



LSE India Summit 2017 Working Paper #2

1. Does Forced Philanthropy Work? CSR in India
- 2. Does India Need 'Virtual Water'?**
3. India Abroad: From Third World to Regional Power
4. Do We Need a New Constitution for India?

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Executive Summary

‘Virtual water’ (also known as embedded water) is a term coined by Professor Tony Allen in 1993. It measures and therefore makes visible the amount of water used in the production of food and other products and services.

The merits of incorporating this concept into policymaking were explored by panellists amongst alternative strategies to reviving and protecting India’s water resources in India today. Whilst panellists concluded that the concept of virtual water may yield innovative solutions to prevent water waste, much more is needed (particularly from the government as well as the private sector) in terms of policy change, regulation and on-the-ground deliverables. If water is framed in terms of goods, services, and quality, and also has unquestionably political usages, these could also be leveraged to create positive change.

Panellists

John Anthony (Tony) Allen, Emeritus Professor of Geography at Kings College London

Biksham Gujja, Founder of [AgSri](#), a social enterprise to promote sustainable agriculture practices in India, Kenya, Uganda and Tanzania

Manoj Misra, Environmentalist and Convener for Yamuna Jiye Abhiyaan

Marcus Moench, Founder of [ISET-International](#)

The panel was moderated by **Professor Amita Baviskar**, Professor at the Institute of Economic Growth, Delhi.

Introduction

In her opening remarks Professor Amita Baviskar referred to India’s “looming environmental crisis”, listing cities, agriculture, and climate change as the primary areas of concern. Issues of water figure prominently in all three – as Baviskar highlighted, Delhi receives most of its water from the Himalayas despite having the Yamuna river running through it, and India uses [substantially more water](#) in all areas

of crop production than many countries, including neighbouring China. With regard to climate change, she warned that the Himalayan waters and the many rivers they feed are under threat. Increasingly scarce and infrequent monsoon rains and their disastrous impact upon agricultural livelihoods are also an area of concern.

Although India has achieved a great deal in the 70 years since independence, its successes have largely been measured in terms of GDP and GNP. However, Professor Baviskar remarked, “Our economic growth has come at a great cost. That is the cost of cutting the ground away from beneath our feet in terms of our land, water, forest, and pastures”. It is wrong to think of water as a renewable resource – rivers have been destroyed by mining and deforestation and ruined by dams and embankments.

The overuse of water has been systematically encouraged – populist policies offering cheap subsidies whilst simultaneously under-regulating water supply – has led to a significant decline in groundwater, as well as the chronic pollution of rivers. Water transfer projects are costly and tend to negatively impact subsistence farmers as resources are routed instead to high value crops, golf courses, and even theme parks. There are initiatives being made to conserve water, such as the National Rural Livelihood Mission (NRLM), but these efforts are often undermined by the aforementioned factors.

Therefore, there is a pressing need to fundamentally rethink India’s relationship with water to take into account water systems as a whole – including the rights of interconnected habitats and livelihoods.

The concept of virtual water could help achieve this shift. By measuring the amount of water embedded in the production of food and other goods it becomes possible to create a different system of accounting, such as an ecological index of water as it exists in international trade and transfers. This would enable the ecological costs and benefits of different kinds of commodities to be assessed. With this in mind, Professor Baviskar raises the following questions:

- Can we operationalise the concept of virtual water as a measure of what the government should encourage or discourage?
- Should we think of virtual water as a metaphor as a way of looking below the surface, of imagining a more real and permanent set of flows which are essential to our own wellbeing, as supplements to the flows of visible water?

Food supply and security

There are two categories of water: food water and non-food water. Food water is used in the production of crops, accounting for 92 per cent of consumption, whilst the remaining non-food water (eight per cent) is used for domestic purposes and miscellaneous jobs. The latter amount is manageable for most countries except landlocked regions or those that are overusing groundwater.

The phenomenon of decreasing food prices worldwide since the 1950s has thus far prevented the advent of ‘water wars’, a term widely debunked by the panel, since countries that have run out of water can turn to the international market for affordable food. It is in this way that Professor Tony Allen’s concept of virtual water accounts for why trade is still seen as a safe and viable option to maintain both food and water security. In this model, the role of farmers in water conservation is obviously integral,

but Professor Allen noted that in India their incomes are vastly inadequate and consequently, more support by the government is required to protect both farmer livelihoods and food security. Furthermore, most water harvested by dams supposedly for farmers is being diverted to industry, creating tensions between farmers and companies.

Consistently low prices of food have also prevented farmers from innovating. According to Dr Biksham Gujja of AgSri, “There is nothing to sell, no profits to be made and no quick business to be done”. As a result, there is a lack of interest in improving yields with reduced water. “We have the technology and the money in this country to do these things but it is not happening”. Dr Gujja also observed that it is important to look beyond agriculture as the provider of food security alone – it has to be recognised as a provider of livelihoods – particularly in the Indian context where it remains the largest employer.

Manoj Misra’s primary concern was the impact of water quality on food quality. While India has confounded its detractors and achieved food security, little attention is given to how polluted waterways are affecting crops. He cited the example of Ahmedabad, where there is a pristine new waterfront but farmers downriver are using waste water to irrigate their crops. This practice is prevalent all over India due to diminishing levels of groundwater, which despite being “the lifeline for the farmer”, is becoming increasingly contaminated and scarcer by the day. Concerning the fitness of water for consumption and food cultivation, Misra warned the audience “Until we come to address these challenges, India at 70 is not really safe”.

Pollution and death of water systems

In his opening remarks, Professor Allen asserted that “People need nature but nature doesn’t need people. So, if we as people are doing bad things to nature then we should have second thoughts about that”. Indeed, despite the fact that only a small amount of water is used by industry in India (although this is inevitably now increasing), the damage caused by pollution has a much larger impact. Research undertaken for [India’s Rivers Week](#) reported that approximately 70 per cent of India’s rivers are either dead or dying. The remaining 30 per cent of rivers had not been assessed to the same rigour, so the overall amount could in fact, be higher.

According to Misra, “it is wrong to think of rivers as just bodies of water just as it is wrong to conceive of the human body as blood only”. He discussed the case of the Yamuna, which the High Court in Uttarakhand ruled was a ‘living entity’, only to have activists [highlight](#) it was ecologically dead as a result of decades of abuse. Although the ruling was eventually overturned, it allowed activists to consider new ways of making both the state and private industry accountable for what was referred to as the ‘murder’ of rivers.

Urbanisation and water conflicts

Despite Professor Baviskar’s complaint regarding water wastage in India, usage still remains lower than the world average – in fact it is less than half of that of the US. Nevertheless, the exponential growth of urban India in the last four decades has led to a number of issues regarding water supply, quality, and sanitation. Furthermore, whilst Professor Allen and Dr Gujja were quick to dismiss the appellation ‘water wars’, the rise of what can be understood as ‘water conflict’ (for instance, between

the states of Karnataka and Tamil Nadu), is increasing as rivers are siphoned and water rerouted to meet the flows of urban demands. There is a vicious cycle, according to Professor Baviskar, whereby “People are leaving rural areas because the scarcity of water has made agriculture that much harder, they move to the cities, and the ways in which the cities are siphoning water from the countryside makes the problem that much worse”. It is the vast populaces of cities as vote banks that often mean they are prioritised in terms of water access, as Dr Marcus Moench of ISET posited ‘water is also part of political and economic relationships’.

However, Dr Moench also proposed that we view the growing second tier cities of India as a site for opportunity, in which, with adequate pre-planning of infrastructure, new and innovative systems can be piloted for water delivery and sanitation. Indeed, poor sanitation systems in urban areas are also a considerable source of water pollution and sewage treatment remains often inadequate, to the extent that much of the money spent on it, Professor Baviskar claims is “literally down the drain”. As well as considerably impacting the quality of life of the urban poor, the contaminated water also makes its way into other nearby water sources in rural areas, or pollutes the groundwater.

What next? Virtual water and other solutions

The concept of virtual water is vital to ensure that the true expenditure of water consumption is measured accurately and conceived of beyond the physical entity of water itself. “Virtual water is a way of thinking beyond the water box” Dr Moench argued. However, he also acknowledged it should not only be about the quantity of water used in agriculture, but also “the quality, time and space and how these affect the ability to maintain the ecological functions on which we all depend”. Given the aforementioned challenges that India and much of the world face today, what can be done to expand this concept whilst improving the livelihoods of those in agriculture?

Professor Allen indicated that there is significant potential for private sector intervention, adding that a number are already implementing sustainability programs via CSR projects, which can be focused toward fostering more sustainable forms of agriculture that benefit both producers and consumers. He added that governments can regulate corporates, while investors in turn can determine what corporates do, particularly in the case of the sustainability departments of Tata and other companies. However, accounting rules are completely inadequate and it is up to the consumers demand accountability for this.

For Dr Gujja, the answer also lies in the private sector and emerging business leaders of the future: “Future generations need to get involved and see this also as a business opportunity”. He also stressed the opportunity to create more jobs, claiming that women in rural areas in particular would benefit from an additional source of household income by working in sustainable agriculture nurseries, for instance. Dr Gujja’s company AgSri is involved in developing sustainable solutions for sugarcane farming and rice intensification (the latter has increased yield by 30 per cent and cut up to 40 per cent of water consumption in comparison to conventional methods) and he believes that by encouraging businesses to expand in this direction, a solution to the growing water crisis in India can be found. This is preferable to relying on the government and overstretched NGOs.

For Dr Moench, there also needs to be a spotlight on energy consumption – particularly regarding the issue of sewage treatment. One solution he discusses is

the introduction of toilets where the waste is removed on a weekly basis and turned into energy. No water is then polluted or requires treating. Energy is also extracted from the waste and simultaneously saved as it is not expended on treating wastewater. What is also important in implementing schemes such as this is to align them with the drivers of political incentives.

Whilst discussion often focused around innovation, Misra emphasised the potential benefits of reviving tradition, recalling how farmers who chose to bring back techniques of drawing water from ponds and planting selected crops once a year had been less affected by drought versus those using a greater amount of water and a wider variety of crops.

Conclusions

Writing for LSE, Arjun Bhatia [observed that](#) 'India is home to nearly a fifth of humanity, but it only holds four per cent of the world's water'. The combination of a growing population, rapid urbanisation, worsening droughts, and weakening seasonal rainfall are all causing a significant strain on India's water resources and leading to an over reliance on depleted groundwater.

Despite the need to address these issues, government water conservation policies at state level have often been wasteful and ineffective (see for example [efforts](#) made towards removing pollution from the Yamuna). As Professor Baviskar concluded in her closing remarks "changing the political economy of the government is the biggest issue here not just for water but the environment and society". Farmer suicides, water conflicts between states, and the increasing rate of rural to urban migration attest to the assertion that India has a "looming crisis" on its hands.

The panellists acknowledged that there have been attempts by the government and private industry to address the problems, but agreed that more is needed in terms of policy change, regulation and on the ground deliverables – not only to conserve water supplies but also to ensure the livelihoods of millions of India's agricultural workers. If water is framed in terms of goods, services, and quality, and also has unquestionably political usages, these could also be leveraged to create positive change.

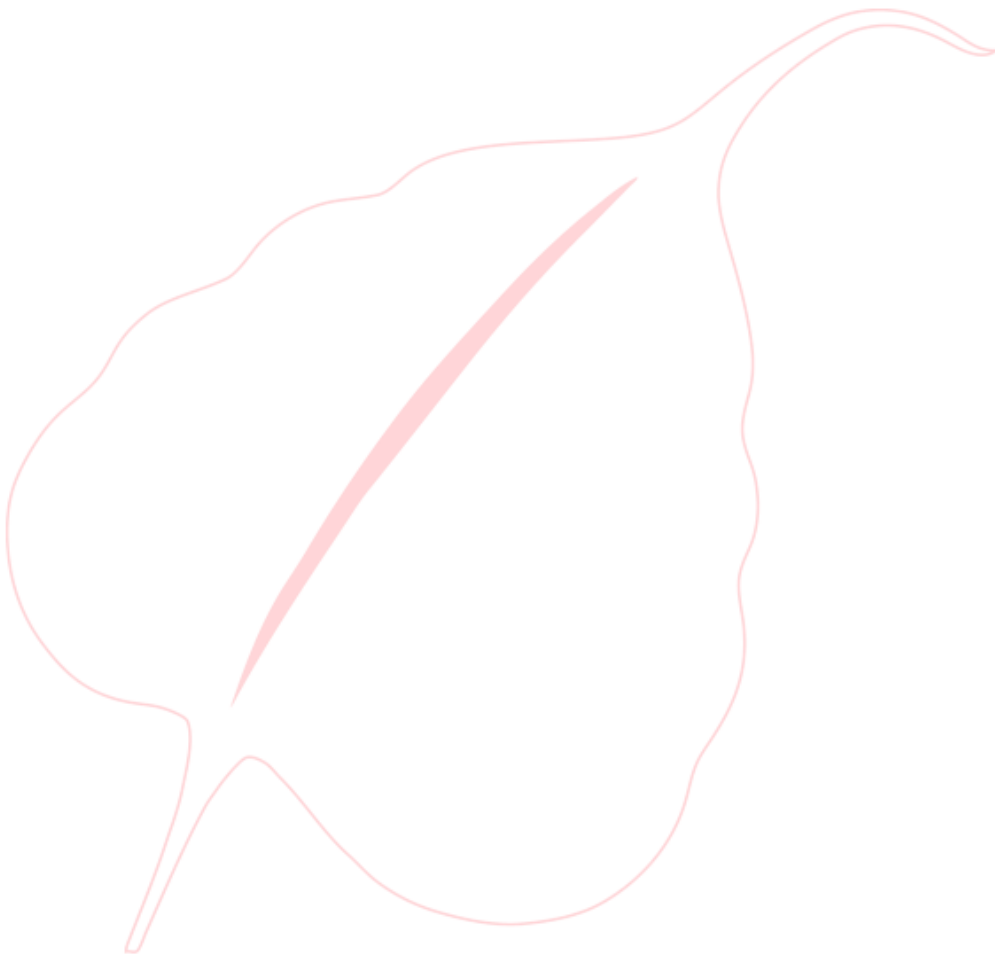
Recommendations

- A more effective water accounting system is required to provide data on water usage and flows, which could then be used to inform policy.
- Better regulation is needed to ensure that conservation measures are properly implemented. Corruption remains a considerable issue that must be addressed within the central and state pollution control boards. Frequent audits and inspections would help address this to some extent, although a greater overhaul of the system is required.
- Zero liquid discharge (ZLD) schemes (using technology which purifies and recycles virtually all wastewater) require further enforcement and a central government mandate. In 2008 for instance, the Tamil Nadu government mandated zero liquid discharge for the textile wet processing industry in Tirupur.

In 2011 the Tamil Nadu high court [shut down](#) more than the half of the textile factories in Tirupur due to failure to adhere to the law.

- One possible solution to get companies to adhere to laws around the treatment of wastewater is to include them in the development of ZLD policy or offer incentives such as counting it towards a company's legal CSR requirement.
- Industries such as manufacturing and mining should also only be allocated a finite amount of water to incentivise and mainstream water recycling.
- The government needs to encourage more sustainable methods of rice farming. Six inches of standing water is common practice in rice cultivation but this means most of the plant's energy is spent on regeneration. NGOs could be funded to educate farmers in using less water intensive methods and farmers subsidised to switch to less water intensive but high yielding methods. Private companies that supply sustainable agriculture solutions should also be included in this partnership, potentially via their CSR departments.
- More broadly, agriculture needs more investment and policy attention. Farmers need access to training and information so they can use water more efficiently and earn a decent livelihood.
- The government needs to consider access to water as a basic human right. Efforts by the Aam Aadmi party in Delhi to provide drinking water to the poor have been watched closely by other state governments. Despite issues in implementation, there is the capacity for the central government to scale this scheme up across cities in India, thereby making safe drinking water accessible to millions rather than those who can afford to pay for it.
- Another issue to consider is water storage – for most of the poor this is a considerable and restrictive issue in their access to water. Water storage should be provided for urban communities, or at the very least subsidised. It is only through initiatives such as these that access to water can be democratised.
- The government needs to consider how it can protect heavily populated flood plains. It should provide subsidies for people to implement solutions such as raising their houses.

Rebecca Bowers, July 2017



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