



The role of business in development

SESSION 3 - WATER, ENERGY, FOOD SECURITY

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

So, ladies and gentlemen, did everybody get a good lunch? No one is allowed to fall asleep. Not in this session which is going to be quite exciting because we're talking about things that are, let's say, raised the temperature among many of us which are water, energy and food security, all three of which are contentious, difficult, and so far not really solved.

So we have with us here, already -- I'll start over the far end, Naina Lal Kidwai who's Head of Water Mission at FICCI, but, but of course, better even known as the head of HSBC, or equally better known as the head of HSBC in India.

And over here, we have Rohini Nilekani who is a Chairperson and Founder of Arghyam. You have to tell me how to pronounce that correctly.

Rohini Nilekani - Chairperson and Founder - Arghyam

It's Arghyam.

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

Arghyam? All right, Arghyam.

And over on this side, I have Peter Brabeck who's a Chairman of Nestlé. And joining us now, is Professor Asit Biswas who's President of the Third World Center for Water Management. And you arrived just at the absolutely perfect time, professor because we are going to start this session right off.

Now I think I'm going to start with you, Rohini. And I want you to forgive me if I quote to you some of the things that you have written. But I was so impressed by them, that I want you to hear about it.

Everybody who is from India knows this. The country is among the wettest in the world, but it's becoming a water stressed country. And from her blogs and her work, and her writing, you have said that our cities do not contain demand, or reuse water, we have high cost schemes to bring water from away. We use it, pollute it, and send it away. That model is disastrous.

So my question to you is, if it's disastrous, what is going on?

Rohini Nilekani - Chairperson and Founder - Arghyam

Namaste, everyone. It's nice to be here. Thank you, Maria. What's going on is, I think we are coming to -- now, you've moved me to talking about urban water. So in urban water, I think the country is going through a massive rethink, of how are we going to provide for the habitation 7,000 -- by the latest census, 8,000 urban habitations.

That will require sustainable water for everyone, even though about 40% to 50% of our urban populations, specially in the smaller town are in slums, which means they may not be connected to proper water piping, et cetera.

So it's just going to be a huge challenge. And some of us do believe that we are going to have to apply the principles of subsidiarity, look at using local water, first, look at creating proper institutions for both financing and better governance and look at a source to think approach for urban water.

Because even though domestic water in general is only between 7% and 8% of total water use in India, I think the impact of having 300 million to 500 million people moving in the next 20 to 25 years into urban habitations, is going to mean significantly that we're going to have to change how we manage water in this country because urban people use water differently than rural people, especially because you assume that urban people will use flushing systems that currently are quite risky at 12 liters per flush.

We're going to have to rethink how we manage water, especially when you're talking about urban. And of course, since 80% to 85% of water is used in agriculture, and I'm sure Peter is going to talk a lot about that, we are going to very much have to think about how we are going to manage the competing demand on this finite resource in India.

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

You're right also that the Planning Commission of India has repeatedly warned that water will become a more serious issue than land or energy in the years to come, but one of the problems about trying to make a policy, is that water is a state and not a federal issue, so it is -- the policy push is at the state level whether it's agricultural, or whether it is urban. There isn't a central approach to this.

Is this one of the -- or is this not important?

Rohini Nilekani - Chairperson and Founder - Arghyam

No, I think it is true that water being subject -- you can not mandate or top down kind of policy. However, I think the policy frameworks that are being put into place at the center and through the 12th plan, will allow different states based on their local context to pick up large chunks of those policy frameworks.

And, in fact, that is happening specially when you look, say, at groundwater, which has become a very critical issue to manage in India. I think the groundwater policy frameworks that have been set out are now being picked up by states because increasingly they are seeing tremendous amount of conflict, and tremendous amount of groundwater depletion in different states, and they are picking up. So, I wouldn't say it's so much of a constraint.

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

It's not so much of a constraint, but is there more of a constraint -- you have also in some review or work, brought up the conflict between urban use and an agricultural or, let's say, out in the rural areas the use. Is that going to be exacerbated?

Rohini Nilekani - Chairperson and Founder - Arghyam

It is getting. Actually the million mutinies, as they say in India, around water every single day, not all of them get into the new papers, but more and more conflict is happening. One of the conflict ideas is between rural and urban use.

But I think it's an also opportunity to convert it into as win-win relationship between urban usage and the rural continuum just around the cities because the kind of waste that gets produced in urban areas can be reused in agricultural settings.

It's a question of allowing cities, to create some kind of frameworks to work with the rural agricultural usage around them. And I think we are seeing some of that happening, and certainly around the world there are many very good examples that we can borrow from.

But, yes, the conflicts are growing, and, yes, some innovative responses to the crisis are also being seen everyday.

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

So you do see -- and this is the biggest question that I have for you -- you see some progress being made because the awareness is now so acute. Is that what it is, or not yet?

Rohini Nilekani - Chairperson and Founder - Arghyam

It's reaching fairly, crisis point. So whether it is -- I think we are rethinking what kind -- how will we look at the cost of production of water for urban and rural drinking water, and how will we lower it, and therefore change our strategy, but how we get water from further and further away into our cities, how will we use local water first, do conjunctive use of surface ground rain water --

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

And you see progress in this area?

Rohini Nilekani - Chairperson and Founder - Arghyam

I think so. I think people have been talking about this for a long time, but, for example, we work in a small town in Karnataka called Mulbagal, and where we are seeing, there is great receptiveness among the councilors, among the state authorities, to say, yes, let us look at a much more sustainable pattern of managing urban water.

The metros, is much harder and more complex, but in the 7,000 small towns of India, I think we genuinely have a very good opportunity, some low hanging fruit. And before we make big mistakes, we are still to roll out our public water infrastructure in small towns, and we can leapfrog over certain things and do it right.

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

That's a bit more encouraging than one had thought. Professor Biswas, when we had a chance to exchange some views before, you had said that there are some very shameful things around the whole world that we're doing with water, not just in India, but everywhere that you work, because you're also in school of public policy in Singapore. And so, you've seen a great deal.

Could you tell us, please, what are the things that we are doing really wrong? And then perhaps give us some example where the ingredients for best water management have actually happened.

Prof. Asit Biswas - President - Third World Centre for Water Management

Well in the area of water management, most countries of the world, we are doing most things wrong.

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

Like what are they doing wrong?

Prof. Asit Biswas - President - Third World Centre for Water Management

Take India. There is absolutely no reason, economic, technology, expertise -- management expertise, why any city, more than 200,000 in India, cannot have water 24 hours, 7 days a week which can be drunk straight from the tank. The fact we're not doing that is because of mismanagement.

Any large cities in India, from Delhi to Chennai, to Mumbai, call it. If you try to see how this billion dollars in [assets] are being managed, it's pathetic. Delhi doesn't know how many consumers it has -- how many consumers of water it has. It does not know what is the per capital consumption per day -- per capital consumption every day.

It has no clue as how much money it gets from its consumers, or a plan for the future. It goes for -- it's not only Delhi, Delhi we know because one of my students who is here filled the rights to information and got the information. How on earth can you manage a \$1 billion investment with no information at all?

In all the major cities of India right now, 40% to 60% of water never reaches the consumer.

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

Never reaches the consumer.

Prof. Asit Biswas - President - Third World Centre for Water Management

Never reaches the intended consumer -- 40% to 60%. In Delhi, you give me 5 years, good management, some fundamental changes, no extra money -- we don't need the foreign experts, or technology, everyone in Delhi will get clean water, 24 hours a day which can be drunk from the tank.

I hear lots of excuses saying, there's not enough water.

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

Yes.

Prof. Asit Biswas - President - Third World Centre for Water Management

Those are a bunch of baloney.

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

That's interesting.

Prof. Asit Biswas - President - Third World Centre for Water Management

So India's water problem -- drinking water problem is solvable.

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

Look, it sounds at first that this is impossible to do. But on the other hand, you have brought some examples where it can be done. I know you've written up about Phnom Penh. What were, say, the three ingredients, or the three or four major things that they did to turn it around, and make that city, if you wish, water viable? What happened.

Prof. Asit Biswas - President - Third World Centre for Water Management

Yes. One of the things we have to realize, that water management is a complex process. In all the major cities of India, and many other parts of the world, let's take Mexico, the average stay of the water utility manager, in Mexico is 18 months, in India roughly between 30 to 36 months.

And the person who comes, has no management expertise, no water expertise. In India, on the big cities, all (inaudible) officers, they're neither responsible nor accountable for what they do.

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

This is an enormous condemnation. Now tell us how it was done properly.

Prof. Asit Biswas - President - Third World Centre for Water Management

Look at Phnom Penh.

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

Yes.

Prof. Asit Biswas - President - Third World Centre for Water Management

In 1993, 73% of its water never reached the consumer -- 73%. Very few people received water. Phnom Penh water supply authority was, for all practical purposes, bankrupt. Then came the good news. They appointed a person who is very intelligent, but not a water expert -- and remember, water management is not rocket science. So he came, first 6 months, he looked at it, what is to be done and then he came to a few conclusions.

First, water has to be priced.

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

Has to be priced.

Prof. Asit Biswas - President - Third World Centre for Water Management

Priced. It doesn't matter, rich or poor, it has to be priced. You cannot have conservation if you do not get price -- if you do not pay for it.

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

Right.

Prof. Asit Biswas - President - Third World Centre for Water Management

Number two, he got rid of all the corrupt officers. And how he did is very interesting. He didn't start with the bottom. He started with the most powerfully, politically connected person who was a cousin of a minister who thought he was untouchable.

He told him once, what you are doing, stop doing, or your out. Second time, he said, you are out. He threatened lawsuit, he said, take me to court, but you are out. So from tomorrow, you are not coming to the office. End of the story.

Because (inaudible) the prime minister, had the good sense to make it Phnom Penh Water Supply Authority, an autonomous corporation. Now, the city, as I said, everyone pays for it. If you are poor, there are very simply way, he decided who is the poor. Average person in a shanty town was using 2 cubic meters of water a day bought from vendors -- poor quality water.

So he said, anyone who gets 7 cubic meter of water or less, is poor. You can argue whether that is true or not, but --

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

That's the way he --

Prof. Asit Biswas - President - Third World Centre for Water Management

That's the way it is. If you go to the poor and said, are you happy with the water? They said the only person who has done anything for us, is Ek Sonn Chan, the Director General, because now we have all the water we need.

If your consumption is more than 7.1 cubic meter, just one, you don't get the subsidy, subsidized water.

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

So subsidy only for the poorest.

Prof. Asit Biswas - President - Third World Centre for Water Management

Only the poorest of the poor.

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

Right.

Prof. Asit Biswas - President - Third World Centre for Water Management

And there's no problem.

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

And everybody else have to pay a price?

Prof. Asit Biswas - President - Third World Centre for Water Management

No, they pay -- they still pay, but they pay a subsidized price. And the middle class, normally uses between 12 to 20 cubic meters.

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

So what you are proposing, is that there has to be good governance, proper pricing --

Prof. Asit Biswas - President - Third World Centre for Water Management

And good information system.

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

-- and a good information system to the public or for the people to run it.

Prof. Asit Biswas - President - Third World Centre for Water Management

For the management -- people who run it.

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

For the management. Okay.

Prof. Asit Biswas - President - Third World Centre for Water Management

If you go to Phnom Penh Water Supply Authority, you want to know how much money the consumers paid yesterday.

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

They know.

Prof. Asit Biswas - President - Third World Centre for Water Management

They know -- yesterday. You go to Delhi Water Supply in Mumbai, ask him what they got the last month, they don't know. It will be another 6 months before they will get that information. You cannot run a corporation on that basis, public or private. So it's a mismanagement throughout.

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

So those are the ingredients for a good water management in general.

Prof. Asit Biswas - President - Third World Centre for Water Management

Yes.

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

Okay.

Prof. Asit Biswas - President - Third World Centre for Water Management

That is for urban water supply. In the agricultural water supply, 2 weeks ago, I had some discussions in China with the Chinese water minister. And we worked out a plan next 15 years, China's agricultural water requirement, will cut it by half -- next 15.

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

Will be cut by half.

Prof. Asit Biswas - President - Third World Centre for Water Management

Cut by half, by making the water management more efficient. So in India, where we use much more water for the agricultural sector than China, everything is free, and pumping -- and this is the sad part.

Pumping of water for the farmers is completely free. As a result of which farmers pump 24 hours a day whether there is water or not, the down water table goes down, and the farmers in Punjab, in Moga (inaudible) --

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

I'm going to get on to that a little bit.

Prof. Asit Biswas - President - Third World Centre for Water Management

The farmers have to buy bigger and bigger pumps because the down water table is going down. Electricity companies are broke because farmers don't pay for it. So we said -- we talk of a win-win. This is a wonderful situation of lose-lose situation too throughout the system.

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

Naina, in light of the lose-lose situation, I know that you as the Head of FICCI, you led the water mission. And here is -- I'm doing her publicity for her. FICCI HSBC knowledge initiative on water use.

In many different areas, you've done some very interesting work. So what are the kinds of things, and perhaps recommendations that came out of your work that you would have suggested for India whether it's rural, or urban or industry, what are the kinds of things that you found were contradictions, and could perhaps lead towards some good solutions?

Naina Lal Kidwai - Head of Water Mission - FICCI

Maria, so let me limit myself to talking about industry and its engagement in the water front.

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

Yes.

Naina Lal Kidwai - Head of Water Mission - FICCI

Industry, I should start by saying, is not as bigger user as urban usage or indeed agriculture, but it still has to play a very important part in the way it engages in the subject of water for India. And I think both speakers earlier have highlighted that the tragedy in India is the fact that we have enough water, if only we used it properly.

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

Let me just ask that right away. You say India does have enough water.

Naina Lal Kidwai - Head of Water Mission - FICCI

Well we have great, big river basins. It's not a desert. We have water, maybe not always available where it's needed, but the ability to use it efficiently and transport it, and indeed, reuse it, is all going to be part of the way we manage our water resources, and also conserve our water resources in terms of river pollution and such like.

But what we've attempted to do at FICCI in its very early days, is at one level at the membership of FICCI, we have many sectoral committees to have each committee begin to define their water policy so that every industry begins to think about what it needs to do, what are the challenges, and how they can best tackle it.

The second level, then, of course, is government and policy advocacy. And the third is through a range of information gathering, commissioning reports, and engagement with civil society, to develop the debate to a level that is meaningful. So, it's early days.

And I just thought I would share what I think really gets embedded in the concept of CSV as we started out discussing today, is some of the win-wins that can happen and have indeed been demonstrated in the case of for example the power sector. So what we found was that the power sector group embraced water straight away. And why? Because 30% of the power plants in the country shut down over the summer months for lack of water. Water is a very essential ingredient for a power plant, in terms of cooling, and such like.

So here was a situation where they need to tackle the problem, and it then became a case of well, how do you want to tackle the problem. And we then, of course, also looked at the information and data. And statistics put out by the Ministry of Water Resources itself suggested that just in the period from 2010 to '25, the power sector needed the three-fold increase in water, and from 2025 to 2050, a ten-fold increase.

So if India needs power, which it desperately does, we certainly need lots of water. And how are we going to actually bridge this, is something that the power sector itself better resolve for itself or it's not going to be able to grow.

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

And you still maintain that there is enough water to do this, if properly used?

Naina Lal Kidwai - Head of Water Mission - FICCI

Well look, I'm no expert on water in terms of these projections going forward, but at least, experts say, that there is a huge amount of wastage starting with the agriculture sectors, and with industry, and also right down to urban. And it starts exactly as you heard from the fact that we don't price for water, on the one hand, and on the other, the policies don't preserve what we have. So there's a huge amount to be done there.

I was quite struck by the fact that even in the power sector, how there was initially not enough sharing of best practice. In fact, those that came together to share their best practices, did it a little reluctantly, almost afraid that competitors would pick up on information.

So I think one of the things we, at industry have to do, is establish benchmark, best practice, and make sure that there is sharing across the sector of that best practice because it's a pity if we lose out -- and this is not about picking up a technology sitting in the US, it's under our very noses, right here, often in the same state, often in neighboring power plants.

So what we've attempted to do through the study you held up, was really put some of those benchmark practices into the public domain. We made sure that the seven biggest power practitioners were in that book, but there are many, many small ones who must learn from that.

The next level has got to be water audits, which FICCI does, it has a team that does this, but we need many more practitioners who can go out then, audit for water best practice and establish.

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

And is the audit going to be at enterprise level, company level? Or, is it going to be a state -- a power grid level?

Naina Lal Kidwai - Head of Water Mission - FICCI

It would have to be, I think, industry specific --

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

Industry specific.

Naina Lal Kidwai - Head of Water Mission - FICCI

-- but then, go down to each unit, in terms of different practices they're in. And the wide range of measures that we found, that were being adopted for water conservation went from waste water treatment, reuse of water for power generation, desalination of sea water, technological modifications on air cooling, regular water audits again were something which the sector itself came forward saying they would do.

And likewise, the second knowledge initiative is in agriculture and irrigation. And I believe there again, that reports will be out in a month, we will again get some of these benchmarks and best practices being shared in there.

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

It's very clear from the work that you're doing, that this session which brings water and energy and food security together, water is the link in this. And it is equally true for whether it's urban personal usage, or whether it's rural, agricultural usage or as you're saying now, of course, in the rather sometimes disastrous energy, and power picture.

This is what is industry is doing with other industry. What does it take other than your getting information and benchmarking, what else will it take for industry across India, particularly in the power sector, to actually step up to the plate and introduce and use these benchmarks and the research and the recommendations you've done?

Naina Lal Kidwai - Head of Water Mission - FICCI

I think just pure shortage of water will do it. If you don't have it --

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

That's rather a lose-lose way to get there.

Naina Lal Kidwai - Head of Water Mission - FICCI

I mean I'm sure, Rohini will endorse this, but I visited an NGO in urban India, in fact, there's a group called Force which works with Water Aid in an urban environment. And end up more for water than those of us who have access to it because they end up having to pay for the two buckets that they need for the day because they don't have it.

And the way they organize themselves as a community, with community leaders, all women, I might add, they did therefore, arrive at a model where they negotiated with the local board, which is the water board, and it's an unauthorized colony, but they get their water.

And the way they manage their water amongst themselves, and it's all self regulation, is fantastic, and they have to pay for it. That's the only way they get it.

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

Because it's going to be quite a difficult thing particularly if right now, you have no water pricing, in the country side, and on top of it, in one of your reports, you mentioned that the price of electricity, for pumping does down so that it doubly is bad because you pump without even thinking about it, and to change those habits, it going to cause -- is it not going to cause some kind of consternation?

Prof. Asit Biswas - President - Third World Centre for Water Management

That is very true. And one of the thing that we have to do, is to look at very seriously at water pricing.

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

That's going to be one of the main things.

Prof. Asit Biswas - President - Third World Centre for Water Management

There is no other way. You look at one of the rainiest place in the world, and all of us, all of the Indians, at lease here, would have known about Cherrapunji, probably the rainiest town in the world.

Cherrapunji now has a water problem in the summer months. That is the sad part. It's not the lack of water that is creating the problem, in fact, they are in the monsoon months, they are drowning in water, but the management is so bad, the rainiest place in the world, cannot even provide water in the summer months.

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

Now let me broaden the discussion a little bit because we've been talking about India here, but this is something that is worldwide.

We are here in India, and you know the situation well here. But we can't restrict our lose-lose scenarios just in India. And Nestle has this enormous experience across the world on water mismanagement and water good management.

Perhaps, if you don't mind, I want to quote from Peter's blog. He has a blog, you know, a water blog. And you say, "One liter of water, it takes to produce one calorie of food."

Now I never thought about that, but just thinking about that, one kilo of rice requires 3,500 liters of water, 1 kilo of beef, 15,000, and one ordinary cotton T-shirt, 2,000.

How if our demand for food is going to be as you predicted, increased by 50% over the next years. How are we ever going to manage this?

Peter Brabeck-Letmathe - Chairman - Nestle S.A.

Well that's a big question. I mean first, if you look at the water situation on global, you have to get first, effects, on the table. One effect is that the water supply is a fixed supply. It is not a variably supply. So for human consumption, we have 4,200 cubic kilometer of water a day level whether it be 2 billion of people, or whether we are 10 billion of people, it's the same amount of water which is available. That's the first fact which is completely forgotten.

Because as long as we are 2 billion, nobody cared about it because it wasn't an issue. But now that the we are 7 billion, we are already using today, 4,600 cubic kilometer which means we're already using 10% more today than what is sustainable in the long term. First effect, okay?

So based on this, I would say, if I come to the food security, energy and water next is, first statement that I make is, we will run out of water long, but very long before we are running out of oil or of gas.

We have 120 years of proven oil reserves, we have 240 years of proven gas reserves as of today, and we are finding energy all the time, more and more, we have 550 years of coal, so we are not running out of energy now, but we are running out of water just now.

This has to (inaudible) into the policy making and into the decision making because what we have been doing over the last couple of years, is just the contrary. Bio fuel being the best example.

You need 4,600 liters of water to produce 1 liter of bio ethanol, you need 9,100 liter of water to produce 1 liter of bio diesel.

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

Good heavens.

Peter Brabeck-Letmathe - Chairman - Nestle S.A.

Don't tell me that this is not crazy. And if water would have only a little value, a little value, they wouldn't make this thing. So that's the first thing if you look at water.

Now, we're getting to the other pictures. 70% today is used in agriculture, 20% in energy, 10% in household, comes a big issue first of all, water is a human right. Yes, it is a human right, I'm the first one to say it's a human right, and we should all make government's responsible to assume this human right.

This human right, there was a resolution which just came out recently, it has now defined what we are talking about. And we are talking about the 5 liters of water that everyone of us needs for hydration, and the 20 liters of water that we all need for a minimum hygiene. That's the human right as expressed in the UN resolution.

Now, ladies and gentlemen, that makes exactly 1.5% of total water usage for human consumption. That's a human right. But the 98.5% of the water which goes into the toilets and which goes into the golf courses in swimming courts, I don't think that this is human right. And as long as we don't give a value to this water, we are not going to use this water in an efficient manner.

And that's exactly what is happening. Whether it's an energy where you're rightly pointing out Naina that every measure of energy cost us every year, more water, more water, more water, and they got all time to produce 1 liter of oil, you needed 1 deciliter of water. In modern technologies for oil production, you need four to five times as much water if you really produce an oil. So we have an enormous additional demand on the energy side.

Similarly on the food side, agricultural productivity has come down to such an extreme, the demographic growth is faster than agricultural productivity, and therefore we need more and more water for every calorie that we are producing.

So we have a problem of water productivity which is enormous, and it doesn't matter where it is, it's in agriculture, its in energy, it is in households as it was pointed out.

It is not understandable that Phnom Penh, most of us know a little bit the situation of Phnom Penh, and of Cambodia, that in these countries, they are able to have a household supplied with a loss of less than 5%.

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

That's very little.

Peter Brabeck-Letmathe - Chairman - Nestle S.A.

Less than 5%. Where in London, they have 35%, on average with 40%. And Phnom Penh be able to do it. So it's not a question what to do. We know what to do, we know what to do in agriculture, if we have the productivity report, the productivity of Israel and the rest of the world, we would not be talking about the agriculture program at all.

We know that today, every plant received 2.5 times more water than it really needs. If we try to multiply with the water needs, we would have the problem solved.

We are throwing away, and losing about 40% of all food that is being produced. This corresponds to 1,500 cubic kilometer of water. We lose it because in the emerging market, we don't have the infrastructure to bring the (inaudible) and we use it in the developed countries because we buy these stuff and throw it away because we just don't use it.

I mean ways how to manage and how to get the grip on it, we know. The problem is, we mismanage.

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

So let's assume that we mismanage on one side, that our governance of water is not so good, and third, that we do know some of the ways because it's been done to do it. So what's the obstacle? Why doesn't it happen? And where do we start to overcome that obstacle?

Peter Brabeck-Letmathe - Chairman - Nestle S.A.

It was an India Minister who that in public so I can repeat it here. It was in (inaudible) when he talked about the water situation. And he said, "Mr. Brabeck, you are right. But you do not understand. Anybody who, in India tackled the problem issue of water in public commits political suicide."

And I was first surprised, but the more I thought about it, I think this is perhaps one of the biggest issue that we have.

It is such a highly loaded emotional (inaudible). If I go around, I talk at universities, and talk about water, rest assured, I will have a big crowd of protesters. Not even knowing what I'm going to say, but the fact that the chairman on a public company takes the liberty to talk about the issue is already too much for many people.

So highly emotional is it. Now you cannot manage with emotion. You can manage with information, that's what you need, but take the emotion away.

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

So you need to break the silence, taboo on just debating it, and discussion it first.

Peter Brabeck-Letmathe - Chairman - Nestle S.A.

Well first, you get the effect and I say again, yes, 1.5% of the water that is being used is a human right. Now, put this apart, let's settle this one, which I think is a primary responsibility of any government, okay, to do, take this away, we have 98.5% of the water which is not the human right, and which should be analyzed in a factual manner and found solutions.

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

This is both encouraging and discouraging. Encouraging that we know some of the things we need to do, discouraging that despite that we know them, we don't do them.

So I'd like to start to open up to everyone here. So think of the questions that you want to ask as before. And I'd also like to call on Colin Chartres, Executive Director of the International Water Management Institute.

Colin, where are you sitting? Over here. We get a microphone to you.

QUESTION AND ANSWER

Colin Chartres - Executive Director - International Water Management Institute

Thank you. I think the panel has really left very little to be said. They put things so brilliantly in place. And I think what I would like to say is that we can look at two water future sitting here today.

One is the water future that the water resources group 2030 look for India which showed demand out reaching supply by 50% by 2030, and all these problems alluded to previously such as squabbles over water, where it goes, how do you use it and so on. Or you can look at a future whereby we throw out the business as usual paradigm and we look at a near paradigm which involves all these issues of a much better governance, and much better, or better institutions, better governance, better policy.

And I can give you two examples about the way we could go. And one has already happened. The first one is really, I think bringing the role of the private sectors into the focus on terms of agriculture and food and water, and that is really looking at how we can build on this concept of developing market and value chains which link small holders and medium scope farmers to markets, and we can use some of the models of Nestle and other companies who are already using in which

information can flow down that chain to the farmer, and again, we can boost that with modernized CT technologies, and in that way, everyone is going to benefit.

It really is an example of creating shared value. And the other thing I'd point out is, we can't expect poor farmers to become totally sustainable when they have no money to operate on. They need to get more money to really sort of put in place more sustainable practices.

So that really links the private sector into agricultural water use and would change the paradigm, would make us far more productive in terms of water use the future.

And this is a big issue, making more crop a drop, making us far more productive. The other one is a policy example which does come from India, and this is the (inaudible) which some of the people in the room would know about which started in (inaudible) in which the only way we could see to stop this excessive waste of electricity and water was to separate the power supply from the pumps to that going to the villages.

In that way, the power which was subsidized could be turned off to the water pumps for 16 or so hours a day, just leaving the farmers about eight hours to pump.

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

And is that acceptable?

Colin Chartres - Executive Director - International Water Management Institute

It was applied, and it was successful in the sense that the decline in water take was stopped, or slowed down remarkably. Agriculture productivity hasn't suffered one iota, and the cost to providing subsidized electricity, the greenhouse cost et cetera, has reduced dramatically.

That scheme is now being rolled out through a large number of other Indian states. So those are the two examples of the way we can go.

We can either go with business as usual, or we can start to be much clever, and we can put in place better policies, the pricing and all these issues, and a better management and information flow, which are going to be needed.

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

Thank you very much, Colin. And I would add to that for the panel, just a question of timing. These are some examples that we heard that are being rolled out. Do we have the time to roll them out at the same pace if what you're saying by 2050, a 50% increase need in food, is going to be there. Are we rolling things out fast enough? I would add. We have some other questions, so let's get, behind you there, there's a gentleman, and over at the back over there, we'll take those two first. Thank you.

Please introduce yourself.

Unidentified Audience Member

My name is (inaudible). I'm a small company in (inaudible), to exactly address the agriculture water. I think so far what probably experts have done is describe the problem at the best, (inaudible) have noted the worse.

I think what do you do is the question. I think we can't say that we need to tax the farmers. Do we really, if you ask to price the farmers, are you really going to address water issues? I think the [cracks] of the water issue in this country is 90% of the water is consumed in the agriculture. Half the 90%, 70% is for single crop, rice.

If you could have, there are number of technologies, metrics available to reduce at least 30% of the water without compromising the production. That's what exactly, I'm doing it with, demonstrated, and that's what my company does, small company.

Then sugar cane. The next sugar cane, the 12% of the agriculture water. You could at least reduce 35% , still produce more.

What I'm telling is that while the government is spending billions of dollars on waste construction and how can we ask the farmers to pay? For example, the 12 plants, Dr. Biswas, they are going to spend 341,000 (inaudible), what this means, is India is going to spend a billion dollars a month until 2017 on constructing projects where there is no water.

Then we are asking the 25 million [well] farmers who dug the well, who is doing it, stop the power to them that producing food grains to this county. It's not fair, the governments have stumbled. Maybe we should bring the Cambodians to get rid of it.

Just a final -- finally is that I think our policy prescriptions are to be socially just, technologically practical, policy wise, rather than what are the prescriptions are going to be much more painful than the solution itself. Can you tax the farmers for water, can we pay for --

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

They're not asking -- we have to price water accordingly. Let's take a few more though. We have right there, right in the center over here.

Unidentified Audience Member

I'm Dr. (inaudible). I represent civil society called Save the Children. And I come from the sector of health and nutrition. Obviously, when we talk water, and we understand that it's such a cross cutting influencing practically every aspect of human rights across the board, aspect that probably needs a little clarity is, from the health and nutrition sector, at this point where we clearly look at water and sanitation as its causality link, there have been discussions that have started globally, regionally, and nationally, on what is it what we would do in the post 2015 arena.

And we are aware of what happened in the Rio plus 20 sector discussions, we are aware of the post [MPG] which is the MPG group discussion, we are aware of the sustainable development taskforces. Is water discussions also looking at this convergence into sectors of health and nutrition, and then probably look at monitoring indicators that could appear to be understandable across the board.

The water experts understand a certain group of indicators, that health talks of something else, and nutrition talks of something else. So is there a discussion which could then benefit the post 2015 discussion?

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

And look at the indicators across all of those fields. Excellent. And we have a question here, and then at the back. Go ahead sir.

Simon Holland - *Barefoot Lightning*

[Simon Holland] from [Barefoot] Lightning. I think the issue here in India, specially when you look at agriculture is one that you can't switch the water off, so you have to look at how can we manage it, how can we change the thought processes or the philosophy in the farms.

And that's actually something that's quite possible to do, but it requires a lot of knowledge transfer. And the point is actually, if you just put more and more water on the field, it does not lead to a better yield, it actually can significantly reduce the field in agricultural production.

And what you have to do is be able to communicate things like you put more water, you're going to leech the fertilizers, you put more water, you're going to salinate the soil. Even there are stages in the crop development where waters stress with either lengthen or shorten the crop development, and sometimes, you want that crop development stage to longer, you want it to be shorted.

So there's a level of knowledge, and a level of management of the water which actually requires tools to help people know what to do, when to do it. And again, we've got the tools there now, the mobile tool, perfect for getting knowledge out to a very, very, very large audience for this.

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

In the last session, if you remember, we talked as a baseline, is information and education. There's another baseline here.

Simon Holland - *Barefoot Lightning*

Yes. And even there is one final thing we need to do. We need to do some local measurement as well. If you go into the Himalayas in the hills, as you come up one side of a mountain a cloud releases its rain. As it comes down the other side of the mountain, there's a rain shadow, just like a [solar] shadow. Even the heat, the temperature on those different areas is different.

So it requires a more micro oriented view towards actually the climatic day to rather than a forecast at a district level. And, again, we can get that information. We just have to figure out how to make a channel for it to flow.

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

Thank you very much. We have a question at the back.

Unidentified Audience Member

I am (inaudible), from University of Delhi, representing microbiology. I do agree that rocket technology is not required for water. India is well sufficient for it, but my observations in many of the meetings where we discuss like one like this, I think so, it is the most important point is the right implementation of the teams which we make.

On the papers, there are thousands of rules and regulations which are managed by government, private organizations, big industries, NGOs, however, when it comes to practice, it is always zero. Everybody thinks of themselves. Unless otherwise we are not honest enough to implement them, meetings like this doesn't [build] much. Therefore, it is very important for all of us to think how India or the world manages water.

The second important point is, the water business. The drinking water is sold at a very high cost. It is for urban people, even you have [basically] water, you have this water and that water, but a common man cant afford it. First think of them and then later on. Then only a water policy will work. Thank you very much.

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

Thank you. I think the right implementation is a little bit -- you said it very clearly, the question that I had before. We know a lot, we want to get the information out, we have tools, how do we get them between the knowing and the doing right down to making it across in a large area done? So the right implementation, what does it take?

Other question up here. Thank you very much. Take up here.

Unidentified Audience Member

(Inaudible) Third World Center for Water Management. The discussion to the role of business and development, I think there is a lot that industries are doing. But the industries themselves and all the areas on which they have an impact, one of them as industries, that they can become very efficient.

As it was mentioned before, as it is a case of Nestle in factories, this is case of all of Singapore which has a very large industrial sector where they are 100% efficient. And then we have companies like Nestle and like other companies where they bring all these knowledge as it has been said, the need to transfer the knowledge in terms of extension work which the government should be doing anyway.

So we have [INI], we have the industries, which like Nestle or like [HNM]. So they got to the field, and they talk to the farmer because it is in their own interest to have a more efficient system. But yes, it is on their own interest, but at the same time, they are transferring the knowledge and transferring the experiences. And this is staying with the farmers.

So when we talk on the role of business in development, I think is enormous in terms of water. It's not only in terms of water, but in terms of all the fertilizer, pesticides, you need in the field. And in that sense, they industry, farm industries are doing a lot but some could do much more and then they extend the benefits.

Maria Livanos Cattau - Former Secretary General, ICC and Former Managing Director, WEF

Thank you very much. It was not only the water knowledge, but the entire, and all the other things that goes on with it.

Yes, [Nancy]?

Unidentified Audience Member

Thank you very much, Maria. I wanted to express a little bit of frustration. I'm not a water expert, but I'm an economist, and I've worked for years on the problem of pricing scarce resources. So I want to go back to the very beginning of this session when Professor Biswas said, pricing, then I was happy and when Peter said, pricing, then I was happy.

And what is frustrating to me, and I don't know India very well, is that the real problem with implementation to me has two parts. One is, the NGOs and I appeal to Rohini here, and others [OXFAM] would do well to really speak to the inequities, associated with the lack of pricing, that the poor, when you have a queue, when you have any kind of rationing, the poor will be at the back of the line.

And I'm sure it's true for farmers too. I am sure the smaller poor farmers are not getting as much water as the bigger, richer farmers. So I think this is an area where the business sector has to, it's the NGOs that need to take leadership because it's about the politics.

Then the second issue is on implementation. It's also about the politics. How do you adjust, what is the mechanism over what period of time to help those who do use a lot of water, and who may not have the resources to use it.

Maria Livanos Cattau - Former Secretary General, ICC and Former Managing Director, WEF

Or have the habit of how you work in a less water intensive environment.

Unidentified Audience Member

Exactly. But once you start charging them, just as Professor Biswas said about the poor, they pay something in Phnom Penh. So the implementation problem, the state capability problem has to do with the politics of making that adjustment slowly.

This is true for water, for energy, the gasoline issue, the fossil fuel issue. And to me, if we overwhelm ourselves with many micro solutions, sector by sector, it gets discouraging.

I think we have to give a sense --

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

So you're asking for a more broad governance.

Unidentified Audience Member

Right. The NGOs put a priority on the equity implications, and that the policy leaders put a priority on thinking through how do you help people over time to pay more and more for this scarce resource, people who are poor.

Do you subsidize? Do you cross subsidize? Do you make cash transfers? What do you do?

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

Excellent. Peter, I think afterwards, I'll turn to you because a lot of the water initiatives bring together the public policy, the NGOs and the business. And getting all of them into let's say a direction, a common approach is probably where we need to go.

All right. Let's see who has not had a change to speak yet? Gentleman over here and over there. And then we'll go back to our panel. And two over here and one over there. And then we'll see what time we have.

Unidentified Audience Member

Good afternoon, everybody, my name is (inaudible). I just wanted to highlight that, or rather ask these people in the panel that I just read a case today where one of the (inaudible) was involved in something about water -- the pricing of the water. So somehow it happened in a particular time point -- recent time point in India, that when the farm (inaudible) had to purchase water for its own use.

So what they did was, they [dug] some [sands], and they bought the whole lot of the land which was very rich in the water table. And there, the land was sold at the cost of the land, water was not priced. So these are the types of things that will need to be looked [into]. Yes, thanks.

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

Very good. Very interesting example. We said behind there, we'll try to get you in. Bring up the microphone. I'm sorry, there first, and then we bring up here. Thank you.

Ashish Sachdeva - Founder - Green Dream Foundation

Hi, everyone, my name is Ashish, and I work for Green Dream foundation. I happen to be the founder there. I just had a quick question. I'm, again, not a water expert, but you've talked a lot -- discuss a lot of issues about water crisis, distress. But when I was putting down the points, everything was falling down the three big categories, that the primary reasons happen to be the power, [poverty] or inequality.

And then when I look at them together, it looks like it's like a chain reaction happening, one thing is supporting the other end of the day. So I would like to know panels' thought on where exactly do we start. That's what I want to know.

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

The intervention point.

Unidentified Audience Member

(Inaudible) Foundation for Sustainable Agriculture. The subject I know is agriculture. And I have two comments on Professor Biswas and Peter. And one is that nation-wide policy about reliability of water for agriculture is not uniform. Not in every state, the water is free, not in every state the electricity is free. And the state I come from West Bengal, has no district out of 20 that receives less than 1200 millimeters rainfall, yet the water or electricity is not free.

So even if people want to have dug well, or a bore well, they have to take permission from 11 different agencies, and the electricity, they still have to pay for, in absence of that, most people use a diesel pump which cost much more to irrigate an acre of land than in Punjab or in Gujrat.

The second point is about (inaudible) 3,500 liters of water to produce 1 kilogram of rice, the fact is that half of India's rice production in rain fed. So it is something that you get from above, and you use it for water, and you know there's a word called flooded rice. And the flooded rice came because those areas were perpetually getting flooded. So only crop that grew under a flooded condition was rice.

What happened is that Punjab and other states also switched over to growing rice using precious water of irrigation. So these two points.

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

Very good. You know, we're running out of time. And I don't want to have any difficulty with the next panel so that they have their time. So you will forgive me if I only take one more.

We'll take that gentleman right there.

Unidentified Audience Member

My name is (inaudible) foundation. While we sit here in the city of Delhi, and as far as water is concerned, life line of Delhi (inaudible). And I remember in the year 2000 India Habitat Center, Joseph Allen Stein who made the center, he says, I declassify (inaudible) from a river to a sewer.

And today, when you look at it, 12 years down the line, it's full of generating methane H₂S. It also carries arsenic pesticides, a lot of cancer causing things. And the stuff also percolates into the groundwater.

So while we promise or we look at drinking water out of a tap in Delhi and the water source itself, is cancer getting and full of these substances -- it's a sewer. I think we need to see this consideration how this works.

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

This is the bad news. Very, very short. Yes? Go ahead.

Simon Maddrell - Director - Excellent Development

Simon Maddrell from Excellent Development. Just three very quick points. First, certainly in Africa, the poorest people in the world pay more for water than anybody else. As the professor said, there are very few places in the world where there is not enough water for people. The issue is about the conservation of water.

People talk very much about management, but actually the answer to the problems of water for the poorest people of the world is actually about the conservation of rainwater and not about pumping water from groundwater, but to actually restore and replenish groundwater through the conservation of rain water.

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

And, in fact, there's been quite a few articles recently on the age old way in which rain water is harvested and used. Look, we have a lot of issues that were raised. And I'm not going to go through them all, but I leave them to you to look at.

Perhaps though, because we'll take the next 10 minutes for each of you to say what you would like and leave us with some thoughts. But I do think that there's some common issues that were raised here which is really on the role of the different players that is the role of NGOs, the role of how important is policy here, how important is the government.

Even with the best of knowledge among industry, what else do you need in order to make this really happen because if it's done (inaudible), at least from the audience, we heard, that maybe that isn't sufficient. So maybe you can give some thoughts.

How do we change the thought process, how do we understand the inequity, the feeling of inequity of inequality, of inequity of injustice that can happen when you do price water? How do you get over by explaining that actually, the non-pricing is the inequity to the poor, not the pricing.

So these are some of the ideas that were brought up in some of the questions. And I will turn to all of you, and perhaps, professor, you could start off with one or two answers.

Prof. Asit Biswas - President - Third World Centre for Water Management

I hate to disagree with you. I think if India has to solve its water problem, you have to hold the feet of the politicians and the bureaucrats to fire.

And the only way you can do, or at least one of the most important way you can do, is to take the help of the media.

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

To take the?

Prof. Asit Biswas - President - Third World Centre for Water Management

Help of the media.

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

Help of the media.

Prof. Asit Biswas - President - Third World Centre for Water Management

Yes. I think the role of media is very much neglected in the water issue. If Indian Express, or Times of India, writes consistently about the bad management, the politicians will take note.

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

Now there are many media here, you've heard about your next big series.

Prof. Asit Biswas - President - Third World Centre for Water Management

Let me tell you, there are some people who also raised the (inaudible), the important thing is how do we develop the political will?

In India or China, or all over the world, except in Singapore, the politicians get interested in water only when there is flood or drought. If there is no flood, no drought, most of the time, water disappears from the political agenda completely, until the next catastrophic event.

How do we keep it? The only person who consistently, only prime minister in the world I know who consistently thought about water is Lee Kuan Yew of Singapore. And look what he did during his time. Absolutely remarkable because he was consistently interested, we talked about, somebody talked about the water quality in (inaudible), opinion piece by me, I'm saying blankly, India is trying to clean up (inaudible).

Supreme court on the 10th of October, give a ruling, asking government of India, (inaudible), and Delhi, and the civic people, and authorities in Delhi, to say how much money they have spent on the cleaning of (inaudible), and having spent so much money, why is (inaudible) dirtier than ever?

Why will the government of India has already said it has been 1,500 [growers] in cleaning up (inaudible), and yet it is dirtier than ever. Where did that money go? [Ganges] action plan, government of India is planning to spend \$1.6 billion to clean up to Ganges. Ganges action plan in the late 80s and the early 90 we spent over 500 growers. And Ganges is more polluted than ever.

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

But what you're saying professor --

Prof. Asit Biswas - President - Third World Centre for Water Management

What I'm saying bluntly right now, until and unless you do the right planning and implement them, in case of both Yamuna and Ganges, \$1.6 billion will be spent, 1 billion loan from world bank, but with 99.99% certainly, I can assure you that Ganges will be more polluted in 15 years from today, than it is now, having spent all --

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

So that means that citizens have to hold accountable --

Prof. Asit Biswas - President - Third World Centre for Water Management

Exactly.

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

for what they're doing.

Prof. Asit Biswas - President - Third World Centre for Water Management

Yes.

Naina Lal Kidwai - Head of Water Mission - FICCI

I think we would all die of despair if we were to end on this note of we're going to be spending billions of dollars to no avail. And I think the answer has to lie, exactly as you said, Maria, in accountability, but the accountability will not come unless civil society and we, as people begin to hold that particular policy accountable at the end of the day.

And there have been to my mind, some success stories even in the Ganges. I think some of the work that WWF has done, working with local tanneries for example, in a small belt, it's a very small area of the Ganges to get these tanneries either to move off, or to adopt best practice in terms of affluent control.

It's a very slow process, it requires a huge amount of communication, it cannot, and is not being done by government alone, it requires civil society of a huge order, it requires industry, but it is these steps of partnership and communication that are important.

And on the aspect of communication, I know how hard it is to get media, to begin to talk about boring subjects like energy and environment. We really do need to have media step out to the plate.

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

Yes, but when you run out of water, that's not boring.

Naina Lal Kidwai - Head of Water Mission - FICCI

Yes, but for some reason, it just doesn't get covered. And it has to go beyond the sensationalizing of the numbers to be actual to-dos.

And I think those answers are sometimes quite simple, and it isn't just about turn off the taps when you brush your teeth, it's about children, getting children to understand it. In one of our states in (inaudible), they've adopted the River Dolphin Campaign, so it has emotional appeal, keep your water clean so that your state dolphin is preserved. And the way it's communicated, and the emotional tag of that communication also needs to be handled.

So we do have a deficit right now in terms of the communication as professor Biswas said, and to make it more meaningful.

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

Let me turn to you, Rohini, because you're also working in the NGO area as well. So how do we get all of the players on line here?

Rohini Nilekani - Chairperson and Founder - Arghyam

Yes. I think the water is rising to the center of the debate in India, whether it's in politics or in economics.

And I personally have been saying that we need to become, using the precautionary principle, we have to be a low water society and a low water economy because we do know the numbers, per capita, our fresh water resources are coming down. And we are going to have to use our water more judiciously.

A lot of people have been talking about pricing, as though it's the first and only thing on the table. Pricing is just one of the mechanisms that we need to look at for a more equitable and judicious use of water.

But if you look at it in India, so many, 80 million small farmer households that are using water, two-thirds of our farmers are in that area farmers, so it's not irrigation and farming is the first issue that comes to them. They don't even have irrigation there.

But let me say that if you're looking at a low water economy, everyone will have, every sector will have to do its part.

Today's topic is the role of business and development. I think too much of the business sectors, small companies, big companies, energy companies, agricultural companies, have been getting away with impunity with the way they are wasting water, and polluting water in this country.

I think we need to bring the torch light back on what's happening on that. I think on the domestic water sector, specially urban as I discussed before, we have to make sure that source to sink, we use water much better management much better, and it's not impossible to do.

When we look at agriculture, I think many people have already said, we have to look at much more crop per drop. And I think business community can help farmers very significantly by doing that, by drinking knowledge, best practices to farmers to see how we can get much more crop per drop.

So an industry has to use as little water as possible per unit of production. I think they are moving there just because the supply chains. If they don't do that, there are going to be so many conflicts in India. I don't think business has much choice, and we are saying many good practices.

Keep doing that, keep helping the next [string] of business to do the same. The big companies, can do it, the smaller companies need help. So on the domestic water side, use less water, use it more efficiently, in agriculture, pull out all the stocks to get more crop per drop, and industry takes a bulk of the responsibility throughout the supply chain to use a precautionary principle, use as little water as possible.

And I think we can ensure more equity and efficiency in India because as Naina said, it's not that we don't have water, it's just a matter of how we manage it better, and how we put equity principles first.

We have to think of the poor, and the disadvantage, who gets to make decisions about where the water goes. I think that's very important.

Naina Lal Kidwai - Head of Water Mission - FICCI

In fact, Maria, if I can just come in here.

Maria Livanos Cattau - Former Secretary General, ICC and Former Managing Director, WEF

Yes, go ahead.

Naina Lal Kidwai - Head of Water Mission - FICCI

There's an initiative which FICCI has started called A Million Farmers. And the purpose of this is to help farmers group into bunches of 5,000 people, to help them avail of [drip] irrigation subsidies, but also to be able to buy drip irrigation equipment because when they buy as a group of 5,000, they end up getting discounts of 40%, 50%.

And there is room of industry therefore to help. And in this case, it is companies that supply drip irrigation equipment that help the farmers come together into these sort of forums as well.

So it's about partnership, and working together. Otherwise, we just won't get where we need to.

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

Peter, I'll leave the closing words with you after a very large, a very complex discussion. Perhaps you can help up guide some points to retain in our minds.

Peter Brabeck-Letmathe - Chairman - Nestle S.A.

Let me perhaps start with a question which comes from the Internet here which I just have in front of me. Is it possible for a corporation whose objective is to deliver profit to shareholders to be compassionate, fair, equitable and sustainable with all involved in the supply chain?

And this question is resounding wherever I go. And therefore I thought I would bring it up. And only say is, absolutely, yes. For a corporation whose objective is to deliver profit to shareholders and to deliver value to society.

And that's creating shared value. So I think the question brings us back where we started this morning. Now if I listen the conversation we had now, I think one issue that comes through very strongly is this inequity question which was raised and you said, it should be equity principle based, frankly speaking.

And again, I would agree. From our work that we have been doing, I'm speaking now, I'm talking about the water resource group 2030 which is disruptive public private partnership where we have NGOs, we have private enterprise, and of course governments involved, we have seen that this inequity issue can be solved.

I give you the example, a recent example which we just have implemented two years ago in South Africa. In South Africa as you can imagine, again, the question about human rights, was very high.

Government decided finally that every family will get 6,000 liters of water per month free of charge which corresponds to 25 liters per person for eight persons for a family.

Any water that is being used afterwards has a normal market price. Chile for example, who is the other country who has introduced in 2002, they have called the system which is called Subsidio, and there, you can get a water subsidy, but only for the more than 25%, and less than 75% of the water that you are using.

And with a maximum of 20 cubic meter of water. 702,000 households are receiving the subsidies. So we find solutions to this question about equity and inequity for those who are mostly affected on the human rights side.

The question on the farmer side is a little bit different because there, this question is not heard because almost no country in the world are the farmer being anything for the water they receive. They (inaudible).

A lot of this has to do of course with again, a highly political sensitive issue. In most countries, land ride and water ride is the same. There are very few countries which have separated land rides from water ride. Alberta being one, for example.

And this is almost the first step if you really want to give value to the water in the agricultural side or the energy side because as long as you have this land ride, I have so much acres of land, whether it's agriculture, or energy, I can use water that is here.

And this is politically of course, not very easy as we all can understand. Then there is another aspect which sometimes is forgotten. We all are accustomed to the economy of scale. The more we buy, the cheaper it becomes.

While in water, this economy of scale does not work. And that's exactly the system we have. It is the more we buy, the higher should be the price, it's just the reverse of the normal economy of scale. Again, you don't find this in university book in no economy book, but that's reality, and I think this will become the reality with all natural resources in the future.

Those who are using it more productively, should have a better price, and not the other way around. Not those who are wasting the money, they then afterwards, pay less because they are using more.

See there's the fundamental rethinking which is necessary on our side. Now on the implementation side, from my experience as I said, when we started to talk about this, there was relatively soon coalition of people interested into this subject, coming from the private end of the sector, but also of course NGOs, very importantly, and also some governments.

And we created, this water resource group which is now (inaudible) inside of the world bank where I have the honor to be the chairman of this front.

Now we have for the implementation, we have some very special rules. The first rule is, that is has to be driven by government. I do not believe, neither private enterprise, NGO, not a partnership should supplement the final responsibility of government in an issue like water. This can only be the final responsibility on a government level. We can help, we can support, but we cannot be finally responsible for that. That's the first thing.

Therefore, it has to be government driven. When I say government, I don't accept the workers. Any government where it is not either the prime minister, or the president of the country. Why? Because in all governments I have seen up to now, the knowledge about water is spread out to a number of ministers of agencies, of things like this, I mean in normal country, you have between 24, the different ministers and agencies being involved, everybody is charged of a little bit of the whole thing. Nobody is charged of it totally.

So the second demand we have, we want to have, one, appointed person from the government which assures the coordination between all the different things. Otherwise, we cannot work on it.

The third demand I have, we are not, although we are financing part of the efforts we do, we are not a development agencies. So I want that the government is involved, and pays the part of the work that we are doing because the same way like water, I believe only if we give the price in the value, then your work is going to be appreciated.

And out of this, we have seen that when we get this [active] partnership where we are using the local entrepreneurs, the local NGOs, and the local government can we start to manage a project which is always based upon first thing a factual analysis of the situation. And that will show you the next fundamental thing.

Water is local, very, very local. And what was being mentioned is absolutely right, in one part of the country there are rise production in the water, it can be absolutely productive, whereas in the next part, it can be absolutely unproductive.

You have to go down to the local rules in order to decide what is right and what is wrong. And there is not one solution that can be said, this can be implemented everywhere.

So what we are doing, we are establishing a catalogue of every one of the solutions defined, in the specific environment, and the public based on the internet, and everybody in the world can see how from one [port] to the other, we have this knowledge catalogue, which is openly available to everybody.

So that's about this disruptive public-private partnership that we have established and which is working now in seven countries and we have some relatively good results.

Maria Livanos Cattai - Former Secretary General, ICC and Former Managing Director, WEF

Good results. So ladies and gentlemen, we're not leaving this on the lose-lose line. We're leaving this very complicated discussion on a completely different plane. And I think this discussion has showed that this is not something that we just sit

and cry about, but we do need the media, and the responsibility of government and it's up to us citizens to hold government responsible for their actions while industry and agricultural areas and NGOs do their work as well. This is not a lose-lose situation in the end.

I ask you please, all to stay in your seats because we're going to go straight into the other session, the next session, but in the mean time, to give a very big round of applause for this excellent panel.