private sector concessions for water provisioning are likely to increase steadily during at least the next two decades.

It should also be noted that during the past decades many water utilities have been re-municipalized for a variety of reasons. The number of people affected by re-municipalization is estimated at less than 100 million. Anecdotal evidence from important cases like in Cochabamba, Bolivia, further indicate that these re-municipalized utilities are having considerable difficulty to attract appropriate investment and talents to improve the current levels of poor services.

While virtually all the discussions of private sector involvement have been on the concessions to run water utilities, private sector has been playing increasingly important roles to implement the people's rights to have access to clean water and wastewater management. Over the past decade or so, some enlightened business leaders, like Paul Polman of Unilever and Peter Brabeck-Letmathe of Nestlé, have institutionalized new business policies which have meant that one of their important objectives is to ensure they create long-term value for society. Under this new business philosophy, many multinational and national companies are reducing significantly their water footprints, extensively practising water conservation and recycling. They are assisting their employees and the communities where they manufacture and source their raw materials with availability of clean water and construction of toilets as well as their maintenance.

Nestlé and Unilever are two of the world's largest MNCs. They now have restructured their internal guidelines so that their factories and offices in whatever countries they may be, as well as their suppliers respect and contribute to implementation of human rights to water. They have established due diligence mechanisms like conducting human rights impact assessments of their own activities as well as of their suppliers. These have dramatically increased their impact on the water sector. These two companies, as well as others like Procter & Gamble (P&G) and Coca-Cola, now source ingredients like coffee, tea, cocoa, milk, sea food, spices, sugar, palm oil, and other similar products from many small, medium and large suppliers. They provide direct advice to their farmers on how to manage water properly not only for drinking but also efficient use to reduce water use and contamination (Biswas-Tortajada and Biswas, 2015). Companies like Nestlé have over 8,000 agronomists all over the world who advise the farmers on agricultural issues as well as on water management. Very often, especially in rural areas, these company employees are major and reliable sources of information on water, agriculture and environmental issues (Biswas et al, 2014). These companies further work with independent organizations like UTZ, Rainforest Alliance, Fairtrade and Greenpeace so that products are ethically sourced, water and other environmental conditions are properly managed and human rights are not violated. They have made significant progress during the last decade on improving sustainability of their business practices and contributing to continuing assessments of all types of human rights in their businesses like child labour, slavery, and rights to water and sanitation. All the four companies are giving special attention to water and sanitation needs of schools in communities where they and their suppliers operate. Thus, P&G is providing 10 billion litres of clean water to schools. In India, Nestlé is providing clean water to 127,000 students, and Coca-Cola to some 200,000 students.

It is not only multinational companies that are helping to ensure that people have access to clean water but also many national companies are following their footsteps as well. For example, GNFC has now provided access to clean water to nearly 150,000 people in Gujarat, India.

What is also not appreciated is that many private sector companies like P&G are reducing domestic water use by making increasingly more water-efficient products for use in homes. P&G's goal is to ensure one billion people have access to water-efficient products by 2020. Through

product innovation, P&G is reducing the time people spend in showers, thus reducing water consumption. They have further eliminated all phosphate from their detergents to prevent eutrophication of water bodies. Thus, the private sector is playing an increasingly important role in providing access to clean water, sanitation and hygiene, both directly and indirectly. Accordingly, future discussions on implementation of human rights to clean water and sanitation must involve both public and private sector.

Concluding Remarks

No country or sane individual has argued that human beings should not have access to clean drinking water and reliable wastewater management services. Without clean water and efficient wastewater management, people cannot have a good quality of life and a healthy environment to live in and reach their full potential. The issue is thus not whether these should be achieved but rather how they should be achieved as soon as possible in a reliable, cost-effective and equitable manner.

As a first step, it is essential to determine the magnitude and extent of the problems. Most unfortunately, the latest global figure of only 685 million people do not have access to clean water is a gross underestimate. The real figure is around five times this number.

There is no question that enormous investments will be necessary in terms of construction of new water and wastewater infrastructure replacing older ones, and building up technical, administrative and management capacities of the countries. For urban centres of 200,000 people or more, we now have enough knowledge and technology to formulate a sustainable financial model where all consumers will pay for water and wastewater services that are efficient. Only those households where water bills exceed 1.5 to 2% of household income should receive targeted subsidies.

The decades-long debate whether water-related services should be highly subsidized or even free has not been productive. Domestic water use everywhere must become increasingly efficient. This will ensure not only less clean water has to be produced but also less wastewater will have to be treated. The heated discussions of whether public or private sectors should provide water have been mostly ideological and

unproductive. Whoever can provide a reliable, cost-effective and equitable service should be encouraged to do so. Irrespective of whether public or private sector provides the service, consumers will have to pay for it. Otherwise even 50 years from now, people will not have access to clean water and proper wastewater services. The problem cannot be solved by linguistic gymnastic and by creating meaningless terms like “improved” sources of water, as has been attempted in the past.

The safe drinking water problem of the world is solvable. For this to be accomplished, there has to be sustained political will and determination, consistent demands from the people to have clean drinking water, and public and private sectors as well as NGOs to work together. As W. H. Auden has noted: “Thousands have lived without love, and no one without water”.

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