

Intersection of Technology Innovation Policy and Traditional Social Policy in India: Perspectives from NGOs Working on Water Rights

Tricia Wang
University of California, San Diego

China-India-US Workshop on Science, Technology and Innovation Policy

India is on a trajectory to strengthen its national technological innovation system by instituting policies that encourage growth of knowledge and production. Measurement and discussion of the success of these national technology innovation policies, however, is usually analyzed in the context of how the policies can increase the strength of industries, national GDP, international trade relations, research institutions, or universities. There is a gulf of research that needs to be done around how technology policies encourage innovation on a community level and engage with traditional social policy. What I suggest here is that technology innovation can either push the agenda for free-market policy or for a more balanced market and state relationship. It is too many of times that technology innovation policy is one step removed from how traditional policy areas, such as social provisions, are affected. In the case of India, many social provisions that are supposed to be provided by the state are not fulfilled by the state. The workshop at the National Institute of Advanced Studies (NIAS) gave us the opportunity to consider how technology innovation can better interface with the immediate needs of India and engage with traditional policies that deal with those needs.

Whether new technology innovation policies encourage free-market rationale or state regulated rationale is a particularly pressing question for India and also for the rest of the world. Theories of technological determinism are rife in theories that suppose new technologies solve market imperfections. Within the last 10 years, neo-liberal market policies have radically restructured social institutions across the world. As a result, many social goods across the board are increasingly redefined as market goods that are available based on an individualistic cost-benefit analysis, instead of on a collective, common goods rationale. Social citizenship declines when it does not support the greater social welfare. As a result, there is a thinning of social citizenship, where long-standing social rights become stigmatized as “hand-outs” and incumbent upon the individual or nuclear family to fulfill the social need. Recent trends in India reflect this process: a dwindling of the social right to basic social provisions. Many times the result of dwindling rights is not so much a massive effort by the government to deny citizens basic social goods, but through ineffective administration, basic social goods fail to be delivered to citizens. This regime shift calls for a timely discussion to how technology policy interfaces with existing traditional policies. This discussion can be quite broad, therefore the analysis will focus on how non-government organizations (NGOs) address social issues through technology, negotiate technology policies and traditional policies.

This report provides an ethnographic account of interviews that I conducted with two Indian NGOs that focused on water, and their strategies for engaging their community on water issues through new technology. India has the world's highest number of NGOs, yet it is arguable that in

many situations NGOs are filling a vacuum of responsibility that the government has left open by failing to either create or follow through on policies that ensure the social provisions for an acceptable quality of life. Traditional development analysis tends to focus on policies that ensure basic social provisions, such as health or education. However, less rare is the examination of how technology policies can be a catalyst for delivering more effective social provisions on a community level.

What does innovation on a community level mean? Individuals can create innovative solutions in their communities without the need of national technology policies. This view of innovation does not follow the traditional view, which is to speak of innovation on an institutional level. By focusing on local innovation, we can see how individuals are taking steps to change their immediate environment. But what happens is that without being plugged into a larger network, many local innovations are unable to be scaled to other communities. It is at this point where NGOs play a crucial role in facilitating community level innovation in scaling those developments.

NGOs play a special role in India, stepping in to provide basic social provisions that the government fails to provide. Interestingly, there has been a rise in the number of NGOs that work with community needs by developing new technologies. Many of these NGOs that I interviewed fund implementation of new technologies, support research and development to create new technologies, or implement new technologies themselves. What I noticed about many of these NGOs is that they constantly spoke of how their underlying goal was to create new technologies that could help the local government be more accountable to its citizens.

After site visits to Infosys and Biocon, we who participated in the workshop now have a better understanding of how corporations innovate, but we have little understanding of how NGOs innovate. What are the issues that local NGOs deal with when it comes to technology innovation? This is the question that this account attempts to shed light on. The NGOs' that I interviewed specifically used technology as the tool to address the immediate social needs. The primary focal point of this report is on water as the social need that was addressed through technology by the NGOs.

Why Focus on Delivery of Water in India?

Drinkable water is a basic social resource. On a daily basis, however, India's government fails to provide a consistent supply of water (in addition to electricity) to its citizens. Providing water to citizens involves both technology and social policies. Access to safe water is intimately connected to health and disease monitoring. Sound policies can either render the latest technology available to water monitoring organizations or ensure strong water governance infrastructures that work with apt technology. Essentially, delivery of safe water on a state-wide level requires the consideration of innovative technology policies. Good water policies that make use of innovative technologies create the most desirable conditions for health and disease safety. Unfortunately, there is neither good water nor technology policies in many regions or areas of a city, especially where the poor reside.

Water and health are inextricably linked and the ability to properly monitor and diagnose the environment directly impacts public health. In unevenly developed countries, contaminated water is often the source of infection due to poor sanitation, overcrowded living conditions, and lack of awareness, primarily affecting the health of women and children. The cycle of poverty starts with the poor (already malnourished and having weakened immune systems) who are forced to drink dirty, contaminated water and live in overcrowded, unsanitary conditions. Illness and malnutrition result, due to gastric-intestinal problems like diarrhea, or financial problems caused by the inability to work. The weakened immune systems then allows for opportunistic infections to prey on these individuals, therefore repeating the cycle of poverty and chronic illness.

The barriers to affordable and drinkable water are greatest in regions where citizens do not have access to a dependable water supply. Often, undependable water supply is found in places with erratic communication technology protocols between health clinics, public administrators and local citizens--a combination that could lead to an epidemiological disaster. The present landscape of epidemiology in India is connected to the very same concerns of Dr. John Snow, the first doctor to provide evidence in 1854 that cholera was a disease caused by contaminated water, and in his case a local neighborhood water pump. His innovative approach still continues to inform and challenge modern disease prevention. By spatially mapping out those affected by the disease, he was able to narrow down the cause of the disease. Yet, lacking the technical platform to create a real-time network of information dissemination, Dr. Snow was unable to make his medical report immediately available. His collected data was reported after thousands of people had died, which underscored the temporal urgency of the disease. Timeliness of public health information about water requires innovative technology that makes use of information aggregators and advanced data processors.

Many NGOs and citizens in India have realized that real-time information sharing technology is one of the first steps to creating a more effective public water health approach. This system would require government support to build scalable architectures in which to build such a technology. Government instituted policies that would encourage technology investment into social provisions, such as water, would create the conditions for technology and social policy to work together, instead of in isolation from each other. As of right now, real-time technologies are simply unaffordable for most cities or villages in India without government support. With no state mandates and scalable public technology funds, this effort can only be experimented with on a local level in India.

The agents that have begun to experiment with technology for social solutions, are NGOs. NGOs across India are responding to social concerns with technological solutions on a community level. Working on a community level means that NGOs are accounting for local culture and knowledge into the technological solution, thereby preventing a technological deterministic solution. Without any overarching technology policy to guide NGOs, they are experimenting with how to best bring the success that the software industry has seen from technology policies to the social policy world.

Simply put, the technology policies in India have brought great success to the traditional technology world, but little success to the traditional social issues world, such as water and health. Many of the barriers to providing drinkable water are due to the lack of innovative technologies to run such tests or to the affordability of testing machines and software.

Although expensive water testing technology prevents frequent testing and distribution of information, this can now be overcome by harnessing the power of participatory sharing technology, one of the greatest strengths of unevenly developed regions. Citizen owned devices, such as cell phones and consumer computers, are the most ubiquitous yet under-acknowledged participatory technology in India. For the first time in history, widely-available technology tools present the opportunity to create a truly participatory public health monitoring network in India. The following two NGOs in this report have realized the new opportunity and are working closely with city officials to take advantage of the widespread use of technology among citizens for greater social change. As such, this presents a timely intervention for technology and social policies to cooperate in the goal of accelerating technology development to accomplish the task of technology innovation policy as a catalyst for social policy.

Online Governance

I met with Balaji Sawad¹, the founder of Online Governance, a non-profit foundation created to address the gaps in city municipal policies to provide a better quality of life for citizens through online technologies. Online governance works closely with municipal officials to create an entire online system in which to conduct much of city procedures that involve citizens, from dealing with property tax to digitization of data about properties to street naming to measurement of roads to cross checking state gathered field data to citizen grievances. One of the key features that Online Governance builds into their programs is that the software allows for citizens to file all their grievances online. This online process then creates a digital record of the complaint, saves it into a database, and keeps the file opened until an official looks at the complaint and addresses it. The program creates a weekly grievance record that is sent to the representatives of each city quadrant, so that s/he has a file of the top complaints for his/her constituents (cities in India are split into quadrants with its own representative).

When I asked Balaji why he started his Online Governance, he explained to me that he after working for over 20 years in Silicon Valley, USA, and he wanted to return to India. Upon his arrival, he realized that many basic social provisions that he had become used to in the USA, such as water, were not delivered in India. He conducted more research and discovered that the situation for the poor were even more dire, where politicians and officials rarely ensured consistent delivery of water. Balaji realized that although India had many technology policies that encouraged market growth, national investment and industry expansion, he realized that none of those policies were connected to traditional policy areas, such as water. He thought many of the policies that encouraged a robust software industry were not leveraged to create a robust architecture for civic engagement, citizen feedback, and city governance. Therefore, instead of waiting for a policy to be created, he decided to create Online Governance.

I asked him how an online grievance system could be used to hold the government accountable for providing drinkable water. Balaji explained that with enough citizen complaints over time, there would a public record of reports of health problems related to water, visible discoloration of water, or no availability of water. He explained that the problem in India is that policies can only be created after there is enough information collected to show a need for a new policy. He expanded on this thought by explaining that business consultants are excellent at creating information that

1. The name of the individual interviewed has been changed to Balaji Sawad at his request.

shows how a proposed policy can bring about economic growth. Their data is collected through sound research and projection analyses, and is then presented to politicians in comprehensible charts, pies graphs and images. Balaji believes that presenting sound information is what is key to lobbying officials for new policies to be created. He said that business consultants have done such a great job at collecting and presenting information that they have been able to work with politicians in India to create successful technology innovation policies. However, he believes that business experts are usually not experts at collecting social data from citizens. Balaji's goal is to fill in this gap: collect reliable social data from citizens that overtime can be used to show politicians why there is a need for a policy change around a social need. For Balaji, delivering basic social goods requires the combination of innovative technology policy and relevant social policy. He believes India has the former, but not the latter.

When I asked Balaji why he doesn't work with politicians closely, he responded carefully by saying that he works with city administrators closely. He says that the reports are for city officials *and* politicians, but he believes the problem with working directly with politicians is that there is too much corruption in India and many politicians come from career political families with little experience in actual city administration over everyday social issues. He gave an example of the different ways a politician and a city administrator would handle citizen grievance reports around water. He says that when a politician receives a report that many water complaints were registered in their quadrant, he or she would immediately think of how to incorporate the information into their political speech to convince those citizens that she or he will address these complaints to the "bad" city officials. When city administrators receive complaints around water, they will order a water test for the neighborhood water source. He explains that while both actors could do nothing with information about water problems, he believes that the consistency and availability of reports on water complaints will be difficult to ignore overtime as citizens will be able to check online if their complaint was processed by the city.

He believes that ultimately the reports will be of use to both politicians and city administrators but in different ways and that when this information is widely available, it creates a feedback loop for politicians to pressure city administrators and city administrators to act on the information. In addition, he says this long-term data can be used to convince the city for a more effective water policy that would take advantage of new technologies that would better monitor water, and this in turn would produce pressure on the national government. He says that he comes from a technology background, but he believes that the world of technology is too removed from the world of social policy, and that it is time for these two worlds to come closer together.

Suretha

I met with Sunita Janpuri², the CEO of Suretha, a non-profit foundation that provides grants and research studies on drinkable water, water policy, and water usage throughout India. Sunita has become recently interested in the latest technology that citizens could use to monitor contaminated water. I asked Sunita how Suretha was founded, and she explained to me that after having made a good living in the technology software industry in Bangalore, she realized that many of the benefits of technology innovation policy were not being shared with other citizens. For her, the very policies that opened up the technology industry to innovation were not being applied to other

2. The name of the individual interviewed has been changed to Sunita Janpuri at her request.

social goods that many Indian citizens needed. Sunita felt that access to water was at the heart of every Indian's daily life, therefore she created Suretha to bridge technology and water policy.

I asked her what kind of technology she was exploring and she told me that she is currently funding development for a cell phone application that would facilitate the acquisition and dissemination of real-time data about local water concerns. This solution would bridge the communication gap between citizens and city officials, and integrate the multi-layered efforts of data monitoring, collection and syndication, and ultimately unite the short-term and long-term processes of water contamination tracking. Since she was quite familiar with the software industry in India, she felt that a lot of the software developed could be applied to this water monitoring technology. When I asked why it had not been applied yet, she said that it was the failure of the state to provide incentives that technology policies addressed basic social needs. She explained that too much money was often spent on complex technological solutions for social issues and that she wanted to focus on creating solutions around technology that citizens already owned, such as cell phones.

Sunetha explained that the advantage of creating a data monitoring network with a popular communicative device, the cell phone, is that it offers a simple solution and reliable spatial-temporal view of disease progression using the greatest resources within community - the collective knowledge and experiences of citizens. On an institutional level, aggregating community specific data is the first step to informing localized scientific tests, determination of the course of action for health and public policy, and identification of the source of water problems. And on a community level, in the case that there is a high frequency of reports of similar water problems, citizens are empowered with the collective network data to take action in the case that there is no immediate or satisfactory response from public health, corporate or government officials. In a true linking of the macro and micro, this project also bridges between social science, public health and computer science research to produce socio-technical solutions to one of the most valuable and unevenly distributed resources in India: drinkable water.

Sunetha became passionate when she said that if the government were more effective in creating innovative social policies to take advantage of innovative technology policies, then there would be no need for an NGO such as hers. She emphasized that the government in India is more focused on creating citizens for the technology industry with a market focus, but not with a social focus. She felt that working with most politicians is a pointless cause, and that is why her non-profit is focused on working directly with communities and technologies that citizens already own.

Conclusion

After speaking with the founders of Online Governance and Suretha, I was able to better understand the various roles of technology innovation policy. There is a lively discussion of how technology policy could be used for positive social change in India. After the post-conference visits to Suretha and Online Governance, I then gained more clarity on the role of NGOs in India as a new citizenry collective working to bridge the gaps between technology and social policy.

