

# Water Futures: It's Everybody's Business

Rohini Nilekani



**FORUM**  
OF FREE ENTERPRISE

## INTRODUCTION

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This booklet encapsulates a very realistic and telling assessment of a vital problem "Water" which is not adequately realized and appreciated. It captures the basic issues facing us in India, indeed globally, and which must be widely propagated and disseminated.

What is remarkable is that this presentation comes from Mrs. Rohini Nilekani, who has devoted almost a decade to a detailed study of the subject. Actually she has set up Arghyam, a public charitable organization, with a munificent donation from her own resources. More importantly she has set up a vibrant institution which is actively engaged in providing and sharing knowledge on the subject, reaching out far and wide in 18 states of the Union. It is thus performing an invaluable catalytic role. A few vital points raised in her lecture are underlined.

She starts with a very apt quote - "Water is a very good servant but it is a cruel master." It has now become a civilization issue. With increased urbanization, growing industrialization and rise in aspiration levels in emerging countries the per capita consumption of water is rising whereas its availability has not increased commensurately. Hence we need to evolve more flexible systems for ensuring minimum wastage and relatively more equitable distribution.

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irresponsible use of water. This has to change with real management of water. Campaigns for teaching farmers about crop patterns which help minimize use of water must be organized.

As far as industry is concerned, as the cost of water is too low, there are precious few incentives to prevail on them to use water more efficiently. Fortunately several major companies which have adopted 'sustainability' as one of their major objectives, have been able to instill the need for conservation down the line.

At the domestic level also a major 'Save Water' campaign is urgently called for. This should start at the school level itself. There is enormous scope for preventing wastage through many modern devices. What is imperative is realization.

Above all there is dire necessity for change in trajectory of growth to improve water efficiency at all levels. Constructive engagement with all sections of society for creating the much needed awareness that 'Water is Everybody's Business' is an imperative.

This booklet is indeed an eye-opener to all of us concerned with 'Sustainability of our planet'. It sets out the salient aspects of the problem with great clarity and offers eminently achievable solutions.

A well researched, comprehensive and very readable piece.

**Minoo Shroff**  
*President*

18th December 2012

Forum of Free Enterprise

# Water Futures: It's Everybody's Business

by

**Rohini Nilekani\***

*Today, as you know, I have titled my talk – Water Futures = It's Everybody's Business. And in some sense, the talk will also address the fundamental question – what is going to be our legacy when it comes to this most precious life giving resource.*

In the next forty minutes, I hope to walk you through what I have learnt about water in our country, a bit about its past and present, and a bit about how its future might turn out if we do not choose to be water wise.

My learning has come from the dedicated work of the many partners that Arghyam, my foundation, has supported in the last eight years. We have spent around Rs 35 crores so far and continue to spend between Rs 10 crores and Rs13 crores each year supporting more than 90 projects and programs in 21 states of India, to help move towards more safe and sustainable water for all. We have helped implement rainwater harvesting in places like Bihar, where

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\* The author is Founder - Chairperson, Arghyam. The text is based on the 24th Bhogilai Leherchand Memorial Lecture delivered in Mumbai under the auspices of Forum of Free Enterprise on 7th December 2012.

the floods often make surface water unsafe for the most disadvantaged, or in Karnataka, where fluoride is rampant and ground water is unsafe for drinking. We have helped revive wells, *kuins*, *tankas*, and other traditional water bodies from Uttarkhand and Rajasthan to Tamil Nadu and Kerala. We have helped mountain people restore their rain fed springs, to bring pure water closer home. We have helped to construct thousands of toilets, and deployed decentralized waste management systems.

We have supported participatory ground water management, where communities practice the art of restraint for mutual prosperity. We have worked on serious research and policy advocacy, from the halls of Delhi, to the gram sabhas in Kolar district.

While there is hope everywhere, coming from the work of so many dedicated people and NGOs around the country, Arghyam's work has also given us a heightened sense of just exactly what the nation is facing in terms of its water resources.

This is not a gloom and doom lecture, even though there is much to worry about. Unlike oil, water is an annually renewable resource for at least some part in the hydrological cycle, and we CAN restore our relationship with its rhythms.

I am never sure why our planet is called Earth, when it is mostly water. Yet, you know that if all the world's water were to be in one bucket, we would have only one spoonful to use. The rest is in the salty seas, or the glaciers or deep underground. This entire spoonful is in constant flux in the hydrological cycle, where the water from the land reaches the sea, evaporates and comes back as rain, only to flow back again. I believe the crisis of water is also a crisis of civilization, a crisis of values. And so, it is good to remember

that we are all part of this hydrological miracle, every minute of the day.

All the different water is part of one whole. The amount of water cannot be increased or decreased on this planet. Water is a finite and a renewable resource. It's amazing to think that the water I am sipping now comes from the same stock that my *panjibai* (great grandmother) used to drink, her *panjibai* before her and even the dinosaurs that roamed the earth used to consume. So the good news is that we are not going to run out of water, as we might run out of oil.

If there is any bad news, it is this. This same finite resource now has to be shared among more and more living creatures called human beings, whose demands and aspirations keep growing unlike other creatures.

Let us turn to India. You all know these numbers but it is important to restate them. India is well endowed with water but even better endowed with humans. With 4000 cubic kilometers of precipitation, we have 4% of the world's water to support 18% of the world's population. Plus, you know this water is not equally distributed temporally or spatially. Most of our rainfall comes in three short months and falls unevenly over the land. Parts of Rajasthan get as little as 150 mm per year and parts of Assam as much as 3000mm. All in all, though, the per capita availability of water in India has gone down from 6,008 m<sup>3</sup> in 1947 to around 1700 m<sup>3</sup> in 2001, and will dip further over the next thirty years. By one estimate, somewhere between 2030 and 2050, we will become officially water stressed, when our per capita resources will drop below 1000 m<sup>3</sup>. Why do we all need to understand this? Because this means that our basic quality of life, which needs water not just for drinking and washing, but also for the ecosystem services provided to us by our rivers and aquifers and wetlands, will be at risk.

Let's understand where all this water is going.

Though this data is both contested and old, it is the best we have for now. It tells us that more than 80% of India's freshwater goes into the agriculture and irrigation sector. About 5-7% is used for domestic water, and about 10- 13% is used by industry. But with our rapid rate of economic growth and our increasing urbanization, all of which need water, because water is embedded in everything: there is tremendous competition for this same finite resource.

Right now, as we speak, this competition is creating a million conflicts all over India. Some celebrated conflicts, as that between Karnataka and Tamil Nadu over the sharing of the Cauvery River water, come into the media. Once in a while, the plight of the people whose villages will be submerged and who have yet to be rehabilitated might penetrate the urban consciousness through the papers, but increasingly villagers have to resort to heroic acts like standing in the river for days on end, or to go onto fasts unto death, to even get noticed. That might be because the fights over water have become commonplace. Neighbors fight over the slum tap or the village well, villages fight over water taken away to cities, states fight over the diversion of river waters upstream and the enforced distribution downstream.

All of us have faced some water related issues in our lives, no matter how elite and urban and protected we are. Maybe the taps have run dry in the summer, or we face energy shortages because of a drought. Energy and water are linked at the hip and even if we do not link the two in our minds, we still have to face the consequences.

One of my favorite quotes about water comes from CGD Roberts, a 19th century writer, who said - 'Water is a very good servant but it is a cruel master'. I think in India we are

beginning to feel the whip of the master in many parts of the country.

In some fundamental way, we all live downstream now.

Sounds bad? Maybe, but I really think it is too late for pessimism, so it is good to focus more on what we can do, rather than to focus just on describing the problem in myriad ways.

We spoke of Gandhi and he is always good for a relevant quote. "The difference between what we do and what we are capable of doing would suffice to solve most of the world's problems".

That is what I believe holds very true, certainly, for the water problem. What must we do? It is simple, really. We have to figure out very good and flexible systems to share water better, and we have to create water efficiencies wherever possible. People now call this demand management, but it includes in it the now old fashioned value of RESTRAINT. That is why I said it is a civilizational issue. Today, *Dil Maange More* seems to be a more celebrated mantra than *Dimaag Maange Less!*

Water wisdom means that we have to use this scarce though renewable resource more responsibly, and we have to be reasonable about other users of the same resource, understanding how our own actions might impact especially on the poor or the disadvantaged. We also have to keep in mind our responsibility to future generations, who are yet to be born. And most of all, we have to understand and respect that water is a key resource of this planet on which all forms of life and nature itself depend. As they say of the proverbial manduka or beduk, who is otherwise much maligned in the world of aphorisms, 'the frog does not drink up the pond in which he lives'. Water is embedded in ecosystems, it is not a

resource that should be used freely, and manipulated at will. Rivers, wetlands, aquifers, forests and mountains cannot speak, but we have to hear their voice anyway. We cannot really quantify exactly how much water Mother Nature needs; we cannot give it a ration or a quota. That is pure human hubris. That is what some call hydroschizophrenia.

Instead, can we practice a little humility, in our own long-term interest? Can we use a precautionary principle? Can we leave as much water as possible in its undisturbed state, or at least revert it, after human use, to as close to its earlier state as possible? Can we become a low water economy, indeed a low water society?

If we take this up as a national mission, I truly believe that all of us, regardless of who and where we are, can do something about it. First we have to understand properly the nature of the crisis, which we have tried to, but we also need to be shown good examples of how to use water better, and we need to experience the change for ourselves in some way.

Since the maximum use of water in our country is in agriculture, let's begin there. If industry and cities need more water, it might have to come from the water that goes into our farms and fields now. Yet, we have to keep growing food for our growing population. So clearly, we have to grow more crops per drop of water. The problems have been analyzed to death and the solutions are all known.

Many of our crops are over watered. We try to grow rice in Punjab and Haryana, that too with flood irrigation. We grow sugarcane in Rajasthan! State policy almost encourages irresponsible use of water. We have no real management of groundwater in India. Most other countries have found a way around this kind of irresponsible withdrawal, but with

23 million private and public bore wells distributed around the country, the government is finding it extremely tough to impose new legislation. Anyone with a piece of land is almost free to drain out this common pool resource with near impunity. Over the decades, advances in civil engineering, pumping, and mapping technologies have made it too easy to suck water out from deep aquifers.

In a country with the most wonderful biodiversity of seeds and grain strains in the whole world, we spend national budgets procuring mainly wheat and rice and sugarcane, which are highly water intensive crops. When the elite of the population has, because of more knowledge of health benefits moved away from white rice and white sugar, we encourage our poor, through subsidized pricing, and ironically our farmers, the producers of all that health food – millets and vegetables and fruits to consume the white rice and sugar and oils that the elite now want to avoid.

We need to quickly come to grips with the farming crisis. It is a water crisis as much as it is a farming crisis. Maybe big farmers have to show the way. And indeed a movement is taking fragile hold around the country, which must be lauded and replicated. After all, it is not the rain fed area farmers, who are in the majority in this country – farmers with small landholdings, who have to pray for rain to grow their crops, but the prosperous farmers, with access to electricity and deep bore wells that we are talking about. It is the ones who are now growing corn and soya and other grains that go into livestock feed around the world. It is they who have to shift the needle and improve efficiencies. It is in their own long-term interest, after all, because in many places, they are now drawing out fossil water from the bowels of the earth. This is not the water that is replenished through the annual rain cycle. This is water that dripped silently through

the cracks of the rocks below ground to settle in dark pools deep and mysterious, deep banks of precious water that farmers are withdrawing with no hope of replenishing the capital.

Why blame big farmers? We are all consumers of water in its virtual forms. Even by making the right food choices, we can help reverse the abuse of water!

From agriculture, let's move to industry, which draws between 8% and 13% of total freshwater, depending on which data you look at. This use has grown sharply with GDP increase, as industrial use is closely linked with the economy of a country. A lot of this water goes into the production of energy, and as cooling water.

There are precious few incentives for industry to use water efficiently. The cost of water is too low as part of business expense. Some industries have tried to rapidly improve inside the fence practices as part of their sustainability initiatives. Others, such as the beverage companies, have been forced to improve efficiencies across their entire product and supply chains, partly due to intense public pressure and conflicts, but partly because freshwater sources are not available in many places for love or money!

Others will have to follow suit and some attempts are being made to track the water efficiency per unit of industrial production. Mumbai is the heart of the world of finance that feeds the industry and it can play a lead role in incentivizing Water efficiency.

It is not only water efficiency that we as citizens have to worry about. It is also industrial pollution and agricultural runoff. In many places, the quantity problems have been solved with engineering and technology but there are

massive new problems of water quality. Industry must wake up and accept responsibility for polluting. The polluter must pay principle is well established but somehow, sadly, we are not living up to it. Our rivers are mute testimony to our indifference. Mumbai's Mithi River, Delhi's Yamuna River and even the mighty Ganga have become toxic in many places, especially around industrial plants and big cities.

But eventually products from industry and agriculture come to us, the consumers. The more we begin to understand the water crisis, the more we can become water sensitive.

Here in Mumbai, with its dynamic entrepreneurs, with its financial power, it is easy to think of the country or the world in purely economic terms. But we must understand that water, even more than energy, can become a real constraint to economic growth.

Unless we change the trajectory of that growth! To improve water efficiency in agriculture and industry, in the very design of our products and services, to come to grips with where virtual water is hidden wastefully, and then follow that up with good policy and good practice.

### **What is virtual water?**

Look around you, Like air, water is everywhere. Like air, some of it is invisible. Water is embedded inside everything that we make, everything that we use. This podium is made of wood, and looks very solid. But of course, it took thousands of liters of water for the trees that the wood comes from to grow, Similarly, these clothes, which also look nice and dry, took a lot of water to grow the cotton from which the cloth is made and then a lot of water in all the factory processes that turned the cotton into cloth, dyed and printed it, and

using energy of many kinds, which also use a lot of water, finally made it towards me. All our young people in their denim jeans should know that denim consumes the highest amount of water in its production. It is a good thing jean wearers save water later by never washing their trousers!

We are very proud that we are a leading exporter of textiles. But with that, we are also transporting millions of liters of our water, ironically from where it is scarce, because cotton is often grown in Vidarbha and other water scarce regions.

Similarly, each liter of milk we consume contains, according to the research of IWMI, 3000 liters of water. Naturally so, when you stop to think about it. The cow needs food, which needs water to grow and the cow herself drinks 20-30 liters of water a day. And then, since we no longer get our milk directly from the cow, as our grandparents used to, we have to add more hidden water because of all the water embedded in the energy intensive process of making the plastic bags and the tetrapaks the milk comes in. Ironically, because milk comes from the arid regions of Rajasthan and Gujarat, where the livestock economy flourishes, this unseen water is going from water scarce regions to water rich ones.

Water used to be thought of as mainly a local resource, but globalization has changed all that. And this has a lot of interesting policy implications. For example, when India imports one tonne of wheat instead of producing it domestically, it is saving itself 1300 cubic meters of real, local water.

John Anthony Allan of King's College explained this concept of embedded 'virtual' water. It has become a very important concept in the international debate on water. It has

also helped people to understand their real water *footprint*, which measures the amount of water consumed by people on an average in the day, not only directly, but also virtually. It is said that in Asia, people, on an average consume about 1400 liters of water each day whereas people in Europe and North America consume about 4000 liters of total water each day.

These inequalities of water use also exist inside countries. Our high aspiration middle class is moving rapidly into the higher water footprint range, as we become a nation of meat eating people with more material lifestyles. Our rich are certainly at the water footprint level of the global elite. And that is something we can all start thinking about, especially the younger generations who will have to innovate their way out of the many problems our generation has so kindly left them!

A lot of demand for real and hidden water comes from our cities and towns, where consumption is growing. But how are cities themselves **managing** their water supply?

Our big cities are setting a terrible example for our 7000 emerging towns. Mumbai and Delhi bring in water from far away, use it, pollute it, and leave the sea, the river and downstream neighbors to worry about the pollution and the scarcity. Cities value land much more than water. So catchments are encroached, mangroves are destroyed; water bodies are eaten up to create housing or malls. This leaves the city ever more vulnerable to floods, to droughts and even to civic unrest. No one present could have possibly forgotten the havoc of the recent Mumbai floods.

Within cities, there is terrible inequity. In Delhi, rich areas can get an average of 400 lpcd (liters per capita per day), whereas some slums in the north manage with barely

36 lpcd. Such a high water supply for connected areas is mainly because the systems designed to carry human waste in cities come from a mindset of plenty, an old 20th century mindset. They use a lot of water to carry a little human waste. And we have all become a flush and forget society. Few of us know where our water comes from and where it is going.

But cities can do better, much better. We can use the best principles of cities like Singapore – to rationalize use, treat, and reuse, but we need to innovate and make the cost of production and treatment go down. We need to look at more decentralized options, for water supply and wastewater treatment, using the subsidiarity principle. We have to use both carrot and stick to ensure that cities use local water first, that they design cost effective systems, that citizens understand the cost of water and pay appropriately, and so on.

Cities can do better and citizens can do better too. We have looked at agriculture, industry and urban usage of water. Eventually, it is people who engage in these occupations and lifestyles. So, don't stop just at turning off the tap when you shave or brush your teeth. Engage in the discourse on water in your city, or at your place of work, Help revive your lakes, and even your rivers. Understand and reduce your water footprint. Engage, engage, and engage!

If we don't engage, if we don't change course, the legacy we will leave behind is too horrible to contemplate. Some of our big beautiful rivers are already polluted; some are not reaching the sea. Our forests and catchments are bearing the brunt of a cancerous model of economic growth. We are depleting and polluting our water reserves.

If we do engage, it means that we will renew our relationship with water. We will begin to value water, a value that goes beyond price. Water is attached to everything in life, and more so to our future, and that of those who will come after us.

Let's strive to become a low water economy, a low water society, so that water in its natural form can continue to sustain us all. Securing our water future is everybody's business – mine as well as yours.

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*"People must come to accept private  
enterprise not as a necessary evil, but  
as an affirmative good".*

**- Eugene Black**  
*Former President,  
World Bank*

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