

# Mapping rural-urban biodiversity: Rejuvenating enriching traditions



## MINDS ON THE MARGIN

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When we think of biodiversity, we often think of wild forest or gardens, or farms in plains or mountains. Seldom do we realise that there is a lot of biodiversity even in the villages and cities. But leaving aside the tree lovers and botanical students, most people somehow remain indifferent about it.

What if we organise an annual competition among urban housing societies, institutional campuses, government complexes, personal gardens etc., to reward the most diverse private, cooperative or public campus, personal or public garden and private collections? We could do the same thing in rural areas. We could also enumerate trees older than hundred years and form groups of children in the neighbourhood or find other arrangements for conserving them.

While we must plant thousands of trees every year and this year, there is already a campaign on for the purpose, but conserving what we already have is no less important. Let me share some traditional ways of



### Creativity of earthworms

conservation which will tell us that when there was much less threat to the environment, communities had developed such diverse ways of conservation. Why has the urge to conserve gone down with much higher pressure on nature?

In many fishing communities, during rainy season when fish move upstream into shallow waters to lay eggs, there is/was a taboo on fishing. The fish during his period become very dull. They could be easily caught but they are not. Similarly in certain parts of Japan, there are special temples where pregnant sea animals are buried and one prays to seek forgiveness for catching pregnant animals by mistake. In some communities, gillnet of less than four inch mesh size is not allowed lest small fishes are caught. Social boycott follows if some

one uses small mesh size net to maximise the catch. Obviously the motivation of the communities which evolved such rules must have been to conserve resources in the long term and not just in short term.

When dry land farms were ploughed by bullocks or camels, it was easy to bypass tree saplings in the cultivated fields. After mechanical plough, it became difficult to do so, the tree density on cultivated fields came down.

We should also count trees which have the highest number of nests of birds. In some of the villages in Gujarat, people tie thorny plants on the stem of such trees during the period when birds lay eggs, lest cats or other such predators prey upon the eggs of the birds or their young ones.

Can these traditions survive only in historical records. Can we not revive such sustainable practices in our daily lives here, and now, hope to hear from the readers about number of species they could count in their neighbourhood, old trees they could locate and other stories about conservation of nature, before these are lost. I must compliment all those readers who called me up after the column on water conservation and promised to engage with the issue in some practical way. Ideas without action are sterile and actions without thoughts about long term future are suicidal. Let us look far, act now and ensure that our grand children do better than us....

# Dreaming of a museum of crazy creativity & innovations



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**A**fter all, there are so many science parks and museum, technology parks, art and culture museum everywhere but where is an innovation museum and that too, of innovations and traditional knowledge of common people?

Let me share what kind of innovation museum I am talking about and may be it will make some files move. Some action will be hopefully triggered. Our children will get a chance to be inspired. They might prevail upon their parents and other elders to change their mindset, and overcome their inertia.

Idea is that tens of thousands of green grass-roots innovations and traditional knowledge examples that Honey Bee Network (srusti, gian, and NIF and numerous collaborators ) have scouted from over 545 districts need to be visible to our children and others so that they will be inspired to experiment. They will refuse to live with so many social, economic and technological problems that have remained unsolved for decades or even centuries in some cases. How will it happen?

We should start a programme on radio and TV every week, when we will share new ideas and pose problems to students to come out with solutions to problems all around us. Innovations may become a subject of every day conversation. Let us assume that we get some land and are able to build museum there. When a person will enter, she will give her age, education, professional or occupational background and general likes and dislikes. She will be issued a smart recording and listening device. When she stands in front of an electronic exhibit, her status (whether a student, worker, professional, policy maker, politicians etc.) will be recognised.

Exhibit will re-organise itself according to view category. If there is a policymaker or politician, then only bullet points will be shown; neither detail, nor much text should be there. If a stu-



President Pratibha Patil during the innovation exhibition, held between August 10 and 14 at the Rashtrapati Bhavan

dent is there, explanation of how it works in simple language through animation may be shown. Idea is that only that much of content should be shown, as a person can easily understand. All the content will be open source. Very day there will be a real life problem posed and best answer will be given a prize and provided incubation support for making that happen.

There will be real working models or true to scale exhibits besides an experimental kitchen, where visitors can try out different kind of recipes. There will be site where visitors can leave behind inspiring stories, by recording them, or folk music or any other art forms which are getting extinct. Users will design their own future in some places and leave them around for others to comment- an installation blog of a sort. There will be walls, where folk artists of Dahod or Takuwa or other regions can paint their work so that their market can be created.

It will be a creative hub, artistic centre, innovation gallery and an experimental kitchen, all in one. ...a place managed in a distributed manner, where invention will be talked about, innovations will be gossiped about, and new forms, features and functions will be added to existing things, so that they can start to think,

Don't complain that I am dreaming too much, Dr Vikram Sarabhai and Kastur Bhai Lalbhai had created so many outstanding institutions, with each one of them continuing to be excellent still. I am suggesting a small footnote to that tradition. It will happen some day, do you want to join the effort, write back.

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# Innovations in public systems: Who will bell the cat?



## MINDS ON THE MARGIN

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**M**ay be not many people noticed two of the important recommendations of the 13th Finance commission (FC). One was to create an institutional framework for systematic scouting, documentation and replication of innovations in public systems which make the impact on the lives of common people.

A Centre for Innovations in Public Systems has been set up at ASCI, Hyderabad and was launched on Saturday by cabinet secretary. The analysis of innovations collected by 13FC from all the states were analysed by National Innovation Foundation to make two recommendations to mainstream the search and scaling up the innovations for improving the public systems. Second recommendation was to create a District Innovation Fund of Rs1 crore in each district. Both these will hopefully make a small difference to the innovation environment in the country. Dr Vijay Kelkar, chairman of the 13FC was incidentally the finance secretary when NIF was set up ten years ago drawing upon the experience of Honey Bee network and SRISTI and GIAN. HBN experience has triggered another institutional innovation now.

But the central question is not that there are not enough innovations in public systems impacting the life of the people. The real problem is that we don't build upon the innovations that are indeed tried by various public functionaries to reach the unreached and serve the underserved. Let me illustrate. A block level official noticed that children of fishing communities often accompanied their parents in the offshore fishing expeditions.

They were thus deprived of educational opportunities. He introduced a 'learning' boat to accompany the 'living' boat. Children moved to the learning boat in the day time having a teacher and joined their parents in the night in the living boat. This example from coastal



Andhra Pradesh could easily be replicated in different states. A district collector, Samir Sharma realised that generic drugs cost much less than the branded drugs and thus if one procured only generic drugs, one could use the available funds to serve many more people in the district. There are similar many more experiments that have been done in various parts of the country.

In Karnataka as well as Gujarat, lakh of children were given swarna prashann, an ayurvedic drug for boosting their immunity on a particular day. If vaccinations can be done in a countrywide manner, why could not ayurvedic booster doses not be given to our children in schools as a measure of preventive health.

The freedom to experiment, innovate and serve the common people is needed at all levels but is that available at a scale that is needed. Don't we often see the attitude of public servants hardening with time rather than becoming flexible? Do they appreciate initiatives by lower level functionaries enough?

On the civil service day when I asked this question, many secretaries at central government level didn't agree with this observation. I asked them to show me a file in which various experiments and innovation tried by people had been compiled? Was there any database of such initiatives available at central or state level? Who will bell the cat of inertia and indifference towards initiatives and innovations needed urgently to match the rising aspirations of common people particularly in the economically backward regions?

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# Adopt grass roots innovations to rein in food inflation

For representation purpose only



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When prices of agricultural commodities shot up more than 60% in the last few years, pressure on consumer prices was expected. It is alright for agricultural minister to say that to pay farmers well, society should bear the inflationary burden, but that is neither a very responsible attitude towards poor who suffer the most, nor towards farmers who don't care about prices as much as about profits.

Why has this problem become so intractable? Let me suggest one clue. It is because we seem to have focused entirely almost on prices of output as a balancing exercise. We have not paid enough attention to the reduction of cost in most commodities. It is not only playing havoc with the sustainability concern but also making the whole approach almost unviable.

What needs to be done, if innovations become the watchword of future economic transformations? We need to aim at reducing unit cost of every goods and services with passage of time in manufacturing, as well as agriculture sector. Farmers also will not plead for higher prices every year if the cost of their inputs can be controlled and reduced. But how will this be done? How will we convince wise people in the planning commission who assume the inflation and add 10% or so cost to every unit cost. How do we ensure the tendency of rampant cost over runs (Commonwealth games is a recent example of three times escalation) at central and state level. How do we encourage every body to experiment and innovate to reduce unit cost.

Let me give an example. Take cotton, a crop which consumes almost 40% of the country's chemical pesticides, followed by paddy which consumes 20%. What do we do to reduce cost without having to use GM crop (if farmers so



A farmer of Surendranagar used the idea of growing lady's finger (left) around cotton crop (above) to trap the pest of cotton

wish, though majority of farmers use GM cotton in Gujarat and other major states), which have diffused widely.

We should listen to farmers like Lakhra bhai of Surendranagar who, 20 years ago, in Gujarat (and Maharashtra) used the idea of growing lady's finger around cotton crop to trap the pest of cotton. If that didn't work, they sprayed jaggery or sugar solution (Sarja bhai of Bharuch) to attract black ants which will help control the pests.

But will these practices ever reach masses? No. Because, then farmers will become self-reliant and sustainable! Will department of agriculture share this, disregarding the pressure from chemical pesticide lobby? I doubt, for 20 years they didn't do it, these kinds of solutions are available on sristi.org website in open source for decades.

When cost of failure is low, and chances of success high, only inertia can explain indifference to such bottom up grassroots solutions for decades. May wisdom prevail...may farmers' organisation wake up.

These solutions will reduce cost, check inflationary pressure and make poor better off too. They will not suffer from exposure to chemicals. I hope technocracy will prove that we are wrong.

# Grassroots institution-builder of modern Gujarat



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**I**t is gratifying that ayurvedic sector has received strong support in the last few years in Gujarat and at national level, thanks to a dynamic devoted leadership of department. The state budget has doubled, more dispensaries have been created, and Jamnagar Ayurvedic University continues to produce nationally and internationally-renowned research publications and trained human resources.

There is a strong case for building upon the standards of excellence that this university has created and more support to the university. Be-



**RL Parikh**

fore I dwell more upon what I learned during the recent visit to the university, let me share a very interesting story I learned from Dr Attara, acting principle of UG College at the university. Decades ago, it seems that king of Dhrol, popularly known as Thakur of Dhrol had a problem of convulsions when he went to bed, followed by headache and other problems. He consulted many English doctors in Jamnagar and Mumbai and somehow nobody could treat him.

He was advised by the doctors to go to England for surgery of some suspected tumour in his head. On the way to England, he was resting for a few days in Ahmedabad. His ADC told him about a vaidya in the city who he felt could be given a chance, just in case it helped. The idea was not liked much by Thakur but he relented

on his insistence and agreed to visit the Vaidya.

When the word was sent to Vaidya Prabha Shankar Patni (whose disciple RL Parikh later became the V-C of Jamnagar Ayurvedic University) that Thakur of Dhrol wanted to see him, he advised him to come in queue since he didn't break his rules for any body.

Accordingly Thakur 's turn came and the Vaidya saw him. He advised his assistant Rasik Lal Parikh to put some oil in his ears, cleared the clogging wax and gave some other medicines. He asked him to take rest for a while till he could see other patients. In the meanwhile,

I wish contemporary elite patients would think about the debt they owe to this valuable traditional healing system, and continue this great tradition of philanthropy and creation of public good

Thakur got relief and felt very happy. He asked him as to what fees or gift could he offer to him for getting him rid of this great problem.

Vaidya did not want to take anything from him but Thakur insisted. On seeing his keen desire, Vaidya asked him as to how much he would have spent on his visit to UK. Thakur kept all the money he could have spent for his travel and treatment abroad on the table. Vaidya didn't touch this money and asked a trust to be established for popularisation of Ayurveda in Gujarat. He invited Bhikshu Akhandanad to take this money but what would Bhikshu do with it. He set up Sastu Sahitya Vardhak Karyalaya to popularise low cost scriptures as well as Gujarati classical Ayurvedic books translated by Girija Shankar Mayashankar Shastri.

I wish contemporary elite patients would think about the debt they owe to this valuable traditional healing system and continue this great tradition of philanthropy and creation of public good.

# Social challenge awards of Rs20 cr: A Gandhian legacy



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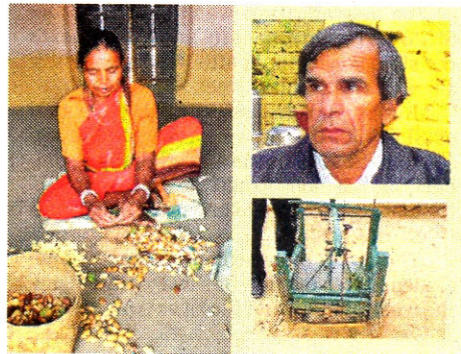
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**T**he fact that there is not a single challenge award at the national level illustrates the logic of inertia and indifference that the state has towards the unsolved problems of the common people. Not to speak about the problems that has been emerging as a consequence of development. The country has not learned to say, "enough, no more", to the problems that we have been living with.

Way back in 1929, Gandhiji was faced with a similar problem. He realised that if khadi had to become an alternative to the mill-made clothes from England, then charkha had to become more efficient. He offered an award of Rs1 lakh (7,700 pounds, more than Rs 20 crore today) to anyone who could come out with a new design of charkha. The conditions that the future design should meet were specified. Isn't it a time that hundreds of crore that government intends to spend on Dandi memorial or thousands of crore other such extravaganzas are utilised for developing solutions to the problems that poor people face, be it the manhole workers, paddy trans-planters or other problems that I will enumerate next.

There is no dearth of millionaires and billionaires in the country. How is it that the conscience of no one pricks them to offer crore or even lakh as an award to solve problems with which we have been living with for millennia, centuries or even decades. NIF may not be able to afford such attractive prizes but will soon announce challenge awards for some of the problems.

Let me illustrate some of these problems. All of us eat rice without thinking about the drudgery that the women have to go through while transplanting paddy. We must develop already developed manual trans-planters, for example by Photo Singh, Baghpat, UP and battery or motor driven trans-planters, which women workers could afford to own and provide services. In Bastar, women use stones to



(Clockwise) Woman crushing mahua seed with stone in Bastar, Photo Singh and paddy transplanter

crush mahua seeds to extract kernel and press it using wooden logs to extract oil.

Large variety of forest products today go out of forests as unprocessed raw material ensuring thereby, continued poverty of tribals. We have to develop low cost, low energy requiring grinder, pulverising unit, dryer, fractional distillation apparatus, human powered UV treatment unit (such as developed by Dr Jain in Bilaspur) for ensuring in-situ value addition. There is no way naxalite problem can be solved in the long term without providing them viable and affordable opportunities.

The norms of FDA requiring 1,000 sq mtrs of a space with five separate rooms may not be required for making many of the high quality ayurvedic medicines. Increase in the growth of AYUSH (Ayurveda, Yoga & Naturopathy, Unani, Siddha and Homeopathy) has to go hand-in-hand with high-quality manufacturing units. In many of the high poverty regions, numerous crops and their local varieties are grown, each one of which may have unique food processing potential, already known to local women in many cases. Neither national nor state level gene banks have characterised the germ-plasm for their nutraceutical or food processing potential. I could add dozens of more challenges but the message is simple. We need public spirited, entrepreneurs, politicians and officials to come forward and say, "enough, no more" to the problems. I look forward to hear from such people soon. [anilgb@gmail.com](mailto:anilgb@gmail.com)

# Bridging trust deficit in Kashmir



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**W**hen an all-party delegation visits Kashmir in a few days time, there is a need to debate as to what they will say to the youth there. All this while, not for one day, did Parliament stop its normal work and discuss the anguish of the youth, use of excessive force, undoing of all the gain the forces had made in the last two decades, and a rethink of the current strategy. Now that there is an initiative, let us make most of this opportunity: here is a list of what the all party delegation can do to assuage the feelings and make amends for the pain caused.

The delegation should meet the mothers of the slain youth and express nation's grief over their loss. It is true that a similar protest anywhere else would not have provoked such excessive use of force. There is a need to rethink the strategy to handle public protests. While the use of violence must be condemned by all sides, we must realise that there is no alternative to dialogue. India met Naga leaders even outside the country, why should there be any hesitation in talking to even so-called separatists within the country. I am quite hopeful that in any reasonable dialogue, angry youth might realise that India with all its imperfections offers a much better future forward than any other path. But the lost faith has to be restored.

There is large number of unemployment in Jammu and Kashmir. Where else would you find a PhD teaching in a school for Rs2,000 or Rs3,000 a month, which we



Members of 19th Shodh Yatra interact with locals in Kashmir

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saw during our 19th shodh yatra, Qazigund to Lazbal (Anantnag). We need to introduce a massive R and D investment, set up educational call centres for children who can't afford tuitions and coaching, and a lot more food and agro/ayush processing units. When we went into a shop during that yatra and asked for some thing made in Kashmir (other than craft or textile), we couldn't find even candle made in Kashmir.

There has to be a massive programme for local industrialisation for which entrepreneurs may have to be invited from other parts of the country as well, in partnership with local youth. Tonnes of unripened apples fall down every

year due to unseasonal hailstorm and heavy rains. But there is no industry set up to extract phytochemicals and other products out of it. Similarly, walnut peels are used for making bricks instead of high value cosmetics.

We should plan for return of pandits without fail as a part of comprehensive solution to the problem. We should grant much more autonomy at village level as allowed in Nagaland and Mizoram.

Inquiries should be ordered in all cases of use of excessive force. We should have monthly reviews by all party delegation to ensure that all the issues agreed upon in this meeting are implemented without fail. Corruption is corroding the delivery of services and that needs to be checked.

RTI must be made functional and effective. Lines of communication between central, state and local bodies have to be kept dynamically active for some time, more than average. Without making any concession to insurgency, innovations in constructive engagement can help restore normalcy.

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# Dissent, disagreement and diversity are agenda for NIC



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It was very gratifying that the first formal meeting of (National Innovation Council) NIC held recently in Planning Commission, saw diverse opinions on how to carry forward the agenda of inclusive innovation model for the country. While there was no consensus on how NIC will prioritise the contending ideas to take forward the agenda, it was clear that promotion of innovation will have to be pursued through a very diverse approach.

If there was a consensus it was on the need to promote dissent, disagreements and diversity while pursuing various goals. The issue of announcing challenge awards for solving India's century old problems did not evoke a strong sentiment but a reality show on television did. So much about inclusive agenda! It might not have occurred to the mandarins that most of the Naxalite affected villages do not have electricity and so the issue of their participation in reality shows does not arise.

If radio had been chosen as a means of mobilising the minds, may be the social inclusion could have been achieved. But radio is perhaps not as glamorous for the change agents. Another idea debated was a fund of funds to promote innovations. It was hoped that the fund with large scale participation from private sector will help lower barriers for start ups to access risk

capital. It was ignored that not all sectors suffer equal disadvantage in accessing risk capital.

The history of venture capitals, which have seldom invested in ideas that are yet to prove their worth in market was ignored. There is a need to focus on sectors like ayurvedic ( Indian system of medicine like ayurvedic drugs) which can only flourish when tribals become active drivers of ethical and fair supply chains.

But this is not on the agenda of NIC yet. If in the process the extremists elements in society deepen their roots, will we be forgiven for this lapse. Similarly, the investment in hundred of thousands of ideas of students available at tech-

capital.in has not become a priority yet. Nor has investment in creative ideas of various village panchayats become the focus of funds.

No strategy has been developed to link formal and informal science so far.

It is obvious that connect between needs of masses and the system of thinking at higher level will only be forged slowly.

Society will have to remain vigilant so that the agenda of inclusive innovation is not hijacked by more privileged sections once again, as has happened with so many other initiatives. Sooner or later, efforts like that of Honey Bee Network will have to be made as points of reference.

We have spent only little over two decades so far in persuading the nation about its innate creative potential. May be it will take another decade or two before text books of every class will have some lessons about grassroots innovations, list if pending problems, and self inspired efforts of local communities to take charge of their destinies. Seeds of impatience have to be sown in every mind. anilg@gmail.com



Will the child's curiosity be converted into creativity? NIC needs to answer it



# Story of an innovator's struggle



## MINDS ON THE MARGIN

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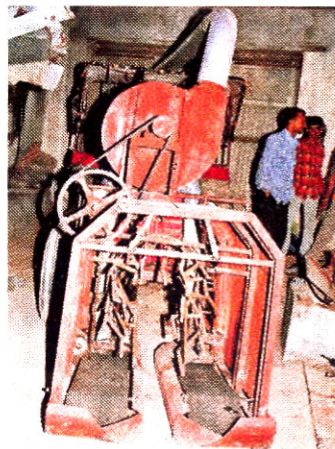
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**T**he story of Natthubhai (099240 55012), a 39-year-old, passionate farmer pursuing his dream of developing a tractor drawn mobile cotton picking machine is a story of a decade long struggle. The work is still in progress. He made a model earlier, which did work in the field but somehow left a few balls unplucked. He was not happy with that model. He dismantled it and started working on new designs. Leaving his mother Maghu Ben Vadher, he has devoted a lot of his time to pursue his passion.

But when he invested his savings year after year on designing this machine, and still success eluded him, his wife Push-paben started complaining. She wanted him to think about education of his children Dharmendra and Ravina, their future and their daughter's marriage. Natthubhai recalls, "Some times, I would start from the house saying that I am going out to grocery shop for purchasing oil. However, I would return bringing some iron parts for the machine."

But this could not last for long. He had already invested more than ten lakh rupees and there was no guarantee that he would succeed. Tired of family's criticism, he stopped working on this machine.

At this stage, SRISTI which had scouted him originally, reconnected with him. He was requested to resume his work. Mansukh Bhai Patel, who had developed a national award winning cotton stripper machine earlier was also requested to suggest ideas. Slowly and slowly, GIAN and



Natthubhai (in pic) is a 39-year-old passionate farmer pursuing his dream of developing a tractor-drawn mobile cotton picking machine

NIF offered financial support and requested him to restart his struggle.

A workshop built by him in Erwada village of Dasada taluka, Surendranagar district became active once again. He has started working on a new model. Honey Bee Network is looking out for such crusaders also who may not have succeeded in their mission yet but have a desire to persist with their dream, have a reasonable chance of success and are willing to share their ideas with others, and take their feedback.

Nattu Bhai's search will help a lot of farmers. Even educated unemployed landless people can be supported to buy this machine so that twin goals of improved

productivity and enhanced employment are not compromised. There are some times children engaged in picking cotton which is not something that any civilised society should permit.

There must be many more such farmer cum mechanics or artisans who we do not yet know. But they are the real assets of a society. They are real knowledge workers and deserve to be become a point of reference. Could we not have a at least one crore social innovation promotion fund in every district managed by local elites to spot, support and sustain such ideas.

We should also have mobile high precision tool labs which can be requisitioned by such innovators for a given time period so that not every innovator needs to make a fixed capital investment in workshop for developing just one prototype. The story of their struggle should be part of the curriculum so that young minds learn how an innovator struggles at personal, professional and social fronts, all at the same time. Indian journey towards a developed nation will be pursued on the shoulders of creative people like him.