

Science Technology and Enterprise Development for the poor

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I believe that science and technology for the poor in no way means poor technology or even poor science - it has to be the best and the most apt technology. The liberal use of appropriate technology in development parlance has reduced it in many cases to outdated and outmoded technology, which is often not useful. What is needed is apt and appropriate technology, truly being, that, which is most suited for the situation that the poor are in, and not that which costs less. If it is low cost, that is an additional advantage, but that should not be the precondition.

In mainstream understanding, advancements in science and technology directly correlate to wealth creation for the rich. This has been particularly exemplified with the growth in the field of Information technology. But even small innovations in this can result in good for all. In my remembrance if a single technology has benefited the public, it has been the increased accessibility of telephones through the PCO/STD booths, which today dot both rural and urban landscapes. With no extra investment by the government in setting up huge exchanges, by generating large-scale employment for the booth operators, additional revenues for the government and greater flexibility and reach for the common man, especially the poor who do not have the luxury of getting their own telephone connection.

In the world of the people I work with, the rural poor in Orissa, Science and Technology directly relates to the question of survival on a human plane, a dignified quality of life. A few simple interventions go a long way in lifting these people from the morass of subhuman existence to a life of dignity and quality.

Delivering modern technology

Today the poor in rural areas have to make a quantum leap to be considered at par with citizens of urban areas. To do this, I believe they have to have access to more energy. Most energy devices currently in vogue are geared to electricity. Given that in these rural areas characterized by poverty, access to grid electricity seems very remote., so we have to have electricity produced locally - for home lighting, to provide motive power for lift irrigation, for operating cold storage units for food preservation, for undertaking processing and value added activities locally. Here interventions like development of micro-hydel, biomass based gasifiers, solar photovoltaic power can open up possibilities for economic development. With the current level of technology and enormous investments in R&D, these are still not very cheap.

Communications today is another stepping stone for global convergence. Grameen bank in Bangladesh has already demonstrated with cellular phones how villages can be connected. This may not be the most apt in the context of many Indian villages. I believe the most appropriate technology for rural communities in far-flung areas to be

networked, even for their basic needs is satellite telephones. If the investment in establishing a huge network of cables and wires and small exchanges is saved and blocked in a corpus, and the income from that goes to meeting part cost of the phone as well as cost per call, I believe we will be able to afford taking satellite telephones to the most remote Indian villages. Wireless has been tried but has not succeeded, but we have to continue and find the most appropriate solutions.

With phones and electricity comes access to the internet, and a whole new world of information which can change the dynamics of these communities. From timely access to medicines to an awareness of commodity prices and schemes of the local government information would be accessible at their doorstep.

The danger often is that often such technology comes without the essential package of after-sales services. Also given the context, any S&T intervention has to be accompanied by efforts in building capacities locally (both human and financial) so that the know-how of maintenance and repair rests with them. This itself can breed viable service enterprises in rural areas.

Simple solutions

Advancements in Science and technology while stemming from the laboratory have to find a place in practical and the most basic applications to really impact the people I work with. It strikes me as I travel through, when I meet people living on lands, which are barren and bereft of tree cover. The science of watershed, which stems from traditional wisdom, but which is being enhanced by new technological advancements especially in development of irrigation infrastructure, can effectively transform harsh landscapes to productive areas.

Most tribal villages located on hills today face an acute shortage of drinking water. The water sources are seemingly moving further away from villages. A viable solution here would be diverting the flow of natural springs using the principles of gravity and siphoning, right into every house in these villages.

Often we do not need heavy R&D, just some creativity, encouragement and the courage to take risks. Like fitting a ball bearing to a water-lifting device to draw water from a well, or a better designed bullock cart can make incremental changes as to how poor people live and work.

Redefining enterprise promotion

The overpowering mainstream has systematically subdued through a process of denial, traditional knowledge systems, skills and enterprises. The current system of awarding contracts on the basis of estimates and quotations does not recognize traditional skills and knowledge. The PWD will not allow them to construct a diversion weir, even with proof that they have the knowledge. Recently during our work in severely drought prone areas of Gajapati, we thought of bringing water from across the hill to irrigate atleast 500 acres of land. While engineers of the land and water department said it was not possible, a group of Saura adivasis came forward and said that they could do it. They

asked us for Rs.4 lakhs and a time period of four months. The local villagers vouched that they were traditional engineers and could do the job. We took the risk and today the area has water. They need an additional Rs.20 lakhs now for developing the structures further, but no government will give it to them.

For their survival these Saura engineers said that they are forced to work as unskilled labourers on jobs undertaken by contractors. These people need greater encouragement, patronage and capacity building to compete in today's world of contracts.

I have also found among adivasis some of the best construction technicians - they have an innate sense of aesthetics and symmetry and a grasp of building technology. In such a context equipping them with skills such as masonry, carpentry and the like can provide them viable alternatives that fit into the existing job context.

There also have to be systematic interventions to develop the enterprise approach in the value that people attach to land, water, animal and other natural resources. These efforts are often curtailed by lopsided policies, which infringe on people's traditional rights to the resources.

Frequent and huge forest fires often destroy large tracts of dense forests. I have found villagers staying close to these forests often looking on without concern. Why have we reduced communities so closely linked to the forests to such a situation, where even their feelings and emotions are curbed? The answer is simple, the people of the forests have been alienated so much that have no control and no stake at all the trees that they grew up between, even those that are there in their backyard.

We suggested that the government allow tribal communities access to the forests just to grow pepper vines and creepers of yam at the bottom of *sal* trees, so that they see some benefit from protecting the trees. Predictably the idea did not find favour with the government. In a recent encounter with an adivasi in Thuamul Rampur block of Kalahandi district, I found him felling a large *sal* tree, and when asked why he said it was to capture a bee hive at the top of the tree. He was not being naïve. He had no right to either its seeds or its timber, and he would have to watch contractors log it and take it away, so he had no remorse in cutting it. It is such lopsided policies that are destroying the forests. People have to see an intrinsic benefit being derived from the resources and for this favorable policy and enterprise development efforts have to be synergistic.

The Social Cost : Grants Versus Loans

I believe that the poor can and will pay for products and services that they believe will improve their quality of life. At the same time we cannot be blind to the double standards being applied by the government and multilateral agencies, when it comes to treating infrastructure needs of urban and rural areas.

A salary earning city dweller can earn a tax rebate if he/she borrows to construct a house. Do city dwellers pay for the construction of roads and bridges, building schools,

laying of telephone lines and setting up exchanges, power generation systems? Governments subsidise, directly or indirectly, all these services and facilities. The question is whether or not there is a social cost in ensuring that the rural poor have access to these. We believe that the governments need to pay for its social obligations, in ensuring adequate efforts in making science technology and initiatives in rural enterprise available to the poor in rural areas. And if the government does not have the resources to pay, bilateral donors and financial institutions can contribute towards these. At the same time, we are certain that communities need to pay for and participate in such initiatives, so that necessary ownership and stakes are created within the communities.