



WATER MANAGEMENT: A TECHNICAL OR MANAGEMENT PROBLEM

KEYNOTE LECTURE
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By

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Senator Harald Wolf, Mayor of Berlin; MinDirig. Hartmut Gruebel, German Federal Ministry of Education and Research; MinDirig. Fritz Holzwarth, German Federal Ministry of Environment, Nature Conservation and Nuclear Safety; distinguished guests and friends.

It is indeed a great pleasure, privilege and honour to be invited to give the Keynote Lecture for this very important event. Germany has made remarkable progress in recent years in water management, and Berlin is one of my most favourite cities of the world. Thus, when I received an invitation from Stefani Reich, a good old friend, it did not require much persuasion to restructure my schedule so that I can be here today!

Introduction

An objective and comprehensive analysis of water management and development in recent years will indicate that the water profession has been quite good at looking at the past and present situations, but very poor at assessing possible future developments, say even a decade from now, let alone in 2025 and beyond. This is not a new development. For example, if we carefully analyse the forecasts of water requirements of the world that have been made since 1950, these have consistently proved to be serious overestimates. The present forecasts of future water requirements are equally likely to be overestimates.

The main reason for this likely overestimate is that the world is changing very fast, and, with it, the water use and requirements patterns are changing rapidly as well. In fact, a historian in the 21st century, looking back on the early part of the 20th century, will probably characterize the present period as a time when profound changes took place. Based on the work we have carried at our Third World Centre for Water Management, in Mexico, it can be safely said that the world of water management will change rapidly during the coming decades. We shall probably witness more changes during the next 20 years, compared to the past 2000 years. However, unlike in the past, the main drivers of these future changes are likely to come from outside the water sector on which the water professionals will have limited, or even, no control. This will make water management,

both in developed and developing countries, increasingly more and more complex in the future.

Within this overall context, let me share with you my views on the some of the priority water issues of the future.

Water crisis

The prevalent majority view is that the world is facing a crisis because of physical scarcities of water. Many international organizations have now produced maps showing how the various regions of the world will increasingly face scarcities because of increasing water shortages in the coming decades.

Research carried out at our Centre indicates that this view is totally erroneous, primarily because of the fundamental errors with the assumptions made in estimating future water demands. Our definitive conclusion is that the world is *not* facing a water crisis because of actual physical scarcities of water. However, the world may face a water crisis in the future because of widespread and continuous mismanagement of water. This is *not* the same as a water crisis resulting from physical scarcities of water. The two issues are totally different, as is their solutions and potential implications to different countries. The world has enough water for our current and foreseeable needs, but we must concurrently manage its demand and supply efficiently. Even for the very arid regions of the world, there should be no water crisis, provided the available water resources are managed prudently and efficiently.

In this connection, my view is similar to that of the Asian Development Bank, the only major international institution that has pointed out that the world has enough water but it is not being managed properly. Its forthcoming report on the Asian Water Development Outlook, which will be available in November 2007, will forcefully confirm this forecast. It is the continuing and widespread mismanagement that is causing most, if not all, of the existing water-related problems. The water profession should commend the Asian Development Bank for its technically and intellectually correct view, even though nearly

all the other international institutions and the national and international media have thus far preferred the “gloom and doom” scenario of the world’s water future, which is scientifically inaccurate, technically faulty and intellectually erroneous.

Sadly, even though we now have the knowledge, experience and technology to manage water efficiently, these are now, for the most part, being widely ignored. If we can translate our existing knowledge into practice, using the community of good practices available from different parts of the world, the world’s water problems will simply disappear. Water management is exemplary in a few selected parts of the world. For example, a country like Singapore has made remarkable progress in terms of total catchment management, provision of high quality water supply, wastewater management, water conservation and public involvement, in only about two decades. If other countries and cities can follow the Singapore experience, the urban water supply and wastewater management problems of the world can basically be solved. Similarly, a city like Phnom Penh has made absolutely remarkable progress in terms of urban water management, since 1993, when its unaccounted for water losses were estimated at over 80 percent. By 2006, these losses have been reduced to only about 9 percent, which is even better than most of the European cities. Consequently, the residents of Phnom Penh at present have a 24-hour water supply, which is drinkable straight from the taps.

Unfortunately, the world at present does not even know much about the good practices in places like Singapore or Phnom Penh. We must learn from their positive experiences and the enabling environments which have made such progress possible. A major question that still has to be asked in the context of the developing world, let alone answered, is why it has been possible for a city like Phnom Penh to make this transition in only a short period of about 13 years, whereas the major urban centres like Cairo, Delhi, or Mexico City have failed miserably to provide their residents with uninterrupted and drinkable water supply. The intercomparison appears even worse when it is considered that many developing countries have had political stability for decades, but Cambodia had undergone major political, social and economic turmoils during the pre-1992 period. Furthermore, many developing countries like Brazil, India and Egypt have better

management and technical expertise and better economic conditions, especially when compared to Cambodia. Yet, most cities of the developing world cannot hold a candle against the quality and reliability of the water supply system of Phnom Penh. This clearly indicates that if the management practices can be improved, provision of good quality water on an uninterrupted basis is possible for all urban centres of the developing world.

By focusing on the real success stories from different parts of the world and also for different water sectors, which are often mostly unknown at present to the water professionals, we can learn what are the most successful models that are now available, as well as what have been the enabling environments that have allowed such models to function efficiently over a prolonged period. Countries that are searching for solutions to their specific water problems can review the successful models that are being used in different parts of the world, select one that may suit their needs and the prevailing conditions the best, and then modify the model as appropriate to suit their own specific boundary and socio-economic conditions.

For this positive but essential development to occur, a great deal of knowledge synthesis has to be carried out, especially in developing countries, to objectively identify the good practices, and also carefully assess of the enabling environments which have made such good practices possible. Such studies, for the most part, have yet to be conducted. I again would like to commend the Asian Development Bank for being one of the pioneers to initiate a programme of knowledge synthesis to determine in which Asian cities urban water management now works well and why. Following this synthesis, it will be necessary to assess the replicability of the models in other parts of the developing world. This will always require some modifications for site-specific conditions. Similar approaches are needed to find the current good practices for other water sectors and also for all different geographical regions of the world. Once these good practices are identified, assessed and used for managing water, the so-called water crisis will undoubtedly become manageable.

A corollary of the water crisis issue is the idea of water wars. Many people have suggested that some countries are likely to go to war because of conflicts over water scarcities and water allocations. For the record, during some 5,000 years of human history, no two countries have gone to war over water. It can be said with near total confidence that no two countries are likely to go to war in the 21st century because of conflicts over physical water scarcities. It is possible that two countries may go to war. If so, the 10th reason may be water, but the first 9th main reasons for the war will be non-water related, and also for more important than water.

While the media loves the stories about water crises and water wars, none of these are real issues. Paraphrasing Alfred Hitchcock, ideas of water crises and water wars are clever McGuffins at best. Based on my own personal analyses and work in 60+ countries, I am now cautiously optimistic of the global water future. I simply do not share the gloom and doom scenarios because all the available evidences indicate that the existing and foreseeable water problems of the world are solvable. We already have the knowledge, technology and management expertise to solve them.

Urbanisation and megacities

In the water profession, much has been written on urbanisation and megacities. During the past Stockholm Water Symposia, World Water Forums and other major international water gatherings, the water problems due to increasing urbanisation and growth of the megacities have been discussed ad infinitum. While these are complex issues, my view is that these are unlikely to be the most critical urban water problems of the future, or will be the most difficult ones to solve.

Let us consider megacities, which are at present defined to have populations of 10 millions or more. It will not be an easy task to manage their water and wastewater problems in the future, but they are most likely to manage them somehow. This is because megacities like Cairo, Delhi, Lagos, Mexico, Mumbai or Sao Paulo are politically and economically powerful. The elites and the power-brokers live in these cities; they have technical and managerial expertise; financial wherewithal; and good

access to media. These and other associated advantages will ensure that the residents of these megacities continue to have reasonable access to water, compared to their less powerful counterparts.

The problems are likely to be much more complex and difficult to solve for small-to-medium size urban centres of the developing world, having populations between 20,000 and 500,000. They have access to limited funds, as well as to management and technical expertise. They have very limited economic or political power. These are likely to be the urban areas where the people will face serious water problems in the future, for which implementable and long-term solutions will be very difficult to find. Yet, not a single country, nor a single international institution is taking this issue seriously. The Asian Water Development Outlook has identified this to be a priority water issue for the developing world. One can only hope that the ADB's intellectual leadership will now be followed by other international and national institutions, and this issue will receive priority attention in the coming years, both from national and international organizations.

Similarly, while urbanization has been an important concern for the water profession, we have completely ignored "ruralisation", a term that we had to coin at our Centre. By ruralisation, we mean the growth of new hamlets of 2,500 inhabitants or less. From Mexico to Morocco, the growth of these small hamlets has been exponential in recent years. They are dispersed, and inhabited with poor people, without any economic and political power, or technical and managerial capacities. How can all types of services, including water and wastewater management, be provided to this increasing number of hamlets is completely ignored at present. Not a single country, nor a single international institution has even considered the issue of ruralisation, let alone formulate a policy to resolve this accelerating problem. Not even a single person anywhere in the world is now working on this exceedingly complex and challenging problem. And yet, this is likely to be a major water-related issue of the future.

An associated, but equally complex problem of the future will unquestionably be water-related needs of the elderly. The number of elderly in the developing world will start to

go up exponentially from about 2010. By 2025, China alone will have more elderly people than the entire current population of the United States at present. And yet, even though one can easily identify hundreds of workshops on water-related issues for women and children, not even a single event anywhere in the world has thus far focused on the water needs of the elderly. At present, we simply do not have much information on the interrelationships between water and the elderly. It is another totally neglected issue that requires urgent attention in the coming years.

Millennium Development Goals

An important millennium development goal (MDG) has been to reduce the number of people that do not have access to clean drinking water by half, between 1990 and 2015. For some very strange and unfathomable reasons, most unfortunately, the MDGs did not refer to access to sanitation. However, the Johannesburg Declaration of 2002 stipulated that the number of people not having access to sanitation should be reduced by half, between 1990 and 2015.

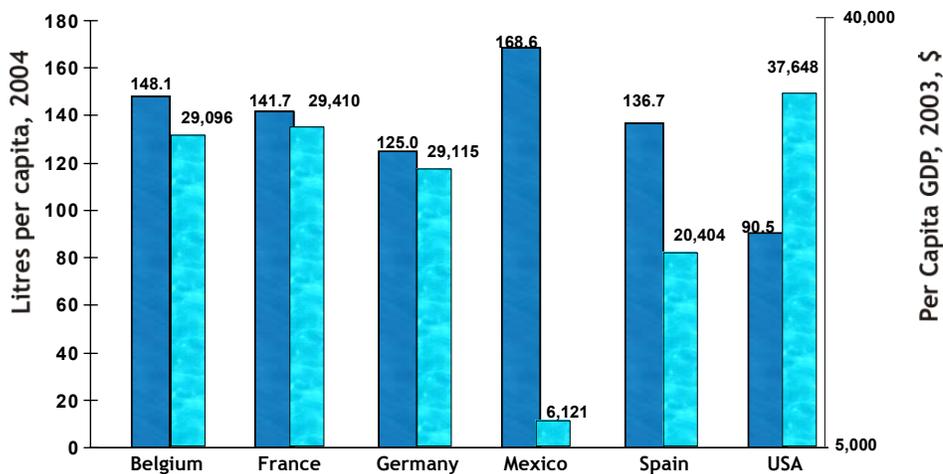
During the preparatory process of the United Nations Water Conference that was held in Mar del Plata, Argentina, in 1977, as an advisor to its Secretary-General, we put forward a proposal that the decade of the 1980s should be proclaimed as the International Water Supply and Sanitation Decade so as to accelerate access to water supply and sanitation. The implicit understanding, when the Decade was first considered, was that access to water meant a supply that was drinkable, and access to sanitation, at least in the urban context, meant that wastewater will be collected, treated and disposed of in an environmentally-safe way. However, the situation is now very different in terms of the definitions that are currently being used for water supply and sanitation, at least in terms of achieving the MDG targets.

From Mumbai to Mexico City, and Cairo to Delhi, water that the urban residents currently get is not drinkable, and the service delivery is restricted for only a few hours (generally 3–6 hours each day). Consequently, residents now have to boil water, or use a filtration system before it can be consumed. In cities like Delhi, the quality of water

supplied has deteriorated so much in recent years that the traditional methods like boiling or filtration are no longer adequate to safeguard health concerns. Accordingly, households are now being forced to use membrane technology, at significant costs, in order to ensure that the water supplied is drinkable.

Because of the poor quality of water supplied, use of bottled water is increasing exponentially in the developing world. For example, at present, annual per capita use of bottled water in Mexico is nearly twice that of the United States, even though the per capita GDP in Mexico is approximately 1/6th that of the USA. This is because the quality of tap water is generally considered to be unacceptable in Mexico, as a result of which the residents are either forced to buy bottled water for drinking, or use a good household filtration system. This situation has ensured that the consumption of bottled water in Mexico is exceptionally high. Figure 1 shows an intercomparison of the Mexican situation (per capita bottled water consumption and per capita GDP) with Belgium, France, Germany, Spain and USA.

Figure 1. Comparison of per capita bottled water consumption (2004) and per capita GDP (2003) in U.S. dollars



The issue that thus needs to be discussed urgently is whether under these highly unsatisfactory conditions we can consider that the residents of these urban centres can be considered to have access to safe drinking water in terms of the achievement of the MDG, as it is assumed at present at all international discussions. My answer is a flat and unequivocal “no”. This is not what we had in mind when we put forward the idea of the Water and Sanitation Decade of the 1980s, and improved access to water supply and sanitation. Furthermore, if this was the goal that the world leaders considered to be a MDG, then their thinking was fundamentally flawed. I have no hesitation to say that I find the current preoccupation to meet the Decade goals through statistical means intellectually abhorrent, morally bankrupt and socially unacceptable.

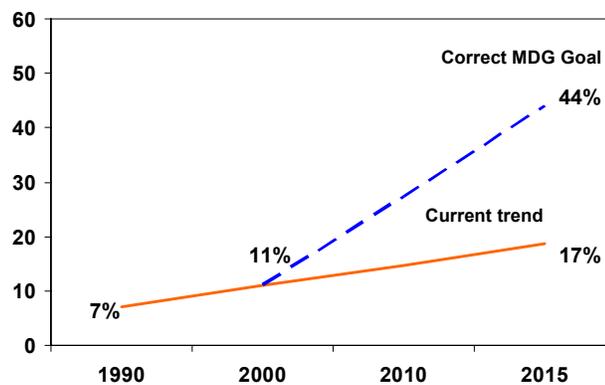
The situation is equally unsatisfactory in many urban centres of the developing world in terms of wastewater management. At present, in many urban centres of the developing world, practices and processes in terms of collection, treatment and disposal of wastewater continues to be poor, and thus unacceptable. In cities all over the developing world, wastewater management needs to be very substantially improved to enhance the quality of life of their residents. In many cities, wastewater is collected, but not treated, or only partially treated, before being discharged to rivers, lakes, oceans or land, creating serious contamination problems. The approach is almost equivalent to “out of sight, out of mind”. Cities as diverse as Delhi, Dhaka, Manila, Mexico and Sao Paulo are discharging untreated, or partially treated, wastewater to land and water surfaces. For example, at present, Mexico City discharges over 45m³/sec of untreated wastewater to the Mezquital Valley, which is subsequently used for irrigation. River Yamuna is heavily contaminated with wastewater discharges from municipalities and various industries in and around Delhi. Because of such discharges of untreated, or partially treated, wastewaters, most water bodies in and around major urban centres of the developing world, are now seriously contaminated. These will have long-term adverse impacts on the human health and the environment, which, in turn, will affect the economic and social conditions significantly.

Surprisingly, in the context of achieving the sanitation target by 2015, it is assumed that the residents of the urban centres have access to sanitation, even though wastewater is not properly treated. It is true that wastewater is sometimes taken away from the locations where they are generated, but this was not what was meant by access to sanitation when we first proposed the concept of the Decade of the 1980s. The global discussions and debates regarding the MDG-associated goals need to be rephrased: playing statistical games to achieve the targets is not the solution, nor should this be the goal.

Let us consider the problem in a more scientific and logical way: that is, the percentage of people that had access to reasonable wastewater treatment in 1990, and then take the overall MDG philosophy of halving the number of people who may not have access to wastewater management by 2015.

Viewed in this way, in Latin America, only about 11 percent of the people had access to wastewater treatment in 2000. This means that the percentage people that should have access to wastewater treatment needs to 44% (Figure 2). By considering the progress that have been made up to 2007, it can be said with almost near-total certainty that the realistic probability of achieving this target for Latin America as a whole, by 2015, is almost close to zero!

Figure 2. CORRECT MDG GOAL : percentage of population in Latin America with wastewater treatment



Our Centre has not done similar studies for the current status of access to wastewater management in African and Asian developing countries. Nor are we aware of any such studies that have been undertaken by any other organisation for these continents. However, my view, based on anecdotal evidence, is that the situation is likely to be somewhat similar for developing Asia, as is the current situation in Latin America, and, for Africa, it may be somewhat worse. In other words, Africa and Asia are facing similar mammoth problems in terms of ensuring adequate wastewater management for its people, like Latin America.

The global situation in terms of the percentages of the people that have access to drinkable water supply and proper sanitation practices are significantly lower than what the world has been led to believe at present by the appropriate international organizations. By playing statistical games, we may be able to achieve the MDG targets, but this will most certainly not solve the real water and wastewater problems of the citizens of the developing world. In the water and development professions, most unfortunately, we have failed to ensure that the global water debate on these complex but important issues remains correct and relevant.

Same old stuff (SOS)

A major global syndrome at present in the global arena is what I call SOS (same old stuff). One can go from one meeting to another, and listen to the same old stuff, time and time again, almost ad nauseum. They are based on past problems, past experiences, past technologies and management practices, past mind-sets and past knowledge. The world has moved on, but the water profession has mostly remained static. The progress, at best, has been incremental. The water profession has been saying for at least the past 35 years that business as usual is not the solution and thus cannot continue. However, the profession behaves as if there is no other solution! Activities have often become synonymous with progress: and simply trading water will not allow us to make good progress. No real attempt has been made, or is being made, to develop “business unusual” practices.

Let us consider the last two World Water Forums in Kyoto and Mexico City. Not even a single presentation focused seriously on what the world of water may look like in 2010, let alone in 2020 or beyond. Some of the papers presented could have even come from the 1970s, let alone from the 1980s or 1990s. Not surprisingly, the impacts of these megaconferences at national, regional or global levels have simply been indiscernible. Such events have not contributed to even one person getting better water supply or sanitation, no national, international and institutional water policy has changed because of these events, and our knowledge-base has not improved even one iota because of these events, in spite of the loud rhetoric of success of their promoters.

At our Centre, we have carried out a comprehensive study on these impacts of megaconferences. Only 2.27 percent of the 2,326 respondents from 121 countries that were contacted felt that such mega global forums have been useful and cost-effective. This is not surprising since these large meetings have never formulated any specific criteria for measuring their success. Nor have the organisations that have promoted the events encouraged or assisted with independent evaluations to identify their strengths and weaknesses. The criteria of success have invariably been restricted to the number of people participated, and to how many countries were represented. As long as a large number of participants from 80+ countries participated, these meetings were proclaimed to be very successful, irrespective of any perceptible impacts. In retrospect, there is no question that even if these meetings had not taken place, the world of water would not have been any different at present.

The best that can be said for these large gatherings is that they provide an opportunity to meet old friends, and make some new ones. They provide opportunities to the participants to do some side business on water-related issues. They can also be a useful mirror to gauge the views of the water establishment, which change very slowly. However, it would be fair to say that we should stop pretending that these are useful and desirable water events for the world, or they are making a difference.

The costs of these events have now become astronomical. It is estimated that the total cost of the Mexico Forum was around 200 million U.S. dollars. Only the Secretariat cost of the Kyoto Forum has been estimated at 28 million U.S. dollars. By any standard, these are huge amounts for events which have had no discernable impacts on the water sector. It is high time that the needs of these mega and expensive events are objectively reassessed by the water profession and the international organizations, especially as they mostly produce SOS: the same old stuff.

Concluding Remarks

In this brief keynote lecture, I have discussed some of the current perceptions and likely future developments in the water sector to 2020 and beyond. By being politically correct, and by saying that everything we are doing is fine, will not even allow us to identify the real water problems facing the world, both current and future, let alone solve them in a timely and cost-effective manner.

The world is heterogeneous, with different cultures, social norms, physical attributes, skewed availability of renewable and non-renewable resources, investment funds, management capacities, and institutional arrangements. The systems of governance, legal frameworks, decision-making processes, and types and effectiveness of institutions differ from one country to another in very significant ways. Furthermore, countries are at different stages of development, and thus their water and development needs and requirements, which vary with time, are also different. Accordingly, and under such diverse conditions, one fundamental question that needs to be asked is that if it is possible that a single paradigm, like integrated water resources management or integrated river basin management, can encompass all countries, or even regions, with diverse physical, economic, social, and cultural conditions? Is it feasible that any single water management paradigm can be equally valid for technological giants like the United States and Japan, the world's most populous countries like China and India, and for countries as socio-culturally diverse as Brazil and Burkina Faso? Is it possible for a single concept to be equally applicable for African traditions, Asian values, Latin culture, and Western conditions? My personal view is that they do not. In this heterogeneous and ever-

changing world, one size simply does not fit all. It never has, and it never will. As the Asian Water Development Outlook concludes what is needed is “business unusual”. Irrespective of the exhortations of the Western donors and most international organizations, the coexistence of a plurality of paradigms for different conditions is a must. There is simply no other option.

Equally, a specific solution that may fit a country at a specific time may not be appropriate at a later time. For example, water policies of Japan for the decades of the 1960s and 1970s have been radically different to the policies of the 1990s. This is only natural, and is to be expected. There is thus a time dimension to the solution of any specific problem, since the overall environment within which water is to be managed is not static. The conditions are invariably dynamic and changing continuously. Equally, the social, economic and institutional frameworks for water planning and management need to evolve regularly, in terms of both space and time. Accordingly, there is a time dimension to the solutions to the water problems as well. In other words, a solution that may be applicable at any one time, in a specific place, may not be a good solution a decade or more later.

To conclude, let me reiterate, the world’s water problems are solvable. We already have the knowledge, experience and technology to solve them. It is high time that the water profession and national and international institutions stop saying that the world is facing a water crisis, which may contribute to water wars. Instead of assuming that this gloom and doom view of the future global water scenario is a fait accompli, what we should do, in fact what we must do, is to solve the problems since they are now eminently solvable.