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INTERACTION



JOHN JOSEPH

BACKFLOW PREVENTION



RAYMOND PARHAM

THE 'PIPED' MUSIC

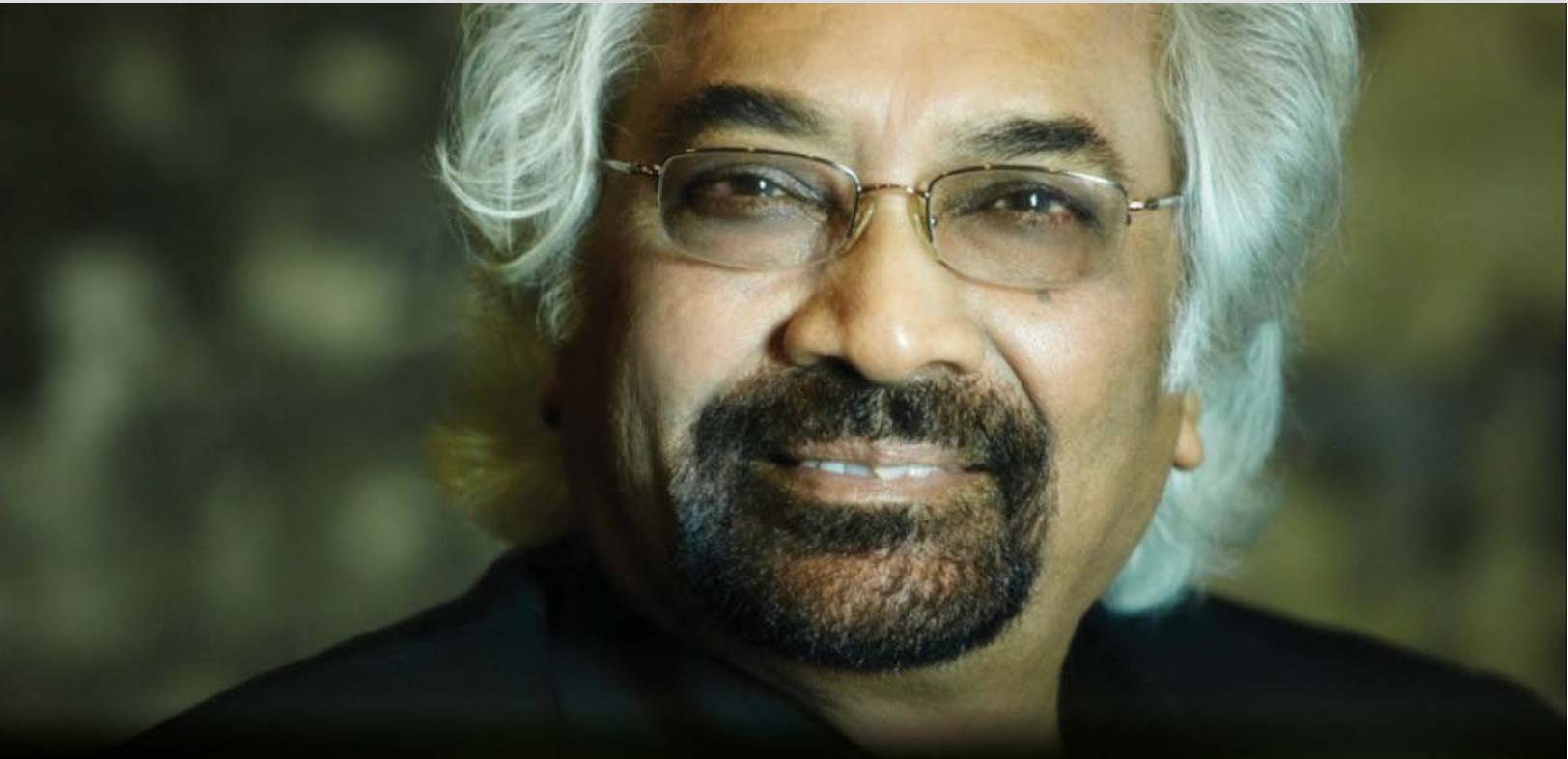


SANDEEP ENGINEER

Let the
Plumber
become an
Agent of Change
in India



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A close-up portrait of Dr. Sam Pitroda, an elderly man with white hair, a beard, and glasses, looking directly at the camera with a slight smile. He is wearing a dark shirt.

Let the **Plumber** become an **Agent of Change** in India

Currently, Advisor to the Prime Minister of India on Public Information Infrastructure and Innovations, Dr. Sam Pitroda had delivered a landmark in 1980s in the form of telecom revolution in India. He is also Chairman of National Innovation Council. Dr. Pitroda is proposing a series of recommendations to the government on various comprehensive development plans and policies in the welfare of country.

He was born in Orissa, though his parents hailed from Gujarat. He obtained his master's degree in Physics and Electronics from MS University in Vadodara, later in Electrical Engineering from Illinois Institute of Engineering in Chicago. In early 70s, he was involved in cutting-edge technology research in telecommunications. He has obtained close to 100 worldwide patents related to mobile phone based transaction technology.

At the behest of the then Prime Minister Smt. Indira Gandhi in 1984, he returned to India and renounced his US citizenship to work with the Indian Government. He then headed six National Technology Missions related to telecommunications, water, literacy, immunization, dairy and oilseeds, apart from shaping India's foreign and domestic telecommunications policies. He is also the founder and first Chairman of India's Telecom Commission.

For Dr. Sam Pitroda, a plumber is an 'agent of change' and not someone who just fixes the leaking pipes! While he says there is so much to call for in the country, he genuinely believes in people's movement — as the means for social change. He talks at length to the Publisher of *IPT*, Mr. Kamal Khokhani. Dr. Pitroda foresees enormous possibilities and tangible solutions to country's basic problems related to water and sanitation through inclusiveness of people and their actions. Here are the excerpts —

KK : As Former Chairman of Technology Mission on Water, you know that India has 2.4 per cent of world's total area; 16 per cent of population but the water availability is only 4 per cent! On top of it, we have a population growth, which makes things worse for gaining access to safe drinking water in India. How do you react to this situation?

SP : Problems related to water and sanitation have been around for quite some time, across the globe. In India, we have a shortage of power, roads, doctors and plumbers. So, the shortage of water is part of a larger problem of scarcity of resources.

This leads to three fundamental challenges – expansion, excellence and access. When we say **Expansion**, I mean expansion of infrastructure, education, health and other services. **Excellence** is essential, because everywhere quality is poor; our roads are poor; water quality is poor; our health services are poor. And the third aspect is **Access** – we must provide access to these services to the poorest of the poor including access to clean and safe drinking water. It should not be a luxury for the rich only.

In India, like in many other developing countries, the problems of the rich are solved first. I have come to observe in the last ten years that bottled water has grown to become a big business in our country. Rich people tell me that we have solved the problem of water and that now we buy clean water for ourselves. Let the government attend to it for the poor. The message I want to give is that we are not sensitive towards water and its preservation. For instance at conferences, I see bottles of water being served and dumped after people have used only half of it, wasting the rest. This bothers me. At my home, I have instructed my staff to never offer me water unless I ask for it, even if I have returned from work. In any case, don't ever give me a full glass of water, and even if you do, offer it as if it's a glass of Scotch Whisky!

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KK : As per international norms, per capita availability of less than 1700 m³ (cubic metre)

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is termed as 'water-stressed' condition. As against this, on the basis of 2011 Census, the per capita availability of water in India has gone to 1544 m³! What is your prognosis of this frightening scenario?

SP : As I said before, this is part of a larger problem not unique to water. We don't have enough per capita doctors, per capita income, per capita roads and per capita power, and so is the case with per capita water availability.

But to me, this is a western way of looking at things. I have faced similar questions, such as— 'India is poor because the number of telephones per hundred people is very low' And I replied – 'Are you rich because you have so many phones?' To me, the number of phones is not important in India – what is important is, the 'access to a phone'.

I think we should not fall into this trap of comparisons with the west on every aspect- if they use 30 gallons of water for a bath, we don't have to do the same. That's not the way to look at the problem. But the fact remains that we have a shortage of water and we have to address it. At the same time, I will not aspire to western standards and consider ourselves successful only if we meet those. We need to define our own standards and targets which make sense in our context and aspire to them.



National Innovation Council's first Report to the People being released by the Hon'ble PM Dr. Manmohan Singh & Dr. Sam Pitroda

KK : Why our governments have not bothered to address this basic issue of water?

SP : I would not say that our governments have not bothered. I would rather say they have not worked efficiently- not done a good job of addressing this issue and other basic issues such as health, water, sanitation, education.

The underlying message I'm trying to convey is that you cannot isolate water. You have to sweep out the garbage to have clean water. I remember a conversation with Mr. Vasant Sathe, Minister of Steel, Mines, Coal and Energy during the Prime

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Ministership of Shri Rajiv Gandhi. He asked me, 'Sam, my telephone doesn't work'. I said - 'Sir, the moment your garbage is cleared out, your phone will work' He asked again, 'What do you mean?' I explained, there is a direct connection between clearing out of garbage and the working of phones. We need to fix many things in chorus; we cannot address any single issue vertically in isolation and hope for success. Telecom in India succeeded - we were lucky. But that's an exception and not a norm. Therefore, the government needs to pay attention to water and sanitation as key areas. I think, water and sanitation are not getting the attention they deserve because they are not sexy. On the contrary, satellites, computers software, and industrial growth are sexy!

KK : As per a study by International Water Resource Group - IWRG, India's current demand of 700 billion m³ is expected to double at 1498 billion m³ by 2030. But the availability of water is not going to improve. In such a scenario, what should be the action plan for the government to meet this challenge in next 18 years?

SP : I am often invited to international fora to speak on water. A few years ago, I delivered the keynote address at a water conference in the Netherlands. My message was very clear —each country will have to adopt local solutions to address its water challenges. For what may be relevant in Sub-Saharan Africa may not be relevant in Cherrapunji and what makes sense in Cherrapunji may not make sense in the deserts of Rajasthan. Therefore, the problem of water cannot be internationalized. It is a local challenge and will need local solutions and commitment from local communities; who differ from region to region and country to country. Gujarat would have different solutions, and so would Rajasthan and Kerala. So, every community will have to take responsibility to solve its own problems. It is good to have national schemes for water but they will not succeed unless there is a local component as a key driver.

I believe, India has a huge water potential. Let's take the example of the Ganga. It has provided livelihood to millions of people for centuries. The other day, I was talking to a friend and

comparing the Ganga with China's Yellow River. China has to keep digging the Yellow River continuously so that water flows in it. In fact rulers were thrown out of power in China because they did not clean their river properly. On the contrary, no matter what we do, our Ganga flows. Rainwater harvesting and management of rivers is a major challenge in India. A few years ago cities like Mumbai and Surat flooded with water due to heavy rainfall. There was enough water but we failed to harness it. Our water tables are pretty low and going down further; at the same time, gallons of fresh rainwater goes to the sea, unutilized.

These are local challenges, which need local solutions. One does not need a national policy or global recognition to address them. We do not need to visit Italy or France to understand the problems and solutions of our local issues of water. Look at Dholavira in Kutch, Lal Quilla in New Delhi - our ancestors knew ways to manage water problems. Many years ago, I had gone with my friend Mani Shankar Iyer to visit his constituency, where water was a major challenge. We visited a 1000-year old temple, where a rainwater harvesting system was already in place, with channels adeptly reaching out to tanks and from tanks into the ground, for the recharge of groundwater. But I was shocked to see that the tanks were full of garbage. The problem with us is that we have either forgotten or not heeded to what our ancestors already knew so well. We want international agencies and governments to take care of our water problems. That's not the way to look at it.

In saying this, I am not saying that we do not need technologies. We do need satellite images; we need water treatment filters, iron and fluoride removal filters for removing impurities from water; and geo-hydrological surveys. And we used these technologies during the time of the Water Mission. In those days, our major problem was guinea worm disease (GWD). We had 31,000 villages affected with GWD. But 20 years later, we have zero villages with GWD - we tackled this problem with technology.

But problems and challenges related to water are often local problems with local solutions - that's what I want to reiterate.

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Mumbai floods (2007)

KK : National Water Mission has suggested balancing of water consumption amongst irrigation, domestic and industrial usage. But where almost 90 per cent usage is for irrigation, how can one balance the usage? How can one nationalise the water usage in irrigation?

SP : To do this, we need to educate our farmers on advanced farming techniques. We need to tell them water is not an infinite resource. We have to adopt best practices for irrigation systems, which consume less water - there is no alternative. Take the example of Israel, where with minimum land and water, they are doing wonders. Drip and vertical irrigation are some well known examples. We must understand that water is a precious resource and we can't afford to waste it. Slowly but steadily this mindset will balance the water usage pattern in the country.

KK : Is food security possible without water security? How can we address both these inter-linked issues, with a potential to damage our socio-economic fabric?

SP : Food and water security go hand in hand. Again as I mentioned before, we will have to advise our farmers to save water, adopt modern irrigation and farming technologies, change cropping patterns, and undertake a host of other measures

We need to tell people that poor sanitation is hazardous to health, and has an impact on our overall well-being. The government will do its work, but people also need to understand its consequences. The government builds toilets, yet if people do not use them, how can we hold government responsible for it?



so that we have sufficient water and food to provide security to millions of our people.

We have a history of traditional rainwater harvesting structures and 'localised' water management arrangements. One can look at our ancient buildings to see, how these traditional practices embodied pragmatic and utilitarian values. Even now in old homes of Ahmedabad city, there are *tankas* to harness rainwater. But over time, all these good practices are being forgotten. Now, we have started taking water for granted and that's the root cause of our problem.

KK : Water and sanitation are two areas, which are like shame for India. By a thumb rule, one-third of Indians don't have access to clean water and more than half, don't have access to safe sanitation! While we talked about water scenario, how do you react on sanitation scenario in the country?

SP : I am not an expert on sanitation but yes, water and sanitation are two basic areas, which are unfortunately not adequately addressed in our country. According to me, both are related to the mindset of people. We believe water is free and hence, think that there is no need for its conservation and management. People do not use sanitation facilities even though it is available at many places. It is a mindset which we need to change. We need to tell people that poor sanitation is hazardous to health, and has an impact on our overall well-being. The government will do its work, but people also need to understand its consequences. The government builds toilets, yet if people do not use them, how can we hold government responsible for it? Bringing awareness about improper sanitation habits to the people is necessary. Again, this requires bringing about behavioural changes in local communities about maintaining health and hygiene through proper sanitation.

But in a country like India, a plumber can do much more than just fixing pipes. According to me, a plumber should become an 'agent of change', Why can't our plumber talk to house-wives about the importance of water saving, rainwater harvesting or water borne diseases or even energy saving through better plumbing designs?



KK : As per a recent World Bank study, loss to the Indian economy, because of poor water and sanitation facility, is close to \$54 billion annually. Isn't it like a criminal negligence, not to address these issues?

SP : As I said before, while such calculations by international agencies are often based on numbers that may not make sense in the Indian context, the fact is poor water and sanitation facilities have economic implications and need to be addressed with serious efforts by the government and public. We need to take joint responsibility to minimize this loss to the economy.

KK : You are the person, who brought telecom revolution in the country by the concept of PCOs. Can you think of something which can bring sanitation revolution in the country?

SP : When I started working in the telecom sector in India, while Shri Rajiv Gandhi was the Prime Minister, people were citing figures of poor tele-density in the country- again benchmarking it to western standards. But to me rather than numbers, it was connectivity that was important. It was access to telephones, which was essential. We worked with that objective and fortunately, it worked. But it's not necessary that everything can work in the same manner. Telephones and toilets are two different things - but both are important in today's world. Unfortunately while the telecom success story is fascinating to everyone there is not enough focus on the need for proper toilets and sanitation. We need to ensure that proper sanitation is available to people and it will be the responsibility of local community to ensure that there is awareness of the importance of good hygiene and proper sanitary habits.

Telephones and toilets are two different things - but both are important in today's world. Unfortunately while the telecom success story is fascinating to everyone there is not enough focus on the need for proper toilets and sanitation.



KK : While it is said that India has more cell phones than toilets, as an Indian, what is your reaction?

SP : As I said earlier, sanitation is a mindset issue. Unless people are convinced of its importance, the scenario is not likely to change. People today are increasingly attracted to quick wins and showmanship, some of these fundamental issues therefore, are not getting adequate attention. What can be done? I am disheartened when I hear this statement, but there is very little one can do, unless it becomes a people's movement.

KK : Whether it is empowering through the Last Mile or supporting 500 million people at Bottom of the Pyramid, how will the issue related to water and sanitation get addressed? Because, it is one of the major issues facing both - Last Mile as well as Bottom of the Pyramid?



The Ganga

SP : The fundamental issue still remains the same: that public needs to change its mindset about such facilities. One should not expect the government to do everything for them. Why can't the sanitation facility be a people's movement? How much does it cost to build a toilet in a rural area? Why can't it be done with people's involvement? If ten people come together – one digs the pit; one carries the bricks; one does the masonry work and erects the toilet; do you think it is not possible? But unfortunately, we have developed a habit of expecting the government to do everything without shouldering our own responsibility.

Let me give an example. Sometime back, I visited a village with Mr. Jairam Ramesh, where the *Mukhia* (Village Headman) was prepared with an endless

list of what was not being done in the village. He began – 'we don't have a doctor; we don't have toilets; we don't have roads; and so on'. Perhaps, he had thought that as Advisor to Prime Minister, I would say, – 'Don't worry, I will go to Delhi and send everything.' Instead, I said bluntly – 'I am not here to give you everything on a silver platter. If your doctor has run away, why can't you find another one? Is there no other doctor in the village? If there is no toilet for women, can't you build a small toilet, yourself?' I told them – 'I am here to empower people. I am here to make people self-sufficient.' Because I firmly believe that unless people are self-sufficient, empowerment is difficult. So, whether it is a Last Mile or the Bottom of Pyramid, we are talking of a large number of people and unless they are empowered, it is very difficult to achieve anything. It is impossible to empower people, who have a passive mindset, and do not take responsibility for their own well being

Our builders, architects and town planners also need to take plumbing more seriously. This again boils down to the involvement of the local community, local domain experts, since after all, it is a local issue.



KK : How, according to you, the social innovations can be devised to this socio-economic problem of water and sanitation in the country?

SP : Social innovations are possible when domain experts from the field of water and sanitation work with local communities on evolving relevant

solutions for providing water and sanitation facilities to millions of our countrymen. Social innovation cannot come from the outside, it has to come from within – it has to be a people’s movement. In this context I would like to mention the initiative by Mrs. Nilekeni, to start a Water Portal (www.indiawaterportal.org). It is a great initiative and a lot of people are coming forward to contribute to this initiative. This is not an initiative by any government, and it demonstrates what people’s movement can do. I am sure, more and more such initiatives will create awareness amongst public at large about issues related to water conservation, rainwater harvesting etc.

I therefore believe that in order to reach out to millions of our people and have water management as a part of our daily habit one key aspect would be to redefine the role of the plumber as a change agent who can carry the message of the significance of everyday habits, that have an enormous bearing on our problems related to water conservation and management.



KK : What are your thoughts on National Innovation Council for Water? How and when do you plan to get it activated?

SP : A key aspect of the National Innovation Council’s work is to set up Sectoral Innovation Councils comprising of domain experts in different sectors to focus on innovations in that sector. We want domain experts on water and sanitation to analyze the potential for innovation in these sectors, work out a strategy for operationalising these innovations, and create a roadmap for innovations in the medium to long term. We are already working on setting up these sectoral councils under the guidance of relevant departments.

KK : In the Global WaterHackathon at Bengaluru, you suggested to create mobile/web apps to address water problems. Can you elaborate this further?

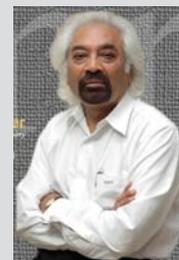
SP : Yes, there is a great potential for mobile apps for issues related to water and sanitation. While everyone may not have access to computers or laptops all the time, mobile phones are now almost ubiquitous. It is therefore, more important to have

mobile applications with GPS, which can give concise information - people do not want detailed information all the time. They have short questions, like – which is the nearest water testing laboratory? How can I treat a diarrhea patient? Where is the nearest dispensary? These are just examples, I am not a domain expert in sanitation – I am an expert in telecom and always think of ways to converge both these domains for the good of common people. India has a vast pool of talent and I am sure, such India-specific mobile apps can be developed, which can help people in a great way.

KK : Plumbing is one of the most crucial and yet, one of the most neglected aspects of building services in India. How do you think, plumbing can get the importance it deserves?

SP : As far as plumbing is concerned, we have adopted the western mind-set. We believe that the job of a plumber is to fix leaking pipes and nothing more. This is a western concept where a plumber comes, fixes the pipe and returns. But in a country like India, a plumber can do much more than just fixing pipes. According to me, a plumber should become an ‘agent of change’, Why can’t our plumber talk to house-wives about the importance of water saving, rainwater harvesting or water borne diseases or even energy saving through better plumbing designs? But the problem in our society is that he is the last man in the hierarchy and his job has been limited to fixing the pipe – and nothing more. Here also we need a change in the mindset of our people. We must propagate the idea that the plumber is not for only fixing a leaking pipe or tap. Our builders, architects and town planners also need to take plumbing more seriously. This again boils down to the involvement of the local community, local domain experts, since after all, it is a local issue.

I believe that plumbing education and training is not rocket science. Our plumbing industry and experts must do it as a CSR activity without promoting particular manufacturers and products.



KK : How can the concepts of Rainwater Harvesting, Dual-Flushing Systems, Water Recycling etc., be part of the inclusive agenda?

SP : One way would be to teach our plumbers to take the message about water saving and water conservation to households, house-wives and children. Then some of these things will work automatically. Today children know how to fix an

Our domain experts must ensure that such skill development programmes are free from any vested interests of manufacturers so that the skill development mission is successful.



electronic gadget but simply do not know how to fix a leaking tap. We are not at all concerned about such small but vital aspects of our day-to-day lives. I therefore believe that in order to reach out to millions of our people and have water management as a part of our daily habit one key aspect would be to redefine the role of the plumber as a change agent who can carry the message of the significance of everyday habits, that have an enormous bearing on our problems related to water conservation and management.

KK : What are your views on skill development in the area of plumbing?

SP : Skill development is certainly an area of great concern in our country. We have the best software engineers, doctors, lawyers, structural engineers and so on, but we don't have good plumbers, electricians, masons and carpenters. It is unfortunate, but now the government is working closely on this aspect of skill development in various sectors.

I recently met a woman in Kerala, who has developed a fantastic video-based training programme for plumbers and she trains only women. Her programme includes virtual training in pipe fitting, threading fixing and so on. You must touch base with her to understand her success and her way of working.

I believe that plumbing education and training is not rocket science. Our plumbing industry and experts must do it as a CSR activity without promoting particular manufacturers and products. We need a large number of trained plumbers who are taught about better plumbing practices and installations, new technologies, energy saving and so on. Our domain experts must ensure that such skill development programmes are free from any vested interests of manufacturers so that the skill development mission is successful.

KK : While we are talking of skill development, only one or two municipal bodies have made a Licensed Plumber a mandatory requirement. When we have Licensed / Second-Class Wireman for power, why not a Licensed Plumber for a proper plumbing job? How can local self government bodies be moved to adopt this?

SP : I think it is the responsibility of the plumbing association to ensure that local self-government bodies make the scheme of Licensed Plumbers a mandatory requirement, because it is in their interest to safeguard the ethics of the profession and promote better plumbing practices. This will also ensure the right kind of people enter the profession- the people, who can be the 'agents of change'

KK : We have Right to Information and Right to Education. When should we get Right to Water or Right to Sanitation?

SP : Information is organized at various levels- at the national and state level, likewise for education, but water and sanitation, as I have mentioned before, are local issues and unless there is involvement of the community there is little meaning. So, we need to have awareness amongst people about having better facilities of water and sanitation.

If you want my recommendation, it is simple - let the community and domain experts come together and address issues related to water and sanitation. Let them come up with ideas which are economical, scalable and sustainable.



KK : What do you recommend for better and effective community participation for developing better sanitation facility in rural as well as urban areas?

SP : If you want my recommendation, it is simple - let the community and domain experts come together and address issues related to water and sanitation. Let them come up with ideas which are economical, scalable and sustainable. If the ideas are very **expensive**, they won't get implemented. If the ideas are economical but not **scalable** they will not work because we have to reach out to a very large population and if the ideas are economical as well as scalable, but not **sustainable**, that won't work either, because if there is an excellent idea which cannot be sustained for more than six months, it is of no use.

In a nutshell, I would like to say that communities need to take charge of their own water and sanitation requirements, and with the help of domain experts design economical, scalable and sustainable solutions for providing better facilities for water and sanitation to millions of our countrymen, who are deprived of these basic facilities. Let it be a people's movement for the people of India! 🇮🇳