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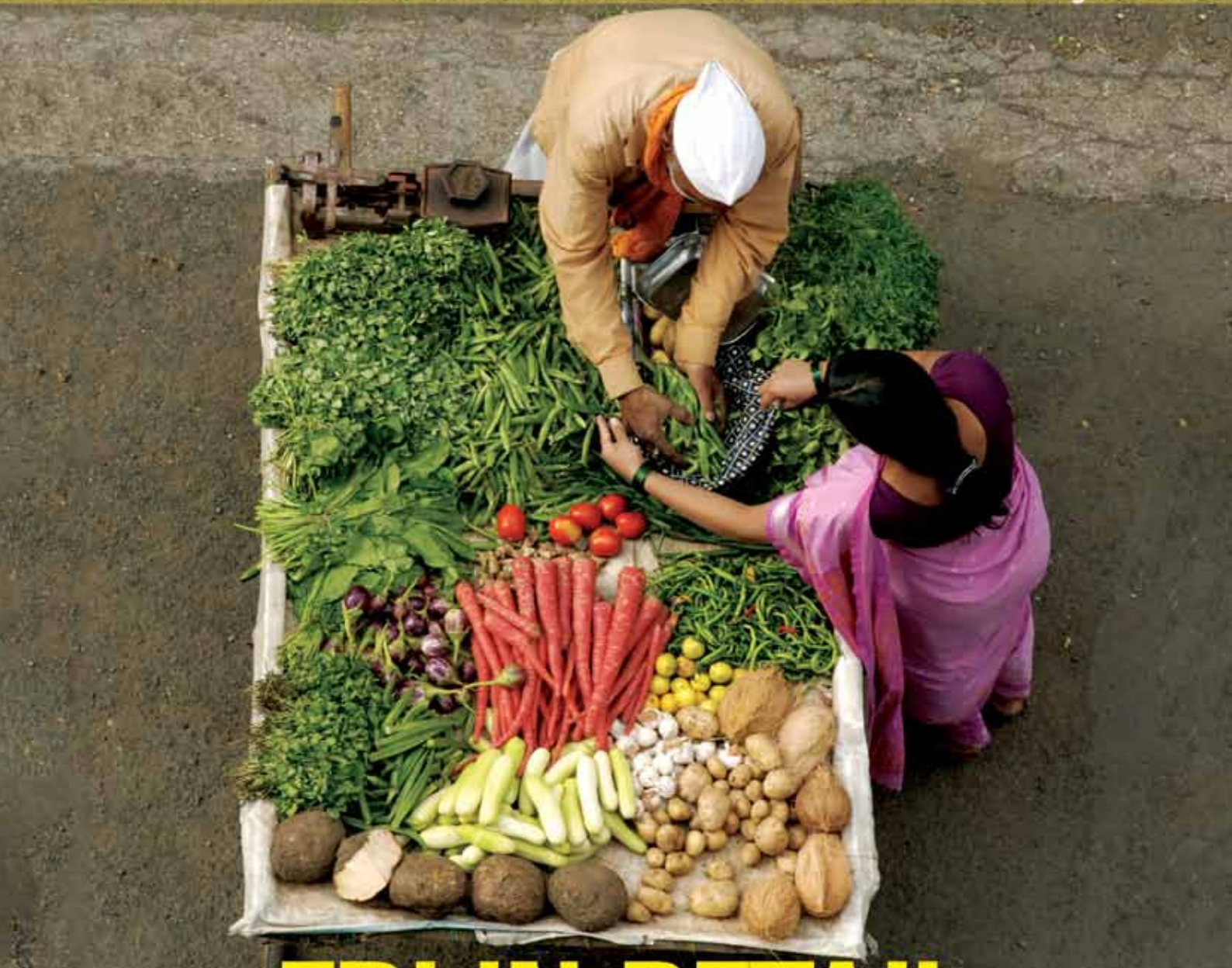
Issues and Ideas for Indian Agriculture



FDI IN RETAIL 08
Farmers not Centrestage

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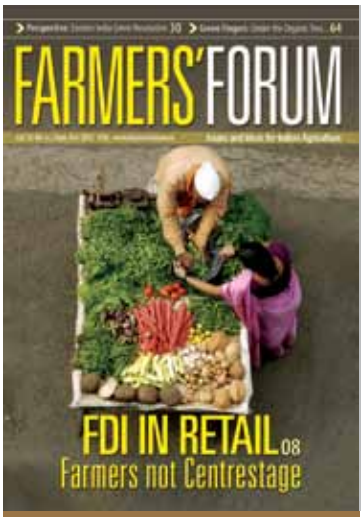

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Time for the FARMER to Act

For they sow the wind and they shall reap the whirlwind
– Hosea 8:7

It is not a little curious how the addiction to power guides and motivates politicians. It is even more curious to observe how current and former politicians manage to sustain themselves in power, or to get themselves rehabilitated by creating controversies to divert public attention from the real issues or cloak ordinary issues with such great significance that people are beguiled into believing that great things are in store for them. As the cynic says, when veteran politicians cannot solve a problem, they create a bigger problem or issue so that people forget the earlier crisis, as has often been the case with Indian agriculture. Meanwhile, in India, the gap between promise and performance in the farm sector often remains bewilderingly large.

For some curious reason, foreign direct investment (FDI) in multi-brand retail has been made a huge political issue with heated debates around how great a reform measure it will be and how it will change things for Indian farmers. Amidst all the heat and dust around what percentage of FDI will be allowed, a very simple fact seems to have been overlooked: FDI is not a reform measure at all. Indeed, it has nothing to do with agriculture reforms that have suddenly been equated with FDI in a national political debate in which everyone, the debater included, is clearly confused.

FDI is merely an investment policy notification and cannot, by any means, be equated with or confused with critical agriculture reforms that India needs. FDI in itself is an investment opportunity and just that. There is no guarantee that investors will jump at the opportunity. Consider the example of 100 per cent FDI that is permitted in the cold storage sector but has so far attracted zero global investment. The answer lies in the fact that the investment is not

FDI IS NOT A REFORM MEASURE. INDEED, IT HAS NOTHING TO DO WITH AGRICULTURE REFORMS THAT HAVE SUDDENLY BEEN EQUATED WITH FDI IN A NATIONAL POLITICAL DEBATE THAT CONFUSES EVERYONE

IT IS TIME FARMERS SET THE NATION'S FARMING AGENDA, TOOK AFFIRMATIVE ACTION FOR INDIAN AGRICULTURE, FOCUSED ON GENUINE FARMING ISSUES WITHOUT LETTING POLITICIANS OF ALL HUES USE HIMSELF FOR ELECTORAL GAINS WITHOUT EVER CONTRIBUTING TO GENUINE FARMING GAINS

considered lucrative in a world where private investments are motivated by profits and only profits. Profits in the current context come from front-end operations. Investors, thus, look at front-end investments and try to avoid back-end investments.

It is commonly accepted that the Indian farmer is bereft of choice. He has to sell at the *mandi* and, in a monopsonistic world, accept what the buyer offers. Again in a system in which everybody is entitled to a profit, the farmer seems to be the odd man out. Prices may go through the roof but the farmer does not get a share of the higher price that the consumer pays. All that the farming community is asking for now is a share of the proceeds that is commensurate with its efforts. It is not against others in the value chain making profits; it is worried about being able to sustain itself.

In the FDI context, this can be reasonably achieved if every prospective retailer with an investment of Rs 5 crore mandatorily purchases 75 per cent of the agriculture produce sold in the retail store directly from the farmers. A big league player seeking to tap the huge Indian market for profits should be required to make such a social investment commitment.

Hopefully, FDI, with the mandatory farmer purchase rider, will provide a healthy competition amongst buyers allowing the farmer to leverage it into securing better prices for his produce; for some profit to directly trickle down to him. This would bring about some reforms in the system. Indeed, there are several levels of farm sector reforms that have become critical and if FDI is to benefit farmers, it makes sense for it to follow agriculture reform and not vice-versa.

FDI per se is of no major significance for farmers because FDI in multi-brand retail is not about uplifting the farmer's lot. Nor are farmers in a position to influence the course of FDI notification or force any new legislation. Indeed, there is no united

farmers lobby because of divisions amongst farmer ranks, which is another major problem that the farming community must address.

The other and perennial problem, of course, is with farming conditions in India; in the current year, especially with the unpredictability of the rains. Travelling through Rajasthan last month, one was confronted with the complexity of monsoon behaviour and its impact on the farming community. One week of drought-like situation was quickly replaced by the thunderous applause from the rain gods, ushering in joy across the board; wiping out the despair over government apathy, at least temporarily.

Fortunately for Indian agriculture, the rains have arrived even if they are late. Rains and droughts are a matter of life and death for the Indian farmer; they represent the difference between surviving and contemplating suicide for those farmers who are dependent on rain. This has been the case from time immemorial. There is so much in common in the circumstances obtaining between beginning of the end of the Mohenjo Daro civilization and the north-west India and Pakistan of today in terms of climate change implications and future water availability.

These, far more than FDI, are matters of consequence to the farmer; these are the greater dangers looming large over the farming horizon that policy makers are blissfully ignorant about. The Bharat Krishak Samaj will examine these concerns on the pages of Farmers' Forum and other fora. They encompass farm energy, phosphorous in soil, water, nitrogen and potash use in agriculture; issues that critically impact Indian agriculture. It is time farmers set the nation's farming agenda, took affirmative action for Indian agriculture, focused on genuine farming issues without letting politicians of all hues use himself for electoral gains without ever contributing to genuine farming gains. ●

Ajay Vir Jakhar
Editor
@ajayvirjakhar

To the Editor

To the true spirit of farm enterprise!

Sir, Apropos of your article, The Magarpatta Story: A City that Farmers Built; Farmers' Forum, July-August, 2012; it was heartening to see farmers taking collective decisions and succeeding. The Magarpatta example should be an inspiration to all farmers who seek to produce wealth on and off the field and live in harmony with each other.

Rahul Sharma,
New Delhi

The 'spoilt' farmer

Sir, Apropos of your editorial, Hobson's Choice for the Farmer; Farmers' Forum, July-August, 2012; and the many articles that are constantly talking of the dispossessed farmer, I think you and your farmers are parasites. You need free power, diesel, minimum price but want to pay no income tax!

Kishore Nair,
(By e-mail)

Bt Cotton, the boon-bane controversy

Sir, Apropos of your article, 'Bt Cotton: Boon or Bane?'; Farmers' Forum, July-August, 2012; based on the report prepared by Bharat Krishak Samaj and the Council of Social Development, I am happy that you have gone into the details and brought out the facts on the impact of Bt cotton on farmer prosperity in India. Notwithstanding the problems that some may have had with it, on my farm I have gained from use of Bt cotton seeds.

K. Venkatesh,
Hyderabad, Andhra Pradesh

King Kurien

Sir, In our search for heroes, we often to tend to forget the real heroes of our time. The late Verghese Kurien was one such hero. The title 'Father of the White Revolution' was well earned by him for it was his extraordinary vision and enterprise that laid the foundation for the high successful co-operative dairy movement in the country. What a success it has been: a country with a milk deficit today is the world's largest milk producer.

I hope Farmers' Forum will pay an appropriate tribute to this king among entrepreneurs.

Ramesh Upadhyay,
Patna, Bihar

Farmers' Forum website www.farmersforum.in is now up and running. Log in to check out all earlier numbers.

I was most impressed with the courage that you have shown in speaking up for the cause of farmer prosperity and have taken on criticism for doing so. I hope you commission more studies that will help farmers and bring about a fair understanding of issues around the farm sector and address other issues that create confusion as well.

Bhoomika Patel,
Vadodara, Gujarat

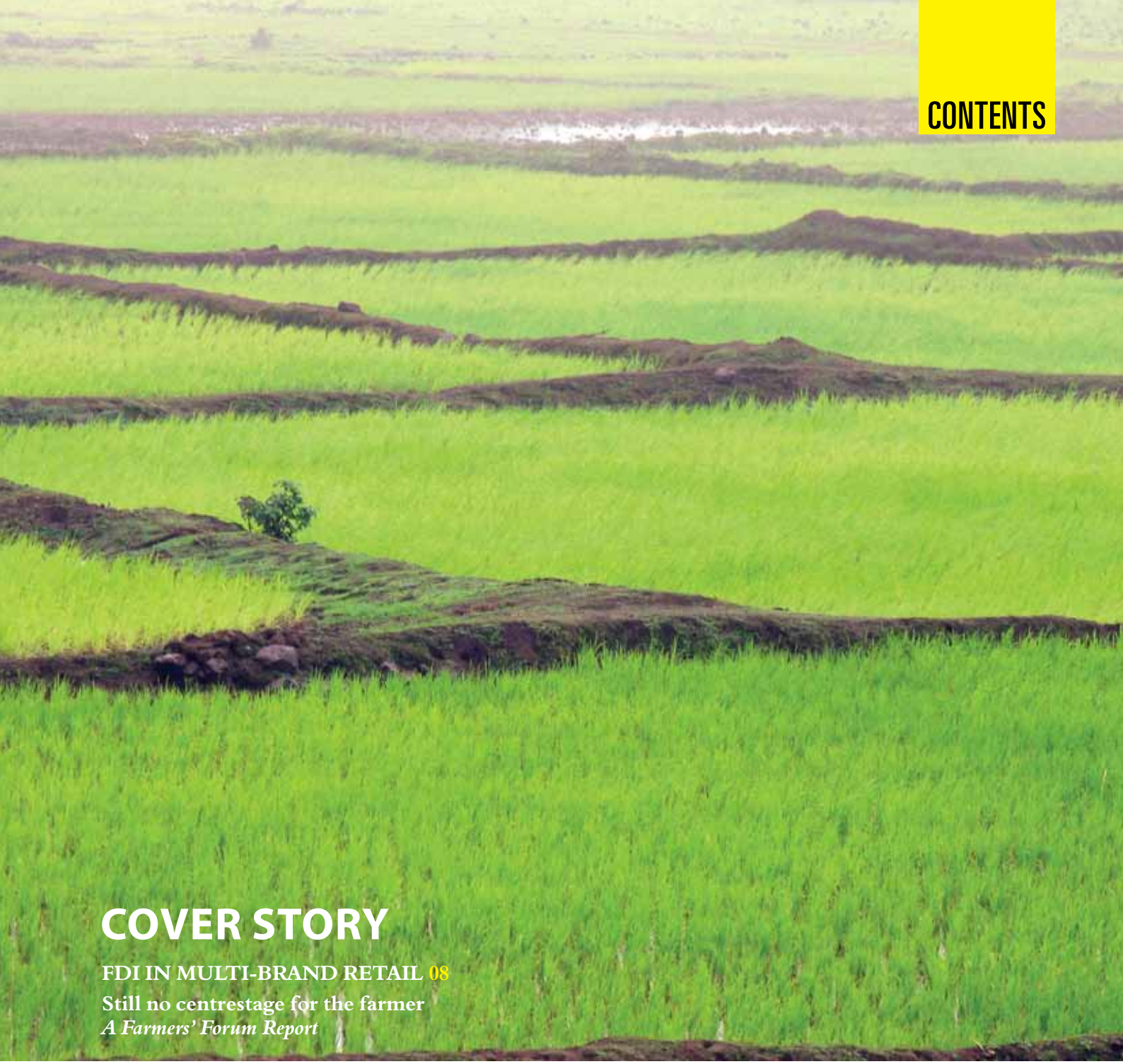
Your study on Bt cotton seems to be favouring a technology that is not favourable for Indian conditions and Indian farmers. I believe it is biased. You should refrain from commissioning such studies in the future because they will only give you a bad name. I have been a reader of the journal but now I have questions about your integrity.

Vijay Shankar,
Dehra Dun, Uttar Pradesh)

Sustaining the Himachal apple

Sir, It is interesting how Ashim Choudhury – Himachal Pradesh: How green is my apple?; Farmers' Forum, July-August, 2011 – has gone into the nitty gritty of apple farming in the region and explained the worrisome state of affairs there. This should certainly awaken the Himachal government and the apple growers and make them adopt a sustainable approach if they want apples to remain profitable for the orchardists. if they want apples to remain if they want apples to remain.

Vinay Kumar,
Dharamshala,Himachal Pradesh



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FDI IN MULTI-BRAND RETAIL

Still No Centrestage for the Farmer

A Farmers' Forum Report

The hullabaloo around allowing foreign direct investment in the retail sector and its effect on the farm economy has one amusing aspect: there is very little consultation with the farmer on what he wants. Like other policy decisions that affect his life, the debate on FDI in multibrand retail has bypassed the Indian agriculturist who, in any event, is used to being bypassed. For purposes of any meaningful dialogue though, this subject needs to be prefaced with a simple understanding that traditionally the farmers have suffered at the hands of those who have a monopoly on purchasing and selling agricultural produce.

There is perishable agricultural produce and non-perishable produce that includes rice and wheat, for instance, the price of which is sought to be controlled by the government. Perishables include fruit and vegetables that are sold in the market place that is controlled by traders and middlemen. The farmer is never a beneficiary of increased prices. The question is now being asked if FDI in retail can help enhance the farmer's share of the consumer price. Also, will it be possible to have a mandatory 75 per cent direct sourcing from farmers as a condition for allowing foreign direct investment in multi-brand retail?

Farmers' Forum organized a conference on "FDI in retail: Will it benefit the Indian farmer?" under the aegis of the Bharat Krishak Samaj in New Delhi on August 21, 2012 at the India International Centre, with a group of experts from a cross section of disciplines speaking on what FDI means for the India farmer. They included policy-makers, think tanks, research organizations, political parties, business chambers, traders' organizations, agri-

produce marketing organizations and the corporate sector. For all the lip service, it would still seem that the farmer is nowhere in the centrestage of this big drama that is seemly all about protecting his interests.

Speakers at the seminar were Arpita Mukherjee, Indian Council for Research and International Economic Relations; Arvind Singhal: chairman, Technopak Advisors; Praveen Khandelwal: secretary general, Confederation of All India Traders; Dharmendra Kumar, director, India FDI Watch; Rajinder Kumar Sharma, chairman, Agricultural Produce Marketing Committee, Azadpur; S. K. Sharma, co-chairman, Regional Committee on Food and Agriculture, CII (northern region); P. Muralidhar Rao; national secretary, Bharatiya Janata Party; Nirupama Soundarajan, additional director, FICCI; Mohan Guruswamy, chairman and founder, Centre for Policy Alternatives, New Delhi. The programme was moderated by veteran journalist, Paranjoy Guha Thakurta.

Introducing the seminar, Ajay Jakhar, editor, Farmers' Forum and chairman, Bharat Krishak Samaj, said that the key question to discuss, when one is considering FDI in retail, is whether India should first have agricultural policy reforms in place before bringing in FDI or whether agricultural reforms would follow FDI. "These issues need to be discussed before we even decide whether FDI in retail is good or bad". As a farmers' organization, Bharat Krishak Samaj accedes that while the trading community as well as the middlemen play a role in taking the crop to the end user, it is the farmer who should first get a fair price because it is his land, labour, capital and enterprise that produces the crops.

Ask what India has done for its farmers; not what FDI will do…

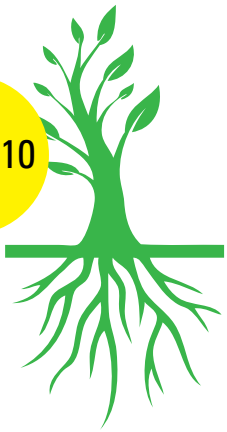
PROFESSOR ARPITA MUKHERJEE
Indian Council for Research and International Economic Relations

Whether or not FDI in retail will benefit the Indian farmer is a controversial subject in the same mould as the controversy over whether the World Trade Organization would help the Indian farmer that raged a few years ago. It was never easy to figure out how the WTO tariff regime would impact Indian agriculture. It is the same with people. With FDI in retail, the foreign investor has access to both the food processing sector and the wholesale market, courtesy the franchise model. The question is: what additional impact can FDI in retail have on the Indian farmer? One can have endless arguments over this and not reach a conclusion. The point is that India is not a closed market any longer; it operates in an open market and things will not change if one shuts one's eyes to this reality.

Whether or not FDI in retail will help the Indian farmer is not really a question that should concern foreign companies investing in India. A foreign investor cannot be expected to undertake welfare schemes under corporate social responsibility. He comes to make a profit and will only invest in infrastructure or generate employment to the extent that it helps him earn a profit.

The more important question is what has the country done for farmers in the past 65 years under a closed economy structure. Why is India not the greatest farming society in the world? In today's service-led economy, 60 per cent of India's population is dependent on farming. The question is not whether FDI can help a farmer but whether India can sustain 60 per cent of its people depending on agriculture, which generates no more revenue than the service sector with much fewer people. Would it not be more beneficial to create employment by putting up processing plants near the lands where farmers produce specific commodities and create their own lables.

It is not the responsibility of foreign retailers to provide irrigation, reduce wastage in the supply chain and give farmers access to finance. All that they can provide is a better market, better technology and a choice to farmers to sell where they want to; so that they do not necessarily have to go back to the money lender to sell when they do not want to do so. Choice is a big thing not just for the farmer but for everyone. It is like having a range of cars to choose from and not just being forced to drive an ambassador.



What has the country done for farmers in the past 65 years under a closed economy structure? Why is India not the greatest farming society in the world?

Prof. Arpita Mukherjee

There is a concern around FDI leading to direct sourcing from manufacturing companies as well as farmers. That will be there; even Indian companies that have entered retail are sourcing directly, not just to reduce the cost to the customer but also to have a better control over the supply chain so that product longevity can be enhanced and wastage reduced.

What should be remembered is that foreign retail giants like Walmart or Carrefour have different models of operation that can actually impact unorganized retailers or farmers. That is where it would be a good idea to have an allied policy framework regarding contracts, sourcing and such other issues. One can learn from the good that retail giants have done for farmers: Walmart has worked with Vietnamese

farmers. Metro has worked with Indian farmers in good examples of corporations and farmers working together and not against each other.

To deal with the current policy dilemma, if the government tells the foreign retailer to invest 50 per cent in the supply chain or oblige the country through other conditions before he is allowed to bring in FDI, it would amount to dictating terms to him. No investor likes to change his operating model. This is why India has not yet got FDI in single-brand retail save for two companies. In fact, the debate is not about FDI in retail; it is about whether organized retail will affect the Indian farmer or not. If at all, the impact on the farmer or on unorganized retail will take place courtesy organized retail, irrespective of whether it is run by an Indian company or a foreign company. This is not an FDI-linked dilemma and the reality is that the farmer has not been impacted yet.

To bring the debate over the politics of FDI in retail into focus, the BJP government proposed 26 per cent FDI in retail in its 2004 manifesto and lost miserably. The Congress learnt its lesson from this and did not propose any FDI in its election manifesto but, having realized the benefit that it could bring to the farmer, it has brought it to the Parliament. To narrow down the debate, FDI in retail is not just about agricultural products, it is about many other things like electronics, textiles and such others, including processed food. There already are many companies, even multinationals, in the processed food industry. The debate then is only about FDI in fresh fruits and vegetables and its impact on farmers.

If the fresh fruits and vegetables segment has to be supported, it can only be achieved through agricultural reforms that have not happened in the last 65 years. How can anyone expect a company like Walmart to come and clean up the mess in India overnight? It is important to realize that if India wants to compete with countries like China it should leave politics aside for some time and focus on the economics of the issue.

FDI in retail is a non-issue; agri reforms hold the key

ARVIND SINGHAL
Chairman, Technopak Advisors

For the last 65 years, almost everybody – politicians, NGOs, journalists and consultants – has been making a living in


Arvind Singhal

the name of three entities: the poor, the backward classes and farmers. Yet the number of poor in India is more today than what it was in 1947. Despite many affirmative policies for the backward classes, the poor are forced to migrate from one part of the country to another because of discrimination; sometimes even because of regional affiliation. When it comes to farmers, all political parties have come to power talking about farmers who curiously happen to be worse off than at the time of Independence. Thus politician-talk about upliftment of such groups should be taken with a pinch of salt. They are concerned about sustaining themselves rather than those they pretend to care for.

To go by historical facts on FDI, there never was any restriction on FDI in this country in the 1990s. It was a minister, who was miffed by an organization who achieved an 'administrative feat' by starting this debate. As an administrative notification, FDI in retail never required state government or Parliament approval. In fact, it was never discussed in either the sixties, seventies, eighties or even the nineties. The first foreign retailer in India was Lanz from Germany that started business in India along with Escorts but folded up. The debate around FDI in retail is then, actually, a debate around a non-issue that has been blown out of proportion.

To consider the data, India's GDP in 2001 was equivalent to $450 billion as per today's exchange rates. Of this, the merchandize retail consumption, including hawkers and local grocery stores and such others, accounted for $120 billion. In 2011, it

In 2011, with all the might of the Tatas, Birlas, Ambanis, Goenkas and foreign retailers put together, the share of organized retail was only $25 billion, with zero profit

was around $1,840 billion and $470 billion out of this was retail consumption. In 2021, if the growth rate remains at between five per cent and six per cent, India's GDP could be $3 trillion with $350 billion of additional retail consumption.

What is the share of organized retail in all this? In 2001, it was just $2.4 billion. In 2011, with all the might of the Tatas, Birlas, Ambanis, Goenkas and foreign retailers put together, the share of organized retail was only $25 billion and with zero profit at that. So while retail consumption has grown by $350 billion in the last 10 years, the growth in modern retail is between $22 billion and $24 billion only. Where has the $350 billion growth come from if not from roadside vendors or grocery stores? How many grocery stores have shut down because of modern retail? In fact, the haats that were not being organized in the cities for many years have come back even to the metros like Delhi because consumption has gone up phenomenally.

To address the question of the apprehended 'unemployment' effect of FDI – which is one of the concerns being raised in the Parliament in relation to FDI in retail – between 20 million and 50 million additional people, for whom the government could not provide jobs, have employed themselves as traders in the past 10 years.

In the next 10 years, in the best of circumstances, modern retail will not exceed $80 billion because there is no space in big cities. Walmart and Carrefour are primarily worried because renting urban space is becoming more and more difficult. At between Rs 200 and Rs 400 a square foot, no retailer can make money. There is, besides, the cost of power, labour and other things that tilt the scales against modern retail. The current number being around $24 billion, the $55 billion additional growth would be against the $350 billion overall increase in retail consumption. One can rest assured that given India's policies, modern retail cannot really grow.

Where does the farmers stand in this scenario? Of the $470 billion retail consumption, more than $325 billion is spent on food. This means that more than 60 per cent of India's merchandize spending is on food as compared to 10 per cent spending on food by developed countries. Of this $325 billion, modern retail accounts for less than $2 billlion in the foods space. This cannot impact farmers in any way, either positive or negative, which indicates that FDI is a non-issue for the farm sector.

Despite major efforts by top industrialists in our country, modern retail has not gone beyond 50 cities except for textile and shoe stores. Even if it goes to about 100 cities in the next 10 years, the maximum population that it will reach out to would be about 160 million people. Of this, not more than the top 20 per cent or 25 per cent would comprise modern retail customers. The rest of the population lives in slums and is unlikely to shop at these stores. Between 30 million and 40 million, or two per cent of India's population, might depend on this format of buying. Where then is the need to worry about the impact on traditional retail shops? What India actually needs is agricultural reforms, to do away with the *mandis* and octroi duties because of which so much produce is wasted while trucks have to wait to clear those bottlenecks.

Big box retail and predatory pricing

PRAVEEN KHANDELWAL
Secretary General, Confederation of All India Traders

FDI in retail does not directly relate to any one segment of people like farmers, transporters or businessmen but to the entire Indian economy. From 1947, traditional retail has been contributing 15 per cent to the Indian GDP but has never been a priority for any state or the central government or even for political parties. There is a policy for everybody in this country including labourers, farmers and hawkers but none for retailers. Despite this, the share of retail in the Indian GDP shows that it is a vibrant space.

Business modules of such retail giants as Walmart are often based on predatory pricing, be it in America, Europe, New Zealand or Australia. Predatory pricing is a strategy to kill competition in

all products, become dominant and then behave in a monopolistic manner. This is what has happened in all countries. One may well ask, if modern retail is so beneficial, why does the USA, which is its biggest centre globally, provide a subsidy of $1 billion to its farmers? Why did the biggest revolt against unemployment start from the Wall Street and why has inflation there gone up from the average 1.28 per cent to more than 3.78 per cent in recent times?

If the government of India believes that inflation will be controlled because of FDI in retail and employment and infrastructure will improve, it is a figment of its imagination. Also, if those favouring FDI believe that it is not going to substantially effect traditional retail, why is the government in such a hurry to bring in FDI in retail? Reportedly, Walmart has spent more than Rs 60 crore in 'lobbying' in India over the past two years, as admitted by it to the U.S. senate. The government had no answer when asked where this money went.

The worry is that the farmer does not get a fair price for his produce as the gap between his selling price and the consumer's purchase price is huge. This gap needs to be reduced by determining the cost and the selling price of each commodity. The government blames the middleman for this anomaly and wants to eliminate him. The question is whom will the government eliminate. There are the labourers, hand cart pullers and transporters, who contribute to the costs/revenue generation at all levels.

Praveen Khandelwal

Walmart has spent more than Rs 60 crore in 'lobbying' in India over the past two years, as admitted by it to the U.S. senate.

The first question to be asked is how come infrastructure will be created in this country only when Walmart, Carrefour or Tesco bring it. India has had a policy of 100 per cent FDI in cold storage for the past 10 years but not a single cold storage has been opened by a foreign company as yet because there is no power to run cold storages. The second question is what infrastructure will FDI create: roads or power. The big box retail companies are keen on back-end and not front end investment. Apparently, the government will be happy, for instance, with a seven-storeyed building in Noida that the investor can deem a back-end investment, for which he has a right to self-certification!

Then again, there seems to be no problem with pricey brand ambassadors like Mahendra Singh Dhoni and Amitabh Bachchan – who charge more than Rs 200 crore for advertisments and add to costs that the consumer pays – but there is a felt need to eliminate the middleman who earns by adding value along the supply chain. This seems to be a strange logic in a world where these middlemen reach products and services to every nook and corner of the country. There is a village in Ladakh with no government presence – not even a post office – which has some 40 retail shops that could do with some support. The government should step in here to upgrade and modernize existing retail structure and rectify the anomalies apart from ensuring better co-ordination between the farmers, *mandis* and the retailers. None of this requires FDI in retail.

Big ticket retail too is a middleman

DHARMENDRA KUMAR
Director, India FDI Watch

The debate around FDI in retail is a decade old. The good thing is that it has now shifted from retailers and traders to farmers but only in a broad context. One is not sure which farmers are being talked about: those who will be able to become part of the supply chain created by Walmart and other foreign retailers or those who export their produce. To go back to the WTO, whose norms were imposed on India two decades ago, can one convincingly say whether they have been beneficial to our farmers? Export of agricultural produce has increased over these years but so has import. There has been no net social gain for Indian farmers.

All talk of FDI not impacting farmers or retailers is bogus though. Not just farmers and retailers, FDI in retail will impact the society and the economy as a whole. Whether the impact will be positive or negative will depend on how the regulations are implemented. The foodgrain production in the country has quadrupled over these 65 years but India's population has also trippled. Even though there is a surplus of food, India has one out of every four children seriously undernourished. The question facing China in the 1990s, when it was growing its manufacturing sector, was: who would feed China. The Chinese government said that the people would feed themselves and adopted a balanced policy of agricultural reforms; taking excess population out of agriculture and absorbing it in the manufacturing space. India still has no answer to that question about who will feed India.

The country is in the midst of a financial crisis and that of farmers' distress. Any new policy or modification in the supply chain must, therefore, be carved around the needs of a small farmer who will ultimately feed India. If any policy does not help him, it will impact the entire country. Those saying that big box retail outlets will not affect small stores are lying. The two cannot co-exist because co-existence means surviving together in one location at the same level and not separately in countryside and in cities.

When it comes to farmers, big box retail proposes to engage with farmers by introducing contract farming around which there are many pros and cons. It is true that some farmers have gained from contract farming but those stories have been blown out of proportion by the media. There are more stories of contract farming failures. In Punjab, 50 per cent of the farmers have refused to re-enter into a farming contract. One is then back to the small farmer.

What the government can no longer avoid restructuring is the agricultural supply chain, ensuring better co-ordination with agricultural produce marketing committees, creating infrastructure and introducing co-operative farming and farmers' co-operatives for marketing produce. Doing away with the Agricultural Produce Marketing Committee (APMC) and middlemen is not an option. In fact, they should exist at least to provide competition to these super stores that themselves are intermediaries in the long chain of middlemen that already exist.

There are more stories of contract farming failures. In the Punjab, 50 per cent of the farmers have refused to re-enter into a farming contract


Dharmendra Kumar

FDI will touch only a small population

RAJINDER KUMAR SHARMA
Chairman, Agricultural Produce Marketing Committee, Azadpur

Rajinder Kumar Sharma

FDI should be introduced in retail even though it will not benefit more than between two per cent and five per cent of the population. It will not harm anybody though. After all, how much will foreign retail invest in our country? How many people can it provide for? How many growers will it benefit? However, while FDI will not change much in this country, it will be a boon for those who have spending power and even for farmers looking for better seeds and wanting to earn well from the market.

A cash-strapped government of India may be focussing on agriculture now but it has many other priorities that demand funds. Agriculture has become a joke in this country; a farmer gets neither good seeds nor pesticides. When the water level goes down, he does not get money to dig his borewell deeper even though he gets a subsidy on fertilizers. What can a farmer do with fertilizers if he does not get good seed or adequate water.

The Agricultural Produce Marketing Committee is an intermediary in the supply chain from farmers to consumers. Rai Bahadur Chottu Ram from Rohtak, who got the APMC Act implemented, saw that farmers were being exploited by village wholesale buyers. It is not clear why people think that the APMCs behave in a monopolistic manner. Anybody in this country can buy directly from the farmers, except in two states. The only rule is that if people buy directly from farmers, the buyer has to pay a market fee of one per cent when he crosses the district or state boundary.

Even in the *mandis*, there are growers' sheds that, as per the Act, are constructed only to allow the grower to sell his produce at any rate to anybody without engaging the *artiya* or any other intermediary. Had these markets not been there, the farmer's condition would have been worse. Even when he does not take his produce to the *mandis*, the farmer now knows the current price and sells it in the local market accordingly. That the rates in a Delhi *mandi* and what is paid to the farmer in Nasik, for instance, vary widely too is a myth. Every *mandi* has a website on which auction rates are uploaded every afternoon. These can be checked by anybody. The only difference is the transportation rate.

When the new APMC rules are implemented, no licence will be required to operate in the market area. The licence will only be needed to operate in the market yard. If the market committee is removed from there too, there will be nobody to control the trader who is currently controlled by the government or the committee.

There is also much discussion on wastage in fruits and vegetables but the fact is that such wastage takes place only where there are no roads or means of transportation. Earlier, things perished faster but with improved seeds anything that perished in three days lasts for 10 days now, thanks to the scientists at Pusa. Things are changing.

It is not clear why people think that the APMCs behave in a monopolistic manner. Anybody in this country can buy directly from the farmers, except in two states

FDI will bring in better standards

S.K. SHARMA
Co-Chairman, Regional Committee on Food and Agriculture, CII Northern Region

A joint study by Boston Consultancy Services and CII says that by 2021 the total retail business in India will be more than $1.2 trillion. Of this, the organized sector will account for $260 billion. The transparency that it will inject into the system will mean that the government will get between $15 billion and $20 billion more in revenue, with every transaction recorded and accounted for. Cost to the consumers is also likely to come down. This means that FDI will benefit all segments, producers, consumers as well as the government.

There are, of course, apprehensions. In the 1990s, when the reservation for small-scale sector was done away with, one thought that the small industry would be eliminated from this country. However, small-scale sector employment increased by four per cent between 1995 and 2005 and by 19 per cent in the last five years, clearly indicating sharp growth in the sector. Indeed, the overall volume of trade envisaged is so high that that there is no question of any player getting eliminated. They will all remain.

The second question is around the need for FDI when India has domestic companies in organized retail. While Indian companies have the capacity and resources to invest, they lack the experience that foreign retailers have. This has happened in every major industry. Even when FDI was opened in the automobile sector, Indian companies did have the technology and vendors but FDI brought in the international understanding of companies that had done a lot of R&D in the sector. Today, Indian companies make world-class cars.

The third concern is infrastructure. Foreign retailers will have to invest in the supply chain for quality control. India's current practices are not stringent about quality. A supply chain company of fruits and vegetables that has, for instance, 40,000 tons of fruits and vegetables produced through contract farming – including carrots, lettuce, onions, potatoes, tomatoes and other exotic vegetables – has to control a lot of things like pesticide level and the way the produce is packed. The vegetables are washed in potable water whereas farmers or growers normally wash it in dirty canal water. Once the product comes to the wholesale market, it gets piled up with the rest of the produce and loses its sheen.

The point is that the existing system of is not overly quality conscious and does not share the concern for health and hygiene that a consumer might have. FDI will address these concerns in the system. For instance, the pesticide tolerance level for grapes imported into Europe is zero. In India, only 20,000 tons of the million-ton production meet that level because there is no such law prescribing these standards. Essentially then, FDI will benefit all the stakeholders in the retail chain.

The transparency that FDI will inject into the system will mean that the government will get between $15 billion an $20 billion more in revenue, with every transaction recorded


S.K. Sharma

P. Muralidhar Rao

Need for a level-playing field

P. MURALIDHAR RAO

National Secretary, Bharatiya Janata Party

In 2004, the NDA government commissioned the Indian Council for Research on International Economic Relations (Icrier) to do a study on FDI in retail and advocated 26 per cent FDI in retail, based on the Icrier recommendations. This was also made a part of the manifesto for an election that the BJP lost. The government today is advocating a 49 per cent FDI in retailing though it was not an election issue with the Congress.

What is objectionable, however, is the manner in which FDI in retail is being presented as a solution for the problems of this country. FDI will not change the face of the economy; it will, at best, play a marginal role, sometimes complimentary and sometimes supplementary but never a big role. The Congress and the prime minister believe that FDI is going to solve the problem of inflation, of trade deficit and of the crisis in the economy too. Are these observations based on facts?

A few days ago, the prime minister said that people should invest in stock markets instead of gold. The finance minister recently said that people should be encouraged to buy consumer durables. There are three different solutions offered by the ruling party. Anand Sharma proposes FDI in retail as a solution to the problems of the economy; Manmohan Singh talks about stock markets; and P. Chidambaram proposes increased consumer durables sales as the solution. Is anyone advocating the cause of farmers in this country? The point is that marginal issues like FDI should not be overplayed.

A more important issue is infrastructure like roads and power. All work, from national highways to the Pradhan Mantri Gram Sadak Yojana and additional power generation, has been stalled in recent months. Which foreign company will set up a cold storage without road connectivity and power? If these problems are rectified though, even traditional players will benefit by it and more traders will come into the system. What is critically needed is infrastructure that will help reduce the problem of wastage of time and save the quality of the produce.

People think in terms of making India like America. They should remember that in the next 25 years, small and marginal farmers will remain a reality in this country. The question to ponder over is how will big organized retail increase the negotiating and the bargaining capacity of the farmers. There is also the question of allowing modern retail alongside traditional retailers that would make the playing field uneven, not just in terms of location but also in terms of policy and availability of finance, which the big retail stores are well endowed with.

There are also the subsidies that developed countries give their farmers. Unless there is parity in the organizational model and the policy framework, besides capacity building for the farmers and the inclusion of APMCs, FDI in retail will not have a smooth run. Anand Sharma says that it has been decided to allow FDI in retail but the government is not open about it. It is scared of facing opposition in the Parliament on this issue.

FDI will not change the face of the economy. It will, at best, play a marginal role, sometimes complimentary and sometimes supplementary but never a big role

FDI: benefits some; hurts no one

NIRUPAMA SOUNDARAJAN
Additional Director, FICCI

It is not the business of foreign companies to solve India's problems. They are a source of investment that comes from abroad as opposed to investment made by Indians. Whether FDI will lead to benefits will depend on the sector in which the investment has been made. The question is not whether FDI will, as a whole, positively or negatively, impact the country but whether it will impact any specific section of the stakeholders negatively. If not, there should be no harm in inviting foreign investment, especially when credit is a major problem for India.

Historically, India has not depended on FDI because it generated enough credit internally. If there is a problem at present, where is the harm in accepting foreign investment. That does not mean that the country has to sell itself.

The consumers apart, the main stakeholders to be affected by FDI would be farmers, traditional retailers and the intermediaries, the three entities that form the supply chain. As far as the intermediaries are concerned, the APMC should continue to exist, both in the form of markets as well as through the APMC Act. However, the APMC Act needs to be amended to allow direct selling to private players who can then set up private markets. As wholesale markets, they cannot be abolished just because of the advent of organized retail, either domestic or foreign. Eventually, the farmer needs an alternative channel to sell his produce.

APMCs suffer from poor infrastructure. Some do have electronic weighing machines and better warehousing facilities but others are a disaster. What needs to be explored first is investment through public-private partnerships in these *mandis*. Second, it needs to be realized that not all the fruit and vegetable on organized retail shelves can be sourced from farmers, because of the sheer volumes. Organized retail has to source them from *mandis* and intermediaries will thus continue to exist and have transactions. Some of them, in fact, may become specialized wholesalers who supply to organized retail.

Not all the fruit and vegetable on organized retail shelves can be sourced from farmers because of the sheer volumes. Organized retail has to source them from *mandis*

Nirupama Soundarajan

When it comes to traditional retailers, the arguments made five years ago against organized retail by the non-organized players are being used against FDI today. The fact is that the farmer has benefitted wherever direct selling has taken place, courtesy lower transaction costs or by using the alternative channel of sale. The local grocery stores, however, continue to thrive – as any locality check will confirm – some have, in fact, modernized. They did brilliantly during recession when organized retail faced the brunt due to overhead costs.

The decline in the employment in retail may be attributed to the next generation of the retailers' not wanting to continue with the trade but choosing to put its education to different use. It is the same with the next generation farmer in many cases. This cannot be blamed on organized retail. The earliest organized retail chain to start in India in the 1900 was Nilgiris; it is still flourishing.

As far as the farmer is concerned, he has no

option but to sell to the *mandis* in the absence of organized retail. The prices in *mandis* remain more or less the same and a state of monopsony prevails with one buyer and many sellers. The farmer has no option but to sell in the *mandi* or face ruin. FDI in retail will, at least, give him an option with the help of which he can increase his bargaining power.

Curiously also, whenever there is talk about FDI in retail, the group that gets criticized is Walmart. If FDI is the issue, there are other players like Carrefour, Tesco, Metro or, for that matter, Heinz and Lays, who have succesfully sourced tomatoes and potato from the farmers for their ketchup and chips for years now. Clearly, retailers do like to source from small and marginal farmers.

Finally, one must be realistic when talking of investment in infrastructure. Nobody is going to come and invest for the good of mankind. Companies look for profit and an industry must generate returns to sustain itself, even if it does benefit the larger society. It is important to take a holistic perspective; if everyone gets some benefit and nobody gets hurt, why not let FDI come in.

Profits for Americans, jobs for Chinese

MOHAN GURUSWAMY
Chairman and Founder, Centre for Policy Alternatives, New Delhi

Foreign investment is beneficial as long as it creates jobs, adds value and contributes to development. To their credit, international companies in the automobile sector in India like Hyundai, Ford and Honda, have done so. Much of the development in this space would not have been possible without foreign investment and technology. However, these are exactly the points that go against FDI in retail. Studies in both developed and developing countries show that big box retail has destroyed jobs in particular regions and squeezed producers by way of monopsony. Their practice of bulk buying pushes down producer prices. The coffee industry provides a telling example.


Mohan Guruswamy

A decade ago, coffee growers earned $10 billion from a global market of over $30 billion. Now they earn less than $6 billion from a market of $60 billion. The cocoa farmers of Ghana earn only 3.9 per cent of the price of a typical milk chocolate bar but the retail margin is around 34 per cent. According to a study, multinationals control processing, marketing and retailing deals with producers in 80 poor countries and set the rules of the game, which are never in favour of the producer.

As far as employment is concerned, the Planning Commission's data shows that the retail sector involves about 50 million people in this country. This means that this sector supports around 200 million people. Given the lack of opportunities in the agricultural and the manufacturing sectors, setting up a small shop or a store with whatever little capital one has is becoming an almost natural decision. When one shops in air-conditioned stores, one must think about how that impacts the employment of these people. USA has had a similar experience.

A 2004 study by the Pennsylvania State University

Studies in both developed and developing countries show that big box retail has destroyed jobs in particular regions and squeezed producers by way of monopsony

showed that countries with Walmart stores suffered increased poverty because of displacement of higher paid workers in small family-owned retail stores. It is like a neutron bomb, when big box retail arrives, everything else is finished. This is going to happen in India because everybody would prefer going to airconditioned show-rooms and shop in style with handcarts and such accessories than to smelly grocery stores and haggle with the shopkeeper.

The chairman of Walmart, S. Robson Walters, was in India on November 6, 2009, on a private visit but did meet the prime minister. On November 9, the commerce minister, Anand Sharma, announced that the government would not revisit its FDI in retail policy because of this visit and that FDI in single brand retail was good enough as it was. However, on November 24, the government announced that it would allow up to 51 per cent FDI in single brand retail. This shows the persuasive power that large corporations wield in India and how they educate opinion and decision makers in this country. As per a lobbying disclosure report filed by Walmart in the USA, it spent about Rs 60 crore on lobbying in India in two years. Nobody knows who received this money.

In order to garner support for FDI, the Congress general secretary, Rahul Gandhi, held up a packet of chips at a rally in Kannauj and said that while the packet costs Rs 10, the farmers get only Rs 2 for a kilogram of potato that they sell, implying that the advent of FDI would increase the price that his potato would fetch. He did not realize that the cost of raw material in a packet of potato chips is just 12.5 per cent of the sales price, that is Re 1.25. All other costs comprise the retailer's and distributer's margin, sales tax, excise duty, packaging cost and such others. The same goes for other products like jams or pickles.

A study conducted in Finland shows that the cost of the staple, the rye bread, has gone up even as the cost of its raw material, rye flour and wheat flour, has come down. Finland, it may be noted, is the country with the highest per capita income where big retail chains dominate.

There is also propaganda that big box retail will reduce wastage of food without any evidence being provided. A Food and Agricultural Organization study shows that food losses in industrialized countries are as high as in developing countries. In Europe, there is a per capita food loss of 280 kg; in North America, there is a loss of 295 kg; in industrialized Asia, about 240 kg; and in sub-Saharan Africa and South and South-east Asia, it is just 160 kg and 125 kg respectively. It is not correct to say that global retailers will come and

stop wastage. Statistics show that while 40 per cent of the food losses in developing countries occur at post-harvest and processing stages, in developed countries they occur at retail and consumer levels. Walmart would be well advised to expand in the USA to reduce wastage, not in India.

The farm economy of India is worth $157 billion. If the government thinks that Walmart, even with its turnover of $2 billion, will come and modernize the massive supply chain in place here – something that the government could not do all these years – it is wishful thinking. According to some calculations big box retail stores do not have the scope to modernize more than 16 per cent of the retail supply chain. Yet one is talking of allowing 100 per cent FDI in single brand retail.

Coming to minimum wages, consider the Guatemalan example, where farmers must pick 100 pounds of coffee in order to get the minimum wage of $3 per day. Often, they have to get their children to work in plantations to meet this target. Meanwhile, small family farmers earn between $500 and $1,000 a year. This is trickle-down economics at its worst and implies feeding the horse so that the sparrows might get the dung. For the coffee that sells for $20 a pound, less than $2 goes to the farmer. Nor can the involvement of middleman be ruled out. In the Indian context, the middlemen do not just buy but also act as creditors, which will not be possible with big box retail.

According to an article in *Time* magazine, the Indian food supply space is so vast and so neglected that there is room for all these players. Even if Walmart reaches its goal of building a network of 35,000 farmers by 2015, it would only be a tiny fraction of India's labour force of 450 million. India might be the only place in the world where even Walmart has trouble achieving scale.

To understand the nature of Walmart operations, 70 per cent of its turnover of $420 billion in 2010 was made on Chinese goods. Walmart is amongst the largest exporters of Chinese goods with over $60 billion worth of goods exported to the USA alone. The Chinese labourer gets the worst deal out of this. Reportedly, the factory payroll for making a pair of shoes is $1.30 in Tianjin, 2.6 per cent of the U.S. retail price.

By opening up to Walmart, Carrefour and Tesco, India is just providing a pipeline for Chinese goods. According to Paul Krugman, the Princeton University economist, Walmart is so big and centralized that it can, at one go, hook Chinese and other suppliers into its digital system. Going back on his own sourcing model, Sam Walton, the founder of Walmart, was forced to say in 1985: "Something must be done by all of us in the retailing and manufacturing areas to reverse this serious threat of overseas imports to our free enterprise system...Our company is firmly committed to the philosophy of buying everything possible from suppliers who manufacture their products in the United States".

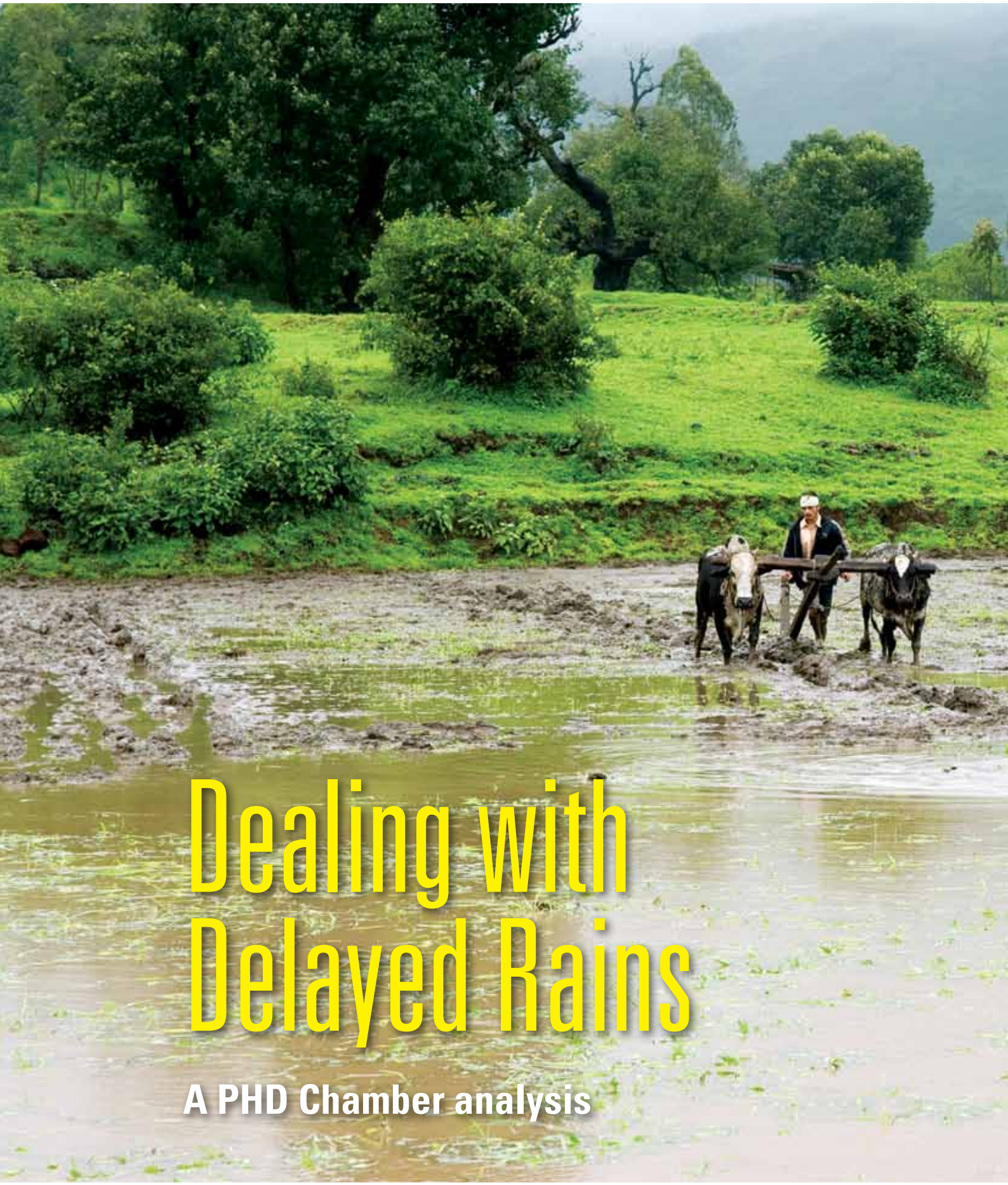
India should, in fact, be worried about its huge trade deficit with China. Even without Walmart, Indian SMEs are being driven out in various sectors by Chinese imports: there is virtually no light fitting or toy industry left in India for instance. One can well imagine what a Walmart pipeline will do to the hosiery and woolen goods manufacturers in Ludhiana and Tirupur. China poses a threat to India's trade. What then is being planned? Bringing in a revolution in retail or inviting a revolution from Indians?

If FDI in retail is brought in, there should be some policy safeguards. The government should insist that big box retailers be foreign exchange neutral

If FDI in retail is brought in, there should be at least two policy safeguards. First, the government should insist that big box retailers be foreign exchange neutral: they should export as much as they import. Second, big box retail should be restricted to outside municipal limits and to satellite towns. This will ease the urban chaos and encourage people to move into less expensive housing outside big cities. Third, if FDI is allowed in retail, the investors should be allowed 100 per cent ownership so that they also bring their own capital and loans.

Finally, Walmart can be compared to what Nick Robbins wrote in the context of East India Company. He said: "By controlling both ends of the chain, the company could buy cheap and sell dear". In this case, it means profits for the Americans and jobs for the Chinese. ●

OUTLOOK



Dealing with Delayed Rains

A PHD Chamber analysis

The rains seem to have arrived at the time of going to press but till August end there has been a 12 per cent shortfall in seasonal rainfall during this year's monsoon for the country. The actual rainfall received for the period June, 2012 to August 31, 2012 is 627.6 mm, against the normal rainfall of 713.4 mm, with the cumulative seasonal rainfall below normal across all regions. The northwest was down by 14 per cent, the southern peninsula by 11 per cent, the east and the northeast by 14 per cent and central India by 10 per cent.

An analysis by the PHD Chamber, India Agronomics August 2012, says that given these circumstances, food inflation may remain high beyond October this year, courtesy the delayed harvesting that followed delayed sowing this summer. This may affect fresh supplies of crops in many parts of the country and affect food inflation. The sowing of summer crops in many regions has been delayed by up to a month due to late arrival of monsoon showers over the Kerala coast, from where it travels to other parts.

Agriculture contributes about 14 per cent of the gross domestic product and performance of the south-west monsoon is critical to the agriculture output of the country. The south-west monsoon contributes significantly to the irrigation process and it is also critical to the overall growth of the Indian economy as more than 70 per cent of the country's population (directly and indirectly) depends on farming.

Out of 36 meteorological subdivisions, rainfall has been normal in 22, deficient in 13 and scanty in one sub-division. As far as area-wise distribution is concerned, 68 per cent area of the country received normal rainfall, while the remaining 29 per cent area received deficient and three per cent received scanty rainfall.

Rainfall distribution across regions (1st June-31st August 2012

Regions	Actual Rainfall (mm)	Normal Rainfall (mm)	% Departure
Country as a whole	627.6	713.4	-12
Northwest India	432.1	503.1	-14
Central India	716.1	793.0	-10
South Peninsula	499.3	559.0	-11
East & northeast India	976.1	1141.4	-14

Source: PHD Research Bureau, compiled from IMD

The current sowing pattern across major crops shows serious deficit with the sowing of cereals, pulses, foodgrain and oilseeds registering significant deficits of seven per cent, 12 per cent, eight per cent and four per cent respectively as on August 17, 2012 against the corresponding period of last year. Among cereals, the sowing of bajra stands at a deficit of 27.54 per cent; that of jowar shows a deficit of 5.81 per cent, rice at 3.57 per cent and maize at 0.85 per cent.

In the pulses category, the current sowing of moong and tur shows a deficit of 20.11 per cent and 3.45 per cent respectively. However, oilseed, soyabean and niger sowing have improved while sowing of groundnut, sunflower, sesamum and castor report a deficit. Sugarcane has posted a decent sowing pattern, the report says.

All India Crop Situation-Kharif (2012-13) as on 17-08-2012

Crop	2011 (Lakh Hectares)	2012 (Lakh Hectares)	Deficit (%)
Rice	319.16	307.76	-3.57
Jowar	24.40	22.98	-5.81
Bajra	74.40	53.91	-27.54
Maize	70.05	69.45	-0.85
Total Coarse Cereals	181.67	157.97	-13.04
Total cereals	500.83	465.73	-7.00
Tur	35.03	33.82	-3.45
Urad	20.03	21.24	6.04
Moong	21.28	17.00	-20.11
Others	21.04	13.26	-36.97
Total Pulses	97.39	85.32	-12.39
Total food grains	598.21	551.05	-7.88
Groundnut	40.31	35.30	-12.42
Soyabean	102.27	106.40	4.03
Sunflower	1.89	1.49	-21.16
Sesamum	13.90	12.40	-10.79
Niger	0.95	1.22	28.42
Castor	8.11	3.96	-51.17
Total Oilseed	167.43	160.77	-3.97
Cotton	116.81	110.26	-5.60
Sugarcane	50.59	52.88	4.52
Jute	8.93	8.77	-1.79
All-crops	941.96	883.72	-6.18

Source: PHD Research Bureau, compiled from Ministry of Agriculture, Government of India

Matters on the procurement front are happy though. The all-India progressive procurement of wheat for the marketing season has reached 381.45 lakh tonnes during 2012-13 (as on July 27, 2012) from 281.08 lakh tonnes up to the corresponding period of last year. Punjab has led the procurement by 128.34 lakh tonnes of wheat, followed by Haryana (86.65 lakh tonnes) and Madhya Pradesh (84.93 lakh tonnes). Uttar Pradesh has also procured significant quantity i.e. 50.63 lakh tonnes.

Progressive procurement of wheat (Lakh tonnes)

State	Total Procurement in marketing season 2011-12 (April-March)	Progressive procurement as on 27th July 2012	
		In marketing season 2011-12	In marketing season 2011-12
Punjab	109.58	109.57	128.34
Haryana	69.28	68.82	86.65
Uttar Pradesh	34.61	34.61	50.63
Madhya Pradesh	49.65	49.05	84.93
Rajasthan	13.03	13.03	19.64
All-India	283.35	281.08	381.45

Source: PHD Research Bureau, compiled from Ministry of Agriculture, Government of India

The all-India progressive procurement of rice for the marketing season too has increased to 347.60 lakh tonnes as on August 17, 2012 from 328.14 lakh tonnes up to the corresponding period of last year. The procurement of rice has inched upwards for states like Chhattisgarh, Haryana, Kerala, Orissa, Tamil Nadu, Uttar Pradesh and West Bengal. On the other hand, Andhra Pradesh, Maharashtra, Punjab and Uttaranchal have posted a decline in the progressive procurement of rice.

Progressive procurement of rice (Lakh tonnes)

State	Total Procurement in marketing season 2010-11 (Oct-Sep)	Progressive procurement as on 17th August 2012	
		In marketing season 2010-11	In marketing season 2011-13
Andhra Pradesh	96.10	91.05	74.80
Chhattisgarh	37.39	36.62	41.15
Haryana	16.87	16.87	19.85
Kerala	2.63	2.60	3.72
Maharashtra	3.08	2.08	1.77
Orissa	24.76	24.57	28.33
Punjab	86.35	86.35	77.31
Tamil Nadu	15.83	14.18	15.96
Uttar Pradesh	24.66	24.10	33.50
Uttaranchal	4.22	3.99	3.78
West Bengal	13.10	10.61	18.70
All-India	340.94	328.14	347.60

Source: PHD Research Bureau, compiled from Ministry of Agriculture, Government of India

It may be recalled though that India's food grain production is estimated to be 257.44 million tonnes during 2011-12 compared to 244.78 million tonnes in the previous years with significant increase in the production of wheat and rice. Record production has been achieved in the case of rice (104.3 MT), wheat (93.9 MT), cotton (35.2 million bales) and sugarcane (357.7 MT). The production of pulses and oilseeds is estimated at 17.21 million tonnes and 30.01 million tonnes respectively.

Notably, Bihar, Madhya Pradesh, Jharkhand and Chhattisgarh have recorded a farm growth better

than Punjab and Uttar Pradesh in recent years. In 2012, low paddy harvest in the northern states of Punjab and Haryana has been compensated by the rise in harvests in the eastern and central states of Bihar, Jharkhand and Chhattisgarh. The two factors that have greatly contributed to improved growth in some central and eastern parts are the price of farm produce and the development of farming infrastructure.

There are, however, worry beads over poor kharif probability looming over Andhra Pradesh. The agriculture sector in the state faces disaster for the second successive year due to weak monsoon. Almost all major crops barring cotton and maize are facing the prospect of a complete disaster. Lower water storage in major reservoirs is a cause of concern for the farmers.

What are the possible consequences of a worrisome monsoon on the economy? The PHD Chamber report says that with the GDP growth touching a nine-year low of 6.5 per cent in last fiscal, the 12 per cent deficit in seasonal rainfall during this year has triggered alarm bells. The actual rainfall across the country from July 1, 2012 to August 31, 2012 was 627.6 mm against the normal rainfall of 713.4 mm as predicted by the Indian Meteorological Department. A poor monsoon is considered to be negative for growth, inflation and the fiscal deficit.

Estimates of crop production (million bales)

Crop	2010-11 (final estimates)	2011-12 (Fourth advance estimates)
Food grains	244.78	257.44
Rice	95.98	104.32
Wheat	86.87	93.9
Coarse cereals	43.68	42.01
Pulses	18.24	17.21
Tur	2.89	2.65
Gram	8.25	7.58
Urad	1.74	1.83
Moong	1.82	1.71
Oilseeds	32.48	30.01
Soyabean	12.66	12.28
Groundnut	7.54	6.93
Rapeseed & Mustard	7.67	6.78
Sugarcane	342.38	357.67
Cotton	33 (million bales)	35.20 (million bales)

Source: PHD Research Bureau, compiled from Ministry of Agriculture

"However, a drought will not have the same ravaging effects as it had a decade ago. The Indian economy is no longer a monsoon economy and has undergone a systemic change to become monsoon-proof. In India, rainfall below 90 per cent of a 50-year average of 890 mm during a four-month season starting June is considered a drought. Droughts are not new to India but today India's management skills are at par with countries like USA, Australia, Canada and Argentina", the report says.

The changing structure of Indian economy – from being an agrarian economy to a non-agrarian economy – has contributed to the development. Though the industrial and service sectors have become the main drivers of the economic growth in the country, there is still a high dependence of the population on the agriculture sector. However, the growth of agriculture sector is not completely dependant on monsoon due to availability of improved irrigation facilities.

The Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) helps in providing employment to rural labour in times of drought as it offers assured wages. There is also the Bharat Nirman programme that

Reframing the farm strategies

The government launched a programme namely 'Bringing Green Revolution in Eastern India (BGREI)' during the year 2010-11 to address the constraints limiting the productivity of rice in eastern India. It is a sub scheme of Rashtriya Krishi Vikas Yojana (RKVY) and is being implemented in seven states: Assam, Bihar, Chhattisgarh, Jharkhand, Odisha, eastern Uttar Pradesh and West Bengal. Rice production increased substantially during 2011-12 in most of the states except Assam, Chhattisgarh and Odisha. The maximum increase was recorded in Jharkhand followed by Bihar, Uttar Pradesh and West Bengal. The latest data from the states show that rice has been sown in 347.10 lakh hectares on August 31, 2012 as compared to 329.19 lakh hectares on August 24, 2012. Coarse cereals, pulses, oilseeds and cotton have also been sown in more area than the area covered by these crops last week. – PHD Chamber

aims at creating basic rural infrastructure. Its key components are water supply, irrigation system, roads and telecommunications. The income from livestock (milk, poultry and meat) is another source of income for farmers. Then again, the information revolution has made farmers better informed and in a position to be able to take advantage of Rashtriya Krishi Vikas Yojana (RKVY) that has led to the creation of seed reserves in many agriculture universities and other centres.

The report says that the "consequences of drought can now be easily contained due to spread of irrigation facilities all over India. These projects help in saving water, result in higher yield and enhance income at the farm level. Farming depends heavily on groundwater irrigation by bore wells and pumps. Today, India has over 20 million modern water extraction structures. A highly competitive ground water industry has emerged in every small town to provide low-cost pumps, rigs, pipes, as well as repair and maintenance services. But the groundwater level in Punjab and western UP, which are major contributors to the country's food bowl, is at an all time low and serious effort is needed to use the available water cautiously".

Apart from the increased irrigation facilities available, change in the pattern of Indian agriculture has also added to better management of drought-like situations. India has two crop seasons-kharif (the summer crop) and rabi (the winter crop). The share of rabi crop such as wheat, sugarcane or pulses has been growing due to improvement in irrigation system, particularly in northern and western India. The rabi crop is unaffected by the progress of south-west monsoon and now contributes to more than half of the total output. During 2009-10, state governments in the north and northeast had initiated early sowing of rabi crops to utilize the soil moisture available from late monsoon rains, which resulted in saving of water.

The PHD Chamber also recommends measures that that government could take to mitigate the

Consequences of drought can now be contained courtesy the spread of irrigation in India. These projects help in saving water, result in higher yield and enhance incomes

effect of drought effectively:

- Effective implementation of MGNREGS will help in providing jobs to the rural labour. Demand under MGNREGS has generally followed the trend of monsoon. The employment demand surged to 61 per cent in the drought year 2009-10 whereas it decelerated sharply to 19 per cent in 2010-11, which received surplus rainfall.
- Availability of food grains stored in Central and state godowns can counter the impact of drought in pockets across the country. The surplus stock can be used to ensure the inevitable reduction in agricultural production in a drought year does not set off an inflationary spiral.
- Reduce the number of people dependent directly or indirectly on agriculture. This is usually linked to urbanization as most of the non-agricultural jobs are concentrated in cities.
- Intensification of public-private partnerships (PPPs) in irrigation projects wherein the overview and planning of the project can be under the public domain, whereas the execution can be carried out by the private sector agencies.

Thus, with macro consequences of monsoon failure not being so severe now, a smart government can turn things around through steps like water harnessing, water management and desalination. Besides, the government has gone in for several crop development schemes and programmes beginning with the promotion of coarse grains production through:

a. Integrated Cereals Development Programme in Coarse Cereals based Cropping System Areas is being supported through Macro Management Mode in Agriculture (MMA).
b. Crop development activities supported by states under Rashtriya Krishi Vikas Yojana (RKVY) with

12th Plan priorities

In the 12th Five Year Plan, the NFSM aims at raising foodgrain production by 25 mt. The mission also proposes to cover coarse cereals and fodder crops in the 12th Five Year Plan besides rice, wheat and pulses. It also provides incentives to farmers to adopt improved inputs and technology that suit local soil and climatic conditions.

approval of State Level Sanctioning Committee (SLSC).

c. Launch of Intensive Millets Promotion-a sub-scheme of RKVY from 2011-12 to demonstrate the improved production and post-harvest technologies in an integrated manner.

d. Integrated scheme on oilseeds, pulses, oil palm and maize (ISOPOM) to provide support for increasing the production and productivity of maize.

The government also seeks to increase production of pulses and oilseeds in the country through area expansion and enhancement in productivity. The various schemes include the National Food Security Mission (NFSM), Rashtriya Krishi Vikas Yojana (RKVY), Macro Management of Agriculture (MMA), Integrated Scheme of Oilseeds, Pulses, Oil Palm & Maize (ISOPOM) and such others. In addition, a new programme "Accelerated Pulse Production Programme (A3P)" has been started under the NFSM since 2010-11 to take up the active propagation of key technologies for augmenting the productivity of pulses.

Another important programme involves promotion of organic farming through such schemes as the National Project on Organic Farming (NPOF), National Horticulture Mission (NHM), Rashtriya Krishi Vikas Yojana (RKVY) and Macro Management of Agriculture (MMA) for increasing the percentage of such land under organic farming. Under the NHM, financial assistance is provided for setting up of vermi-compost units at 50 per cent of the cost subject to a maximum of Rs 30,000 per beneficiary. Under the NPOF, financial assistance is also provided as back ended subsidy through Nabard for setting up or strengthening existing bio-fertilizer and bio-pesticide production units.

States have also been allocated Rs 1,800 crore under the National Food Security Mission, the maximum going to Uttar Pradesh at Rs 276.9 crore, followed by Madhya Pradesh, Rs 226.87 crore and Maharashtra Rs 196 crore. The NFSM was implemented to raise productivity of crops in the 11th Five Year Plan.

Besides, the centre has released Rs 45 crore for enhancing availability of fodder to five states under the Accelerated Fodder Development Programme. The programme has provided funds for production of quality seeds, enhancing fodder production and adoption of appropriate techniques. Rajasthan has been allotted Rs 15 crore, Andhra Pradesh and Maharashtra Rs 10 crore each, while Gujarat and Haryana have got Rs 5 crore each.

The government is promoting the use of bio-fertilizers through a central sector scheme, the National Project on Organic Farming for setting up of new or strengthening of existing bio-fertilizer production units, technology transfer and training. Awareness is being created through training programme seminar and through advisory in package and practices for different crops under organic management.

Multiple initiatives have also been taken for storage of vegetables, fruits and the Initiative for Nutritional Security through Intensive Millets Promotion, a sub-scheme of RKVY. It has been launched from 2011-12 to demonstrate the improved production and post-harvest technologies in an integrated manner with an allocation of Rs 300 crore in 16 states. The operational guidelines of INSIMP provide flexibility to the states, to modify the contents of the input kits as per local situations.

District Contingency Plans have also been prepared for 320 districts by the Ministry of Agriculture to cover 320 districts suffering from deficient rainfall during south-west monsoon

Subsidy focus

The subsidy regime is focusing on diesel and seed subsidy to farmers to overcome deficient rainfall through the "Diesel Subsidy Scheme" by providing irrigation facilities through diesel pumpsets to save the standing crops and to mitigate the hardships of farmers due to deficient rainfall. The ceiling on seeds subsidy has also been enhanced from Rs 500 per quintal to Rs 700 per quintal in respect of cereals, for pulses and oilseeds from Rs 1,200 per quintal to Rs 2,000 per quintal and for coarse cereals from Rs 800 per quintal to Rs 1,000 per quintal.

Multiple initiatives have also been taken for storage of vegetables, fruits and the Initiative for Nutritional Security through intensive millets promotion

2012. States have been advised to prepare location specific alternatives in consultation with respective state agricultural universities and arrange seeds of alternate crops/varieties to implement such plans. The government has also created the State Disaster Response Fund (SDRF)/National Disaster Response Fund (NDRF) to take immediate relief measures in case of natural calamities like drought.

The focus on pulses has led to a revision of the minimum support price (MSP) of pulses but it is still below Commission for Agricultural Costs and Prices (CACP) recommendation. The MSP of tur (arhar) and moong were revised to Rs 3,840 a quintal and Rs 4,400 a quintal, respectively for 2012-13. The MSP was reworked due to declining prices in the market and expectation of robust production.

The production of vegetables and fruits in the country is estimated to be 1505.86 and the 752.74 lakh tonnes respectively, during 2011-12 as compared to 1465.54 and 748.78 lakh tonnes during 2010-11. To enhance production and productivity of horticulture crops, including fruits and vegetables, the government of India has been implementing the Horticulture Mission for North East and Himalayan States (HMNEH) and National Horticulture Mission (NHM) in the remaining states of the country.

To improve the overall knowledge levels in agriculture as a prelude to stepping up agriculture productivity, the government is setting up special institutions including a new institute of "National Institute of Biotic Stress Management" to come up during the 12th Plan at Raipur (Chhattisgarh) at a cost of Rs 121.10 crore. "The mandate of the institute would be to enhance the productivity of crops by creating novel mitigation measures to biotic stresses in agriculture and carry out research on the multiple causes that cause biotic stresses and develop technologies that would effectively deal with prentices pestilence", the PHD report says.

Also on the anvil during the 12th Plan is an "Indian Institute of Agricultural Biotechnology" at Ranchi (Jharkhand) at a cost of Rs 287.50 crore. "The charge of the institute would be to undertake multi-disciplinary basic and strategic research with a view to developing crops for traits such as increased yield, or increased tolerance to biotic and abiotic stress", the report says. •

PERSPECTIVE

Green or Brown Revolution for Eastern India?

Asish Ghosh

A press release of June 1, 2010, from the government of India announced a Rs 400-crore allocation, under the Rashtriya Krishi Vikash Yojana, for extending the green revolution to India's east. It would encompass Bihar, Jharkhand, Eastern Uttar Pradesh, Chhattisgarh, Orissa, Assam and West Bengal. Significantly, 50 per cent of the districts out of 162 low productive districts in the country (out of a total of 551 districts in India) are in these eastern states. (*Table 1*)

Several causes for their low productivity have been identified, including:

- Small land holdings (0.4 ha. to 1.3 ha.)
- Low farm mechanization
- Low fertilizer use (25-35 kg/ha. against a national average of 75 kg/ha.)
- Low power consumption (35-142 KWH/'000 against a national average of 379 KWH/'000)

Table.1: Allocation for Green Revolution

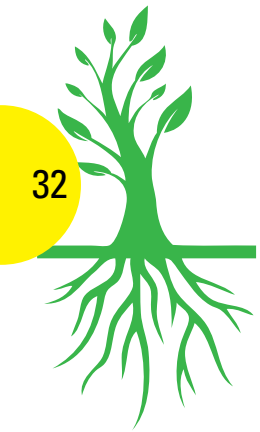
State	Allocation (in Rs crore)
Assam	35
Bihar	65
Chhattisgarh	66
Eastern UP	52
Orissa	78
Jharkhand	30
West Bengal	70
Monitoring (GoI Level)	4
Total	400.00

- Poor infrastructure
- Rural poverty (31 per cent below the poverty line)
- Low cropping intensity (134 per cent in half of the districts against164 per cent in very high category districts)

For 2012-13, the allocation has been hiked to Rs 1,000 crore on the basis of the success achieved in 2011-12. It is claimed that the support offered to the eastern states has led to the rice production going up

by an additional seven million tonnes. What is not clear is how this production was increased and what strategies were adopted by the states. A study by the International Food Policy Research Institute (IFPRI) said that enhanced returns in agriculture production could be obtained by giving more thrust to agriculture R&D (13.45 per cent), roads (5.31 per cent), education (1.39 per cent), irrigation (1.36 per cent), anti-poverty programmes (1.09 per cent), soil and water conservation (0.96 per cent). Investment in irrigation, infrastructure and soil moisture conservation would yield immediate benefits compared to long-term strategies of R&D and education.

The IFPRI said that this data supported investments in asset creation, including construction of farm ponds, dug wells, shallow tube wells, repair of irrigation channels and such others; micro irrigation (sprinklers and such others); soil amelioration under green revolution 2011-12. While one cannot but agree with the aforesaid recommendations, major questions can be raised on the recommendation to intensify use of chemical fertilizers and more electrical energy to pump out groundwater for irrigation.



The groundwater use in many parts of India has gone haywire due to over abstraction without any regard to the recommendations of Central Groundwater Board

It was argued that although the net annual availability of water in the eastern states (WB 27.46 BCM, Bihar 27.42 BCM, UP 70.18 BCM) is more than that of the food bowl states of Punjab (21.44 BCM) and Haryana (8.63 BCM), the annual ground water use is only between 18 per cent and 42 per cent. This is because of low availability and consumption of electricity for agriculture purpose, low availability of electrical and diesel pump sets in the region. As it is, the groundwater use in many parts of India has gone haywire due to unplanned/over abstraction without any regard to the recommendations of Central Groundwater Board.

Historical perspective

A quick analysis of the impacts of the green revolution on Indian agriculture would be relevant here. Way back in 1961 when India faced a serious food crisis, Norman Borlaug was invited by the then agriculture minister to visit India and help device a strategy to grow more food. Borlaug was by that time a well-known name in agricultural science because of his contribution to augmenting wheat production in Mexico. It was in Punjab that the Indian green revolution started with the objective of increasing wheat production. The mission was soon extended to rice with the introduction of IR8. A package of high-yielding varieties (HYV) seeds, chemical fertilizers, chemical pesticides and canal irrigation was recommended to maximize success.

Reportedly, cereal production had more than doubled between 1961-1983 in the developing countries through the magic of new strategy. There were debates on how to define productivity though. When productivity is defined as yield per unit of water input, for example, the HYV crops are seen to be less productive than most indigenous varieties (Deb, 2000). If compared with the traditional varieties, the HYV crops always show much lesser tolerance to shortage of fertilizers or changing temperature, flood or drought conditions (Cleveland et.al., 1994). Given the current agro-climatic characteristics of eastern Indian states, such inherent limitations are not uncommon. A temporal increase was evident with the green revolution in addition to the spatial increase in land area under cultivation.

It was also clear that the extension of irrigation "has been a key factor for temporal increase in land area for cultivation; the greater the proportion of farm lands under irrigation the higher the crop output" (Dev, 2004). The geographical area of agriculture land under irrigation has increased from 32 per cent in 1970 to 43 per cent in 1990; a significant part of this irrigation system was based on ground water abstraction. The most alarming development that followed the green revolution was the fast and massive replacement of other crops with cereals; in Punjab the available data indicates that between 1960-61 and 1999-2000 the net crop area under rice increased 10-fold and that under wheat increased three-fold but during the same period the area under pulses declined by 10-fold; so had the area under maize, oilseeds and millets. Another limitation of HYV oriented green revolution can be seen in the dry land farming, which constitutes nearly 32 per cent of the area (Deb, 2004).

The impact of the green revolution through monoculture crop has also been questioned from the point of view of diet quality. The high-yielding rice varieties are more glutinous and less savory in comparison to the traditional varieties and are sold at a lower price. In India, a massive use of non-biodegradable pesticides during the green revolution led to the alarming increase in child miscarriage in pregnant mothers and contamination of mother's milk up to 400 per cent to 800 per cent above permissible limit. The increasing use of pesticide is advocated inevitably in the area of mono-cropping. It is well known that a weekly train runs from Bhatinda (in Punjab) to Rajasthan, carrying farmers with cancer for cheaper treatment.

With the increasing production of rice and wheat under the green revolution, India has also witnessed an unprecedented apathy towards promoting dry land crops, especially the traditional millets. The public distribution system promoted only rice and wheat all over the country due to the faulty procurement policy. As a result, the enormous diversity of millets with proven nutrition values went into a declining phase (Ghosh, 2012 a).

The other impact of the green revolution was noted in the pest scenario in the rice field. Reportedly, till 1970, there were 10 to 15 insect pests of which five were considered as major pests. After the introduction of HYV at least 40 to 50 different invertebrates obtained pest status with 10 major pests. This obviously led to more expenditure being incurred for pest control and opened up a market for pesticide industry (Bera, 1996).

These apart, the proven advocacy for chemical pesticide, including the banned one in Indian agriculture, also led to the prevention of natural mineralization and loss of soil fertility over a period of time. To offset such adverse effects, there was advocacy to use more chemical fertilizer through intensive marketing campaign, worsening the situation. Strangely enough, the government of India continued to offer more than Rs 30,000 crore of subsidy for fertilizer users knowing full well that their use would militate against "sustainable agriculture" that was its stated aim.

The green revolution also had a very serious impact both on agro-biodiversity and wild biodiversity. The dependence of farmers on HYV seeds – prompted by intense publicity on their benefits – led to loss of more than 5,000 folk rice varieties in West Bengal alone in the past 50 years. The farmers' varieties of seeds with such unique characters as ability to withstand salt in the soil have become so rare that after the devastating cyclones

and storm surge in the Sundarbans in 2009, an intensive search in the National Bureau of Plant Genetic Resources yielded only two out of the six varieties. (Ghosh, 2009 Pers. Comm.) The loss of wild biodiversity on the other hand was on account of clearing up of formerly forested areas as a result of land degradation and soil nutrient depletion.

Notwithstanding the positive impact of the green revolution, there has been a series of multi-dimensional negative impact, caused by sheer mismanagement of the mission. These can be enumerated as:

- Over abstraction of ground water
- Loss of soil fertility
- Increasing pest portfolio
- Pesticide poisoning and serious impacts on mother and child
- Increasing incidents of cancer due to organochlorine, pesticides and endosulphine, organophosphorous and other chemicals
- Loss of agro-biodiversity
- Loss of wild biodiversity

What then is the current scenario for the second green revolution in eastern India? What are the strategic action points? If one examines the field of action, it would be evident that each area has some definite limitations. The most common features are soil erosion, water logging and problems in drainage and it would have been logical to consider investment on soil conservation and appropriate drainage systems. However the emphasis in the plan for second green revolution largely revolves around use of high-yielding seeds, additional chemical fertilizers and introduction of more mechanization and such other partially discredited strategies. Obviously, the ultimate goal is to have

Table 2: Current scenario

State	Features of Agro ecological sub region	Rainfall (mm)	Soil	Cropped Area (mha)	Cropping Intensity (%)	Major Crops	Major Issues
Bihar and Eastern UP	Hot, dry sub humid	1000-1200	Deep, Loamy	5.5	172	Maiz, Millet, Pady, Pulses	Water-Logging and salient injudicious water use, saline underground water
Bihar	Hot, dry/moist sub humid	1200-1500	Deep Fine Loamy to Clay	6	150	Rice Wheat, Pulses, Mustar, Sugarcane, Spices, condiments	Imperfect Drainage, Flooding, Salinity/Sodicity
Chhattis-garh	Hot, dry and moist sub humid	1100-1500	Red and Yellow			Paddy	Soil erosion, Seasonal Drought
Orissa	Hot, moist sub humid	1400-1700	Red, Sandy, Red and Yellow and Medium to Deep Black	11.6	110	Rice Maize Oilseads Minor Millet Cotton	Soil erosion, seasonal drought, Gravel in subsoil, Ground water exploitation due to rocky sub substrata
Orissa	Hot moist, sub humid	1200-1600	Hilly soil	3.3	133	Sorghum, Groundnut, Rice, Maize, Oilseeds, Pulses	Severe soil erosion, Seasonal drought, Low PAWC, Soil acidity, Soil Crusting
Orissa	Hot moist, sub humid	1200-1800	Gangetic Delta		130	Rice, Pulses, Groundnut, Sesamum, Wheat, Potato	Imperfect Drainage, Soil Salinity, Sodicity
Jharkhand	Hot, Dry and moist sub humid	1200-1500	Red sandy to loamy	2	112	Rice Maize, Oilseeds, Pigeopea, Wheat, Potato Vegetables	Severe soil erosion, Low PAWC
West Bengal	Hot, Sub-humid to humid	1300-1600	Brown, Hilly, Deltaic alluvial	3.3	138	Jute, Rice, Mustard, Lathyrus Lentil, Wheat, Vegetables Potato	Frequent flooding and water logging salinity, sodicity

a higher crop intensity (*Table 2*); the concern is around learning from past mistakes.

The press statement, first announcing the government of India's decision, talks of a sustainable crop sequence for the region as follows:

- Rice-groundnut-green gram
- Rice-groundnut-green manure
- Rice-green gram/black gram
- Cotton-green gram/green manure; and
- Soybean-sunflower-green gram

The benefits, according to the government, are that every state has seen an increase in the yield (kg/ha.) of paddy, which varies between 41 kg/ha. increase (Assam) to 1,000 kg/ha. increase (Bihar), except in Odisha, which shows a decline in production after an initial increase (*Table 3*). It needs to be remembered that the area under cultivation has increased in 2011-12 with additional allocation from the Planning Commission and the Ministry of Finance. However, that entire effort is geared towards increasing production of rice only. Yet another question was not answered: did the benefit percolate down the social strata?

What is most worrisome is the absence of data on the practice that was followed during the year 2011-12 in the region under study. The information is around the bumper harvest of rice crop, which was lauded by the government publicists as the allocation for 2012-13 was increased 2.5 times to Rs 1,000 crore. Meanwhile, even while there was a bumper harvest, procurement and distribution was disappointing. West Bengal reported a very high number of farmer suicides during 2011-12. Nationally, statistics show that one farmer commits suicide every 12 hours in India (Ghosh, 2012 b).

If boosting agriculture production is the ultimate aim of the green revolution, it is but a logical expectation that the benefit of such a programme will be shared between the producers and the users. In reality, the situation seems to be going the reverse way. The benefit of bumper crop apparently did not create extra wealth in the farming community. Instead, it has driven farmers to suicides. The latest data on poverty, based on National Sample Survey Organizations' findings (2012), also reveals that more than 70 per cent of Indians still live below poverty line; this is in sharp contrast to the figure of 37 per cent normally given by the Planning Commission.

Table 3: Increase in rice production

States	Year	Area (000 ha.)	Production (000 tonnes)	Yield (kg/ha.)
Assam	2009-10	2945	4335	1737
	2010-11	2570	4736	1843
	2011-12	2444	4345	1778
Bihar	2009-10	3213	3599	1120
	2010-11	2832	3102	1095
	2011-12	3090	6675	2160
Chhattisgarh	2009-10	3670	4110	1120
	2010-11	3702	6159	1663
	2011-12	3773	6028	1597
Jharkhand	2009-10	995	1538	1546
	2010-11	720	1110	1541
	2011-12	1692	3416	2018
Odisha	2009-10	4365	6917	1585
	2010-11	4225	6827	1616
	2011-12	4069	5822	1431
Eastern UP	2009-10	2761	5462	1978
	2010-11	3027	6519	2154
	2011-12	3074	7205	2344
West Bengal	2009-10	5630	14340	2547
	2010-11	4944	13045	2639
	2011-12	5512	15044	2729

(Source: Ministry of Agriculture, Government of India)

Thus, while the success of green revolution in making India self-sufficient in food has been repeatedly publicized, clearly, the real benefit did not percolate down the social strata. The extent of malnourishment of children under the age of five and suffering pregnant mothers still remains a matter of great concern. The ineffectiveness of the public distribution system is now well acknowledged. In spite of the repeated pledges to set it right, there has been no real improvement. On the one hand, the green revolution is the champion for bumper crop production. On the other hand, farmers of the country continue to suffer from high indebtedness; problems of getting right pricing through government procurements; and the people living below the poverty line continue to suffer from deprivation of food, leading to a process of slow murder. Even the Right to Food Bill has not raised hopes amongst the masses.

What then is the alternative? The farming community and the civil society, if taken into confidence, may provide an alternative route,

The benefit of bumper crop apparently did not create extra wealth in the farming community. Instead, it has driven farmers to suicides

The obsession with monoculture of cereals has to be changed with appropriate polyculture to start a genuine process of sustainable agriculture. Government support and subsidy would be needed for promoting bio-fertilizer and bio-pesticide, based on indigenous resources in different regional agro-climatic zone. The farmers also need to be re-trained on the importance of maintaining a balance of pest/parasite/predator relationship, which can contribute towards adoption of an effective integrated pest management system.

which is time tested but has been lost in the surge of modern development demand. It is believed that despite the vast erosion of plant genetic resources after the green revolution there are farmers' varieties still available that may be brought back to the field through community-based seed banks. It is imperative that the present generation of farmers be re-trained on how to use such seeds, keeping in view the land and soil character, rainfall, temperature and precipitation.

The obsession with monoculture of cereals has to be cured with appropriate polyculture to start a genuine process of sustainable agriculture. Government support and subsidy would be needed for promoting bio-fertilizer and bio-pesticide, based on indigenous resources in different regional agro-climatic zone. The farmers also need to be re-trained on the importance of maintaining a balance of pest/parasite/predator relationship, which can contribute towards adoption of an effective integrated pest management system.

Needless to add, crop insurance and easy, hassle-free credit through nationalized banks will be a vital component in ensuring the desired level of productivity. Last but not the least will be a process of ensuring a minimum procurement price, which should be effectively implemented by all participating states so that the issue of loan repayment does not lead to suicides. During the year of bumper crop in 2011-12, farmers in some areas of West Bengal were compelled to sell a 60 kg bag of paddy at Rs 700/750, incurring a loss of at least Rs 200.

No real cost benefit analysis considering the value of eco-system services has ever been done in the field of agriculture. It is high time that environmental economists and agricultural scientists establish a dialogue to determine the real cost of the green revolution. The hype about average 15 per cent increase in production of rice or ambitious plans to take second green revolution from 67,000 ha., to 200,000 ha., in West Bengal or increasing the area from 52,000 ha. to 1,55,000 ha. in Odisha continues to hide serious questions. One can forget about getting answers. ●

The author, a former director general of the Zoological Survey of India, who currently heads Endev, West Bengal, is an acknowledged expert on biodiversity and environment

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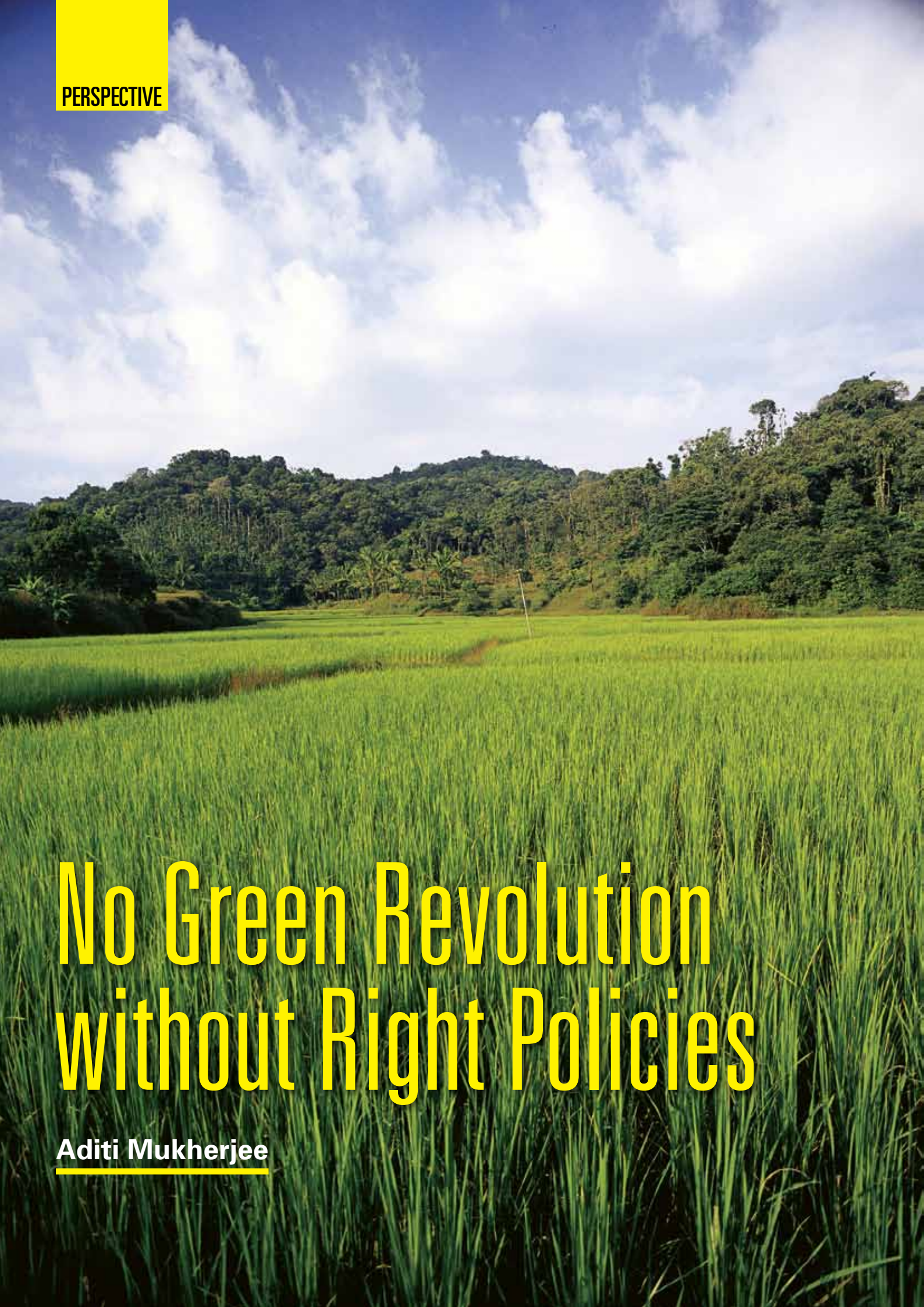
PERSPECTIVE



No Green Revolution without Right Policies

Aditi Mukherjee

With talks about a second Green Revolution in eastern India in the air, there is need to explore whether there is a fair and adequate understanding of the requirements of eastern India to put in place the right policies to bring about a sustainable intensification of agriculture and unleash a second round of Green Revolution. Recent research in West Bengal suggests that the main scarcity that farmers face is that of affordable energy to pump groundwater in a region that is otherwise flush with both surface and groundwater resources. Apart from technological innovations, which are certainly needed, the challenge in eastern India is to address the energy squeeze that farmers are facing.

A large part of the solution, therefore, lies in the domain of rural electrification and more specifically electrification of tubewells and removal of administrative hurdles in connecting tubewells to the grid. In doing so, however, some of the mistakes of the past, such as lack of proper energy accounting due to unmetered connections must be avoided. The government of West Bengal has taken two steps in the right direction and if implemented well, it will unleash another round of Green Revolution in the state with significant impacts on poverty alleviation.

West Bengal is one of the most populous and poorest states in India. The story of agrarian growth in Bengal and its slowdown is well documented and may be captured in three distinct phases – the first from 1900 to 1980 tells a sad tale of "hunger in a fertile land" (Boyce 1987:1), the second (1981 to early 1990s) is a triumphant account of a rate of foodgrain production that was "highest among 17 major states of the Indian union" (Saha & Swaminathan 1994:A2) and the third of agricultural growth that "significantly slowed down in the 1990s" (Sarkar 2006:342). Boyce in his seminal work captured the dynamics of the first phase when the proverbial 'Sonar Bangla'[1] that once abounded "with every necessary (sic) of life" (Bernier 1914 quoted in Boyce 1987:4) became the abode of some of the poorest people in the world.

This paradox of hunger amidst plenty was explained by him and other scholars in terms of regressive agrarian structure and high rural inequality that prevented unleashing of technological improvements such as adoption of improved seeds and inputs. Just as Boyce's book was published in 1987, there were telltale signs of a quiet Green Revolution going on in rural Bengal. An unprecedented growth in the agricultural sector at the rate of 6.5 per cent per annum[2] was recorded during the period 1981 to 1991 (Saha and Swaminathan 1994). Enhanced agricultural growth and productivity in West Bengal in 1980s was sought to be explained in terms of two very opposing arguments – that of "agrarian structure" (Lieten 1988, 1990 & 1992, Dasgupta 1995, Sen and Sengupta 1995, Ghatak 1995, Banerjee et al. 2002, Saha and Swaminathan 1994, Mishra & Rawal 2002, GoWB 1995-96 & 2004) and "market and technology" (Harriss 1993, Palmer-Jones 1995, 1999).

Apart from technological innovations, which are certainly needed, the challenge in eastern India is to address the energy squeeze that farmers are facing

Harriss (1993) found that in his study of villages in Bankura and Bardhaman, agricultural growth could be better explained in terms of development of groundwater irrigation rather than agrarian reforms. Expansion in area under boro cultivation, which is entirely an irrigated crop and increase in yield of all paddy crops (aman, aus and boro) due to assured groundwater irrigation from tubewells, resulted in high growth rates. However, since mid-1990s, agricultural growth in West Bengal slowed down. This also coincided with a slowdown in groundwater economy in the state. The slow down had a lot to do with inappropriate irrigation and electricity policies as one will see in this article.

West Bengal is well endowed with groundwater. It has 30.36 billion cubic meters (BCM) of annual renewable recharge, receives high rainfall of 1,500 mm to 2,000 mm in a year and is underlain by alluvial aquifers with high recharge capacity (http://

1 *Sonar Bangla* translates into 'golden Bengal'. It refers to the once famed prosperity of Bengal in general and fields overflowing with golden ripe paddy in particular.

2 Concerns have been raised about the reliability of data and choice of base year for growth rate calculations. For details see Boyce 1987, Rogaly et al. 1999 and Gazdar and Sengupta 1999.

cgwb.gov.in/gw_profiles/st_westbengal.html, downloaded on 15th March 2011). Only 43 per cent of the state's groundwater resources has been used and this is much lower than groundwater use in other agriculturally prosperous states like Punjab, Haryana and Gujarat, while recharge potential in Bengal is much higher than all those arid and semi-arid states due to high rainfall and nature of alluvial aquifer. According to the 4th and latest round of Minor Irrigation Census (GOI, 2011), the state has a total of 5.19 lakh wells and tubewells and this has come down from a previous 6.48 lakhs in 2001. Bengal and Bihar are the only two states in India where the number of wells and tubewells have declined in absolute numbers. These are the result of perverse policies, as one will see in this article.

Of the five lakh or so wells and tubewells, around 110,000 run on electricity and the rest run on either diesel or on kerosene or a mix of both. Pump ownership is not the only way to access groundwater – farmers who do not own pumps can still irrigate by purchasing water from pump owners. Of 6.1 million farming households in West Bengal, only a little more than half a million report owning wells and tubewells, while 4.6 million farming households report using irrigation (NSSO, 1999). Of these, 3.1 million households (or 50.4 per cent of all farming households) report hiring irrigation services from other farmers. Functioning of water markets is profoundly influenced by electricity tariff and diesel prices (Mukherji, 2007b). Thus, of the net irrigated area of 2.9 million hectares, groundwater irrigates 1.8 million hectares and provides access to irrigation to over four million households.

Only 43 per cent of the state's groundwater resources has been used in West Bengal; much lower than groundwater use in states like Punjab, Haryana and Gujarat

Groundwater irrigation is a concern in West Bengal because of two reasons. First, the majority of farming households in West Bengal irrigate their land using groundwater. Because of very low land holding, intensification of farming remains the only alternative and groundwater helps in growing that crucial third summer crop. Second, groundwater played an important role in agrarian transition in Bengal as discussed in the first section. However, a number of inappropriate policies and misplaced concerns stemming out of deep 'urban' biases among intellectuals in Bengal had influenced public policy discourse in such a way that it led to contraction in entire agricultural economy in the state. These urban biases have been discussed in another paper (Mukherji, 2006).

The policies that have impacted the farmers' livelihoods and poverty include the groundwater and electricity policies in West Bengal. The state is among the very few states in India that has a Groundwater Act and one whose provisions were being implemented at the ground level simply because it was tied to electricity connection. The other Indian state to have a working groundwater Act is Andhra Pradesh (APWALTA, 1999). While there are various provisions of this Act, of direct interest vis-à-vis the current discussion is its provision related to issue of permits (for wells and tubewells constructed after 2005) and registrations (for those constructed before 2005). These permits and registrations are mandatory for electricity connection.

The purpose of the Act was to keep a check on the number of new Water Extraction Mechanisms (WEMs) and create an inventory of all groundwater structures. The responsibility of implementation of the Act lay with the State Water Investigation Directorate (SWID). District level SWID hydro geologists were empowered to either accept or reject any application. Guidelines were often indicative and the final decision was at the professional discretion of the hydro geologist. They were also required to site verification but were not bound to cite any reason for rejection. This resulted in a curious state of affairs. Permits and registration applications were routinely rejected even in districts and blocks where groundwater development was as low as 20-25 per cent or where groundwater levels were less than 30 feet from the ground (*Table 1*).

However, in effect, like most such Acts that have to deal with millions of users and where implementation agency has neither the required manpower nor authority, the implementation is fraught with problems. This has been well documented in Spain (Llamas 2003) and in Andhra Pradesh in India (Ramamohan 2009). The same happened in West Bengal. *Table 1* shows that since 2007, some 66,000 farmers – well and tubewell

Table 1. Progress in implementation of GW Act of 2005 from 2007 till September 2010

Districts	Permits for new tubewells		Registration for tubewells constructed before 2005		Level of groundwater development
	Applications received	% of permits rejected	Applications received	% of registration rejected	
Bankura	2038	48.6	4215	26.9	28.7
Bardhaman	890	73.6	5911	73.5	43.1
Birbhum	2406	70.6	6448	47.4	23.9
Coochbehar	0		0		16.8
Dakshin Dinajpur	1856	81.5	153	90.8	45.7
Darjeeling	63	98.4	0	-	5.0
Hooghly	1361	43.6	2812	47.1	40.9
Howrah	136	25	15	46.7	21.6
Jalpaiguri	264	96.6	39	71.8	4.8
Malda	1038	92	2541	88.6	54.2
Murshidabad	1953	79.7	9657	76.9	83.6
Nadia	263	27	1943	2	84.6
North 24 Parganas	439	41.5	367	40.3	70.9
Paschim Medinipur	6036	76.7	6708	40.9	35.2
Purba Medinipur	1116	53.7	2487	34	38.3
Purulia	35	62.9	7	42.9	14.5
South 24 Parganas	125	56	110	80.9	NA
Uttar Dinajpur	2878	27.1	4	50	45.4
West Bengal	22897	64.1	43417	54.3	41.3

Source: SWID, November 2010

owners in the state have approached the SWID for either new permits to dig a well (22,897) or registration for an existing well (43,417). This is less than between 10 per cent and 15 per cent of the existing wells in the state. Therefore, apart from high rejection rates, another implementation draw back has been that not many farmers knew about the Act or its provision.

Thus, overall, the GW Act of 2005 and the way it was implemented meant that the majority of the farmers were not aware of the provisions of the Act and when they were aware and applied, they were refused permits. Therefore, getting groundwater permits and registrations is the single largest barrier that farmers face in procuring electricity connection. Given that level of groundwater is within 10 m in 80 per cent of the villages, farmers, if refused a permit by the SWID and hence denied electricity connection could always irrigate with a diesel pump. However, high diesel prices and low crop prices meant that this is no longer a profitable or even viable option, as one will see in this article.

After crossing the first hurdle of getting a SWID certificate, the farmers could then approach the electricity office for a new connection. Figure 1 shows that the pace of electrification of agricultural tubewells has slowed down in the last 10 years. Virtually, since 2003, the West Bengal State Electricity Board (WBSEB) and its new incarnation the West Bengal State Electricity Distribution Company Limited (WBSEDCL) has stopped sanctioning new electricity connections for agricultural tubewells. There are both demand and supply side reasons to it.

Since 2000, the state electricity utility has been demanding full cost of electricity connection from the farmers – something that even relatively well-off urban customers are not asked to pay. This includes the costs of wires, poles and transformers, if needed, and may range from Rs 1 lakh to Rs 2 lakhs per tubewell. Most farmers in West Bengal are small and marginal farmers and cultivate low value crops such as paddy. Such high electricity connection costs are often beyond their means. This has, in turn, depressed demand from the farmers for new connections. During the high flat electricity tariff regime (till 2007), farmers without tubewells also got access to groundwater at reasonable price through competitive water markets and, therefore, could grow irrigated crops even without owning tubewells (Mukherji 2007a, b).

However, since 2007, the government of West Bengal has started a programme of metering electric tubewells. This has increased the demand for new electric connections (personal communication, CMD, WBSEDCL) because the erstwhile water buyers now get less access to groundwater than before and, therefore, want to invest in their own tubewell for water security (Meenakshi et al. 2011). The WBSEDCL has been unable to respond to this increased demand due to the Groundwater Act of 2005.

Is the slow pace of pump electrification a response

to dwindling groundwater resources in the state? It does not seem to be so as seen from estimates of the Central Electricity Authority (CEA, 2010). The CEA gives the actual number of pumps energized as against the estimated ultimate groundwater potential in terms of number electrical pumpsets that can be installed in the state. It shows that while most major states have exceeded their potential in terms of electric pumpsets, West Bengal has electrified only 116,000 of the potential 650,000 that can be electrified given the groundwater potential as estimated by the Central Groundwater Board. This means that West Bengal has realized only 18 per cent of the pump electrification potential that exists in the state. Low rates of pump electrification means that majority of farmers depend on diesel pumps for irrigation.

Diesel prices have gone up sharply since mid-1990s after the policy of gradual removal of diesel subsides. For example, in real terms, the price of diesel has gone up from Rs 7.7 per litre in 1995 to Rs 26.1 in 2009, an increase of 3.5 times over a 15-year period. This by itself would not have mattered as much if the value of output too had increased by similar proportion. *Table 2*, however, shows that price to cost ratio has declined in real terms from 1999 to 2007, thereby squeezing farmer's profit margins. While costs of all inputs such as fertilizer, seeds, manual and machine labour have increased, that of irrigation has increased the most in West Bengal as shown by *Table 3*. Overall, as a result of increased diesel prices, electricity tariff and cost of other inputs along with more or less stagnant output prices, the profit margins of the farmers have decreased.

How are the farmers coping with rising diesel costs? One of the obvious ways in which they are doing this is through a change in cropping pattern away from water intensive boro paddy cultivation to less water intensive crops. Boro paddy is one of the most profitable crops in West Bengal. Besides being profitable, farmers also prefer to cultivate this crop as it provides them with food security and the risks involved (both weather related and storage related) are much lower than equally profitable crops such as potatoes and green vegetables.

Given that almost between 80 per cent and 85 per cent of all water extraction devices in West Bengal are diesel operated (GOI 2001), this has had serious repercussions on boro paddy cultivation in the state in terms of reduction in acreage. According to the Director of Agriculture, West Bengal, the area under boro paddy has declined from 1.5-1.6 million ha. to 1.2 million, mostly due to unavailability of surface and groundwater (Ananda Bazar Patrika, March 11, 2011). Therefore, the unavailability of groundwater is not as much a function of physical scarcity of groundwater but one of high diesel costs and low rates of rural electrification. It is also widely acknowledged that it was the increase in area under boro paddy coupled with productivity increases in aman, aus and boro paddy that had propelled spectacular growth in agriculture in West Bengal (Rogaly et al. 1999). This scenario is already changing given the very high diesel prices and lack of new electricity connection. In an unfavourable input output price regime, those farmers who depend exclusively on diesel pumps are at disadvantage vis-à-vis those who have access to electric pumps.

Table 2. Price to cost ratio of boro paddy, 1998 to 2007

Year	Cost of cultivation of paddy (C2) at 2004-05 constant prices (Rs/100 kilos)	Farm harvest prices of boro paddy 2004-05 constant prices (Rs/ 100 kilos)	Price to cost ratio
1998	605.4	1513.4	2.5
1999	652.9	1361.8	2.1
2000	632.0	1214.3	1.9
2001	597.9	1030.9	1.7
2002	580.2	1012.6	1.7
2003	616.5	1101.6	1.8
2004	581.1	1096.8	1.9
2005	568.2	1129.0	2.0
2006	597.3	1092.2	1.8
2007	601.1	1236.7	2.1

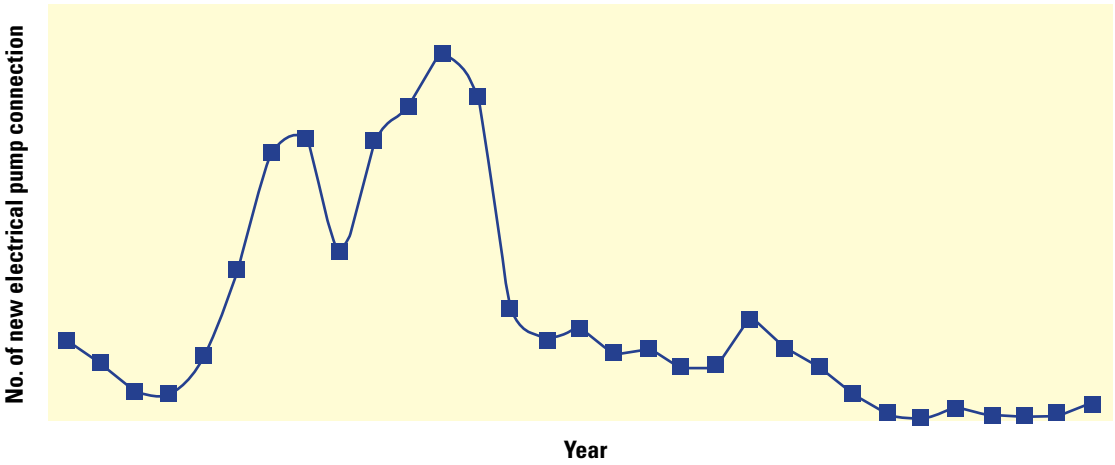
Source: indiastat.org downloaded on 15 March 2011, compiled based on statistics released by Ministry of Agriculture, Government of India; C2 cost of cultivation includes: All actual expenses in cash and kind incurred in production by owner + rent paid for leased in land+ imputed value of family labour.

Table 3. Variable Input Price Index of Paddy in West Bengal at 1999-2000 constant prices

Year	Human Labour	Bullock Labour	Machine Labour	Seeds	Fertilizer	Manure	Insecticide	Irrigation
1999-00	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
2003-04	114.0	110.5	139.2	108.2	115.2	112.6	107.0	153.5
2004-05	111.9	114.4	152.2	110.6	120.4	115.9	108.5	133.9
2005-06	122.1	116.1	172.4	112.6	115.2	119.4	116.8	208.2
2006-07	136.4	119.0	187.5	116.6	115.2	123.0	124.3	223.8

Source: Ministry of Agriculture, Govt. of India; downloaded from indiastat.com on 15th March 2011

Figure 1. Number of new electrical pump connections given to farmers in West Bengal, 1979 to 2009



Source: WBSEB (and now WBSEDCL)

What may have propelled the state to follow such restrictive groundwater policies? Discussions with state level officials shows that the Groundwater Act of 2005 was a partly response to the central government's policy directive to legislate on groundwater (which they are not bound to follow because water is a state subject) and partly a response to their own risk perception vis-à-vis groundwater quantity and quality, especially arsenic related concerns. What are these perceptions and are they well founded enough to restrict groundwater access to millions of farmers and affect their livelihoods?

Are groundwater levels declining over time? Prima facie, it seems not. Data from SWID (see last column of *Table 1*) shows that overall level of groundwater development in the state is 42 per cent and that none of the districts use more groundwater than annual renewable recharge. At the block level, only 38 out of 310 blocks have reached what is called a semi-critical stage of groundwater development – that is water levels are falling in either pre or post monsoon season or level of groundwater development is more than 75 per cent of renewable recharge. These numbers (42 per cent overall groundwater development and 38 semi-critical blocks) have remained constant since 2000.

Consider carefully the 20 year time series data of water levels collected from 508 wells from 1990 to 2009. *Table 4* shows majority of wells (70.5 per cent in pre-monsoon and 81.1 per cent in post monsoon) have a constant trend, while 25.2 per cent and 16.7 per cent of all observation wells experience a declining trend in pre and post monsoon respectively.

The next step is to understand how the water level trend behaves for each well across the seasons. *Table 5* tabulates this behaviour and shows that majority of wells maintain same trends across seasons. Of concern is the category of wells that shows a significantly declining trend in both pre and post monsoon seasons. There are some 67 (13.2 per cent) wells that show this trend and these are the blocks that have been mostly categorized as semi-critical blocks.

These are the wells of concern because here water levels do not recover sufficiently after the monsoon rains to be able to reverse the declining trend. An analysis of depth to water table of these 67 wells with a falling trend shows that some 31 (46 per cent) wells have a depth to water table of

Table 4. Groundwater level trend in 508 observation wells in West Bengal, 1999-2009

	Number of observation wells (% to total)			
	Constant (+-20cm)	Falling (+20cm and more)	Rising (-20 cm and less)	Total
Pre-monsoon	358 (70.5)	128 (25.2)	22 (4.3)	508 (100)
Post-monsoon	412 (81.1)	85 (16.7)	11 (2.2)	508 (100)

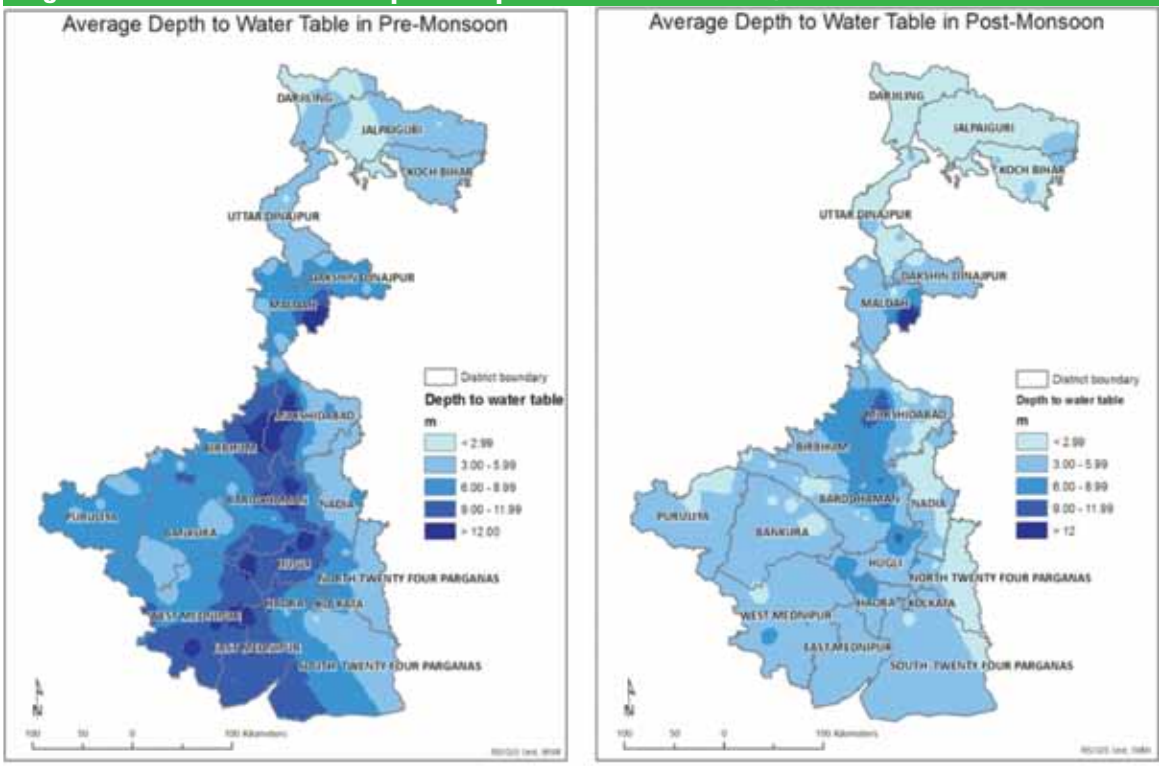
Source: SWID, 2010, Figures in parentheses shows percentage to total of 508 wells

Table 5. Comparison of trend between pre-monsoon and post-monsoon season, 1990-2009

	Trends	Pre-monsoon			
		Constant	Falling	Rising	Total
Post-monsoon	Constant	335(65.9)	61 (12.0)	16 (3.1)	412 (81.1)
	Falling	18 (3.5)	67 (13.2)	0 (0)	85 (16.7)
	Rising	5 (1.0)	0 (0)	6 (1.2)	11 (2.2)
	Total	358 (70.5)	128 (25.2)	22 (4.3)	508 (100)

Source: SWID, 2010, Figures in parentheses shows percentage to total of 508 wells

Figure 2. Water tables in the pre and post monsoon season, 1990 to 2009



Source: SWID, 2010

High rainfall and the nature of the alluvial aquifer and its inter-connectedness with the Ganges river system ensures high recharge in the post monsoon season in West Bengal

less than 9 m, 26 (39 per cent) wells have depth to water table between 9-12 m, while the remaining 10 (15 per cent) have depths of more than 12m.

Overall, the declining trend notwithstanding, the depth to water table is still relatively shallow. Why is this so? The hypothesis here is that high rainfall and the nature of the alluvial aquifer and its inter-connectedness with the Ganges river systems ensures that there is high recharge in the post monsoon season and whatever decline happens in the pre-monsoon season gets adequately recharged in post monsoon season (See *Fig. 2*).

The threat of arsenic contamination of groundwater is often cited as the most important reason for restrictive groundwater policies in West Bengal. Contamination of groundwater due to naturally occurring arsenic, dependence on this groundwater for drinking and irrigation and its impact on human and crop health have emerged as major threat in many parts of the world. Bangladesh and West Bengal in India are the worst affected by arsenic and most of the documented cases are from here.

However, there are many dimensions to the arsenic problem and all dimensions must be carefully thought through before embarking on policies that deny access of irrigation water to the poor. Several millions of people are exposed to high levels of arsenic through contaminated drinking water. This poses serious health risks such as those of skin lesions and cancer (Rehman et al. 2006). This risk needs to be put in the context of access to safe drinking water. In Bangladesh, for example, use of groundwater for drinking was a direct policy response to high incidence of water borne diseases and indeed diarrhoea deaths have been brought under control since then. In recent years, there have been concerns about effect of irrigation with arsenic contaminated water on crops and through consumption of such crops, on human health (FAO, 2006).

What further complicates the issue is that, in many of these places, groundwater often is the only source of irrigation and plays an important role in livelihood security. For example, Bangladesh achieved food self-sufficiency in 1999 thanks to intensive use of groundwater. Here as much as 95 per cent of the net cultivated area is under

groundwater irrigation (Karim, 2001). Third, places with highest incidence of arsenic in groundwater also happen to be some of the poorest in the world. Poverty affects the communities and the governments' capacity to cope. At the same time, poor nutritional status also makes them more susceptible to negative health impacts of arsenic.

However, in the absence of provision of alternate means of irrigation and livelihoods, restriction in access to groundwater is likely to be counter-productive. First, there is no clear evidence that directly links arsenic contamination with the quantum of groundwater extraction (for summary of debate on whether arsenic contamination is human induced, i.e. pyrite oxidation theory or natural, i.e. oxy-hydroxide reduction theory, see Fazal et al. 2001). Second, transfer of arsenic into human chain is very ill-understood as of now and discussions about its mitigation are underway. Third, rather fortunately, various low cost techniques exists for effective removal of arsenic from drinking water (Jakariya et al. 2005) and some of these are now being widely adopted in the affected regions in West Bengal and Bangladesh. Fourth, another body of literature that links nutrition level with arsenic poisoning finds that there is a negative co-relation between socio-economic status, education, level of nutrition and symptoms of arsenic poisoning (Mitra et al. 2004, Rehman et al. 2006 and Maharajan et al. 2007). The policy implication that follows is that, in the long term, overall socio-economic development and improving nutritional status of people would be an important tool for minimizing ill effects of arsenic, though in the short term, providing arsenic free drinking water through low cost technologies that are already available would be crucial. Fifth, another extensive body of literature shows that in the context of India, states with high agricultural growth rates also achieved high levels of poverty reduction (Dutt and Ravallion 1998, Palmer-Jones and Sen 2003) and that groundwater irrigation has played a crucial role in agricultural growth in those states (Dains and Pawar 1989, Repetto 1994).

Linking these five arguments together tells us that restricting groundwater irrigation for containing arsenic contamination is likely to be counter-productive because in the absence of any other alternate sources of irrigation and livelihoods, the farmers would become nutritionally poorer and hence all the more susceptible to arsenic poisoning than ever before. Policies have to be crafted carefully after weighing these tradeoffs carefully, especially since any hasty decision may endanger lives of millions of farmers dependent on irrigation.

After posting impressive agricultural growth rates

of six per cent and above per annum in the late 1980s and early 1990s, West Bengal's agricultural growth has stagnated at between one per cent and two per cent per annum since then. This article shows how high irrigation costs and resulting low profits are a direct result of farmers' dependence on expensive diesel for pumping groundwater and difficulty in getting electricity connections. The article also shows that the main constraint that farmers in West Bengal face vis-à-vis access to groundwater is that of energy, namely, low rates of rural electrification and high diesel costs. It proposes that, given the high groundwater endowment due to high rainfall and rich alluvial aquifers, it is the sustainable use of groundwater that can now unleash agricultural growth in West Bengal. With its high population density, West Bengal is a relatively land-scarce state. This means that farmers have to eke out a living from small post stamp sized holdings (average holdings are less than 0.6 ha) and, therefore, have to crop two to three crops in a year. Groundwater, which is available all throughout the year, enables them to do so. Dependence of surface water sources (like tanks and ponds) is not feasible as most of these dry up by February and do not allow farmers to grow boro paddy.

In the meanwhile, the government of West Bengal has taken two policy decisions — decisions not widely publicized by the media or commented upon by those in the academia – but decisions which will change the lives of millions of small and marginal farmers in the state by improving their access to groundwater and in the process may as well kick start a new Green Revolution.

Farmers in 301 or so 'safe' groundwater blocks, owning pumps of less than 5 HP and tubewells with discharge less than 30 m3/hour, will not need permits from the SWID

First, the Water Resources Investigation and Development Department (WRIDD) vide a memo dated November 9, 2011, has changed a provision of West Bengal Groundwater Resources (Management, Control and Regulation) Act 2005. Now farmers located in 301 or so 'safe' groundwater blocks and owning pumps of less than 5 HP and tubewells with discharge less than 30 m3/hour will no longer need permits from the State Water Investigation Directorate (SWID). This will effectively put all farmers except those located in 37 semi-critical blocks outside the purview of the Act. Earlier farmers needed these permits to apply for electricity connection from the West Bengal State Electricity Distribution Company Limited (WBSEDCL). This process of procuring SWID certificates was fraught with rent seeking and corruption and at receiving end were small and marginal farmers.

Second, the WBSEDCL has also passed a policy resolution by which it will give new electricity connections to farmers against a payment of a fixed connection fee depending on the connected load. This means that farmers will no longer have to individually pay full cost of wires, poles

and transformers based on their distance from the network, as they were required before. The utility will still be able to cover the full cost of new connection on an average through a uniform fee though. The farmers will also continue to pay a metered tariff for their electricity consumption; a tariff that is unsubsidized and indeed a little higher than average cost of supply.

What will be the impact on groundwater irrigation and informal groundwater markets in West Bengal if at least 50 per cent of existing pump sets were to be electrified and the scheme implemented correctly? Informal groundwater irrigation services market is an important agrarian institution in Bengal as more than 67 per cent of farming households in the state access irrigation through these informal markets (NSSO, 1999 and Mukherji, 2008). Using secondary data from agricultural censuses and 54th round of NSSO (NSSO 1999) coupled with primary data and by making some fairly simple assumptions, one can provide a very rough cut and simplistic estimate of the impact of electrification of pumps. These estimates, are by no means sophisticated and more work needs to be done to derive finer estimates.

What will be the impact of an additional half a million electric pumps on net irrigated area? Given that on an average one electric pump irrigates 7.9 hectare of land (Mukherji, 2007 a), an addition of 480,000 electric pumps would lead to creation of an additional 3.7 million hectares (mha) of irrigable land. Assuming that only 50 per cent of this potential will actually be irrigated, this amounts to 1.85 mha of additional irrigated area.

Dr Aditi Mukherji, a senior researcher at the International Water Management Institute's New Delhi office, whose research on groundwater resources in agriculture led to major policy changes to benefit thousands of farmers in West Bengal, was named the first recipient of the "Norman Borlaug Award for Field Research and Application, Endowed by the Rockefeller Foundation". At the request of the World Food Prize Foundation, the announcement was made during the prestigious Stockholm World Water Week in Sweden. Dr Mukherji will be formally presented with the $10,000 award on October 17, 2012, in Des Moines, Iowa, as part of this year's World Food Prize international symposium.

Thus the net irrigated area of West Bengal will go up from 2.98 mha as of now to 4.83 mha. This will mean an increase in ratio of net irrigated area to net cultivated area from 54.5 per cent to 88.0 per cent simply by electrifying around half a million pumps.

Assuming even a very low average boro paddy productivity of 2.5 tons/ha, this will lead to additional production of 4.62 million tonnes of paddy. Assuming Rs 1,000 per 100 kilos of paddy, this translates to additional income of Rs 4.6 billion per year. Similarly, with the addition of half a million electric tubewells, the area served through water sale will increase as will the number of water buyers who are served. With higher competition among electric tubewell owners, price at which water is sold will decrease too. On an average, diesel WEM owners serve 12 water buyers per year, while electric WEM owners serve 38 water buyers (Mukherji 2007). Even assuming that each electric WEM owner will serve only 10 water buyers, the number of new water buyers who will be brought under the ambit of water markets will be a staggering 4.7 million. Right now around 25 per cent of cultivating households (or 1.5 million households) do not have any access to irrigation (NSSO 1999). This scenario might as well change with electrification of tubewells in the state.

While there are no groundwater over-exploitation concerns as of now, it is important to ensure policies that encourage farmers to make efficient use of groundwater are also promoted. That farmers are charged full commercial rates ensures that they will not have any perverse incentive to pump more than their crop water requirements. Thus, there are already checks and balances in place. In addition, ensuring that public money like that of Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGA) is utilized for excavating tanks and ponds as a means for providing additional recharge in the post monsoon season. Arsenic remains a grave drinking water threat in West Bengal. Concerted efforts to provide arsenic free water to rural population along with targeted schemes for providing nutritional supplements like folate to affected population will help mitigate the problems of arsenic contaminated drinking water to a large extent. Such schemes have been implemented in Bangladesh and seem to have had a positive impact.

The state of West Bengal is home to 214 lakhs poor. In other words 28.5 per cent of the population of the state is below the poverty line. Of these, 84 per cent of poor people live in villages. According to the National Sample Survey (NSS) 61st round (2004-2005), 10.6 per cent of rural households in West Bengal are reported as not having enough food every day during some months of the year. This was the highest percentage in India. More than 70 per cent of West Bengal's workforce depends on agriculture as their main source of livelihood.

Distress migration from the state is high and is evidenced by scores of Bengali men and women who are working in the informal sector as low-paid wage labourers all across the country. Since much of the poverty is in the rural areas and much of these rural farmers are rural small holders, faster agricultural growth is a sine qua non for poverty alleviation in the state. The fact that high agricultural growth leads to a trickle-down effect on poverty alleviation is now well established. In West Bengal, the highest decrease in poverty rates coincided with high agricultural growth rates in the 1980s and 1990s. The new policies, if implemented well, will help unleash another wave of Green Revolution in the state and in the process benefit millions of small holder farmers. ●

The author is the first recipient of the new Norman Borlaug Award for Field Research and Application, Endowed by the Rockefeller Foundation.

Only Ecological Restoration can Lead to a Sustainable Second GREEN REVOLUTION

Dhrubajyoti Ghosh

Does the Indian farmer not have a perspective on farming worth respecting? Is the so-called participatory decision-making process worth no more than its cosmetic use?

Any talk about the multi-crore programme to usher in the second Green Revolution should be prefaced with two questions. Who decided that the country should have a second Green Revolution? Who decided how would it be achieved? This is clearly the most crucial decision involving the farmers of our country but how many farmers have participated in the making of this decision? Given a basic understanding of how the system works, it would not be entirely unfair to believe that not too many farmers were taken into confidence in a decision that may well have been purely bureaucracy driven.

This gives rise to two more fundamental questions. Do we then assume that Indian farmers do not have a perspective on farming worth respecting? Also, is the so-called participatory decision-making process worth no more than its cosmetic use? Yet the very obvious truth is that in no other country could participatory decision-making make as much sense as in India, which has more than 70 per cent of its people engaged with the agricultural sector. Who took the decision though? When was it taken? It could not have been taken all of a sudden. Getting the prime minister to pick up the microphone and hoist another flag of revolution, all green, cannot be an overnight decision. What then is the big picture?

The agribusiness fraternity

Transactions all over the world have mostly been unequal, with the powerful securing more favourable terms for themselves. This history is almost as old as the civilization itself, except that the techniques used by the powerful to get better terms have evolved through the ages. Excellence in knowledge and technology has enhanced this skill to deceive and enabled communicating brilliance to influence, for instance, an Ethiopian mother to collect all her earnings to give a bottle of Pepsi to her little child, believing it to be the best nutrition that she can provide the skin and bone on her lap or even the best substitute for questionable water in her environs.

Agrochemicals and seeds products have reached new heights in terms of deceiving mankind and influencing transactions in favour of agribusiness and almost invariably against the farmer or his only belonging: the plot of land. DuPont along with Monsanto, Cargill and such others are powerful masters of agribusiness, who picked the global

agricultural fields as their pasture for profit-making. They had a smooth run and continue to travel the length and breadth of bureaucracies and ministries of all the countries, wherever they are active, including – and especially – the USA, making them do their bidding. There is a good amount of research on the subject of agrochemical holocaust but this article is not about re-opening that account.

Indo-American friendship

A peep into history is desirable though and might also be revealing. Bret Wallach, in his remarkable book 'Losing Asia: Modernization and Culture of Development' (published Johns Hopkins University Press, 1996) mentioned a Frank Parker, a DuPont veteran, who came to India as the American ambassador's foreign aid advisor. At Parker's urging, India was soon conducting an immense programme demonstrating the benefits of chemical fertilizers. Enter the USA and its influence on promoting the so-called second Green Revolution.

The year 2008 was declared by the United Nations as the Year of Global Food Crisis. Global food prices went up by 40 per cent. There were food riots and protests over rising food prices in many countries around the world. A number of analysts considered this to be a consequence of a failed 'Green Revolution' in agriculture. Some analysts, however, saw this as a way to promote genetically modified crops (GMCs), which they said was the new "doubly green revolution" (Mae-Wan Ho, 2008). In the Indian context, however, the Indo-US Knowledge Initiative in Agriculture, in 2005, had already modified it to a 'Second Green Revolution for India'.

Significantly, a report of the West Bengal State Agricultural Commission (2009) on this knowledge initiative, described it as nothing but "a carefully designed strategy by the U.S. based transnational corporations to take over the control of India's food and agricultural sector. Instead of serving the farmers and saving the farming systems as contemplated by the National Commission on Farmers (NCF), the second Green Revolution, presumably based on GMCs and chemical intensive industrial agriculture, has the potential to destroy the socio-economic base of the farming community and ruin our traditional farming systems".

The work on this West Bengal State Agricultural Commission report started on January 15, 2007 and was submitted in March 2009. A total of 256

agricultural experts, 16 universities, five autonomous institutions, five farmers' organizations, five NGOs, 10 research institutions, all district magistrates and sabhadhipatis of the state actively collaborated to produce a 750-page report that provided an outstanding roadmap for the future of agriculture in West Bengal. Understandably, however, the media took very little notice of this seminal work.

There were lessons in history

The country owes a great deal to Bret Wallach who, in his book, articulated the views of Albert Howard, former director and probably the most eminent of the scientists appointed to the early Pusa staff. (Pusa is India's leading and one of the oldest agricultural research institutions). In his last book, An Agricultural Testament, published in 1943, Howard wrote that "the agricultural practices of the orient have passed the supreme test – they are almost as permanent as .... the primeval forest..., the prairie, or... the ocean". According to Howard (as quoted in Wallach's book) "the principle followed (in modern farming is) based on a complete misconception of plant nutrition and is fundamentally unsound. It takes no account of the life of the soil, including the mycorrhizal association – the living fungus bridge, which connects soil and sap. Artificial manures lead invariably to artificial nutrition, artificial food, artificial animals and, finally, to artificial men and women".

Howard predicted that: "chemical manures will be considered as one of the greatest follies of the industrial epoch. Insects and fungi are not the real cause of plant diseases but only attack unsuitable varieties or crops imperfectly grown", which again were the result of "the breakdown of a complex biological system, which includes the soil in its relation to the plant and the animal". This is a history of science that should have been pursued in the research schemes of Indian agricultural institutions.

'Business-as-usual' will not work

On April 15, 2008, something unusual happened. Some 401 scientists from 58 countries worked together under the aegis of the World Bank, FAO, UNEP, GEF, WHO, UNESCO, UNDP to come up with a report on agricultural knowledge, science and technology. The report is known all over the world as International Assessment of Agricultural Knowledge, Science and Technology for Development (IAAKSTD/IAASTD).

IAASTD has discussed virtually all issues

directly or indirectly related to agriculture globally and regionally and focused on a range of non-commodity services of which the ecosystem services are of paramount importance. The report marked the growth in world agricultural production but pointed out that the sharing of benefits has not at all been equitable and the enhanced production has been attained at very high social and environmental costs. Global pesticide related deaths are estimated at 220,000 annually with between 20 lakh and 50 lakh people suffering from pesticide toxicity each year. The lack of diversity in foods and faulty processing are responsible for widespread malnutrition (which includes obesity and over nutrition as well).

Most importantly, the report has included an observation on GMO and specifically GM crops, which it considers to be controversial. According to the report, the "assessment of the technology lags behind its development, information is anecdotal and contradictory and uncertainty about possible benefits and damage is unavoidable". The report recommends a ban on growing GMCs in countries that are centres of origins of such crops in order to prevent inevitable genetic contamination and preserve biodiversity essential for the future of agriculture.

Global pesticide related deaths are estimated at 220,000 annually. Between 20 lakh and 50 lakh people suffer from pesticide toxicity each year.

Parliamentary committee rejects GM

A 31-member parliamentary committee headed by Basudeb Acharya took two years to complete a report that recommends stopping of field trials of all GM crops. The report included depositions by 50 scientific institutions, academicians, scientists and agricultural writers. The environment and forest minister, Jayanthi Natarajan, has been quoted in Outlook (August 27, 2012) as having assured that "until there are proper safeguards and a regulatory framework in place, there is no question of lifting the moratorium". The moratorium was imposed on the commercial release of Bt brinjal seeds in 2010 by the then environment minister, Jairam Ramesh. This battle is far from over though. There are chances of an insidious entry of GM seeds into the market (even if informal) by creating an artificial scarcity of seeds. The farmers are likely to buy GM seeds unknowingly. If this happens, it will devastate the future of agriculture in whatever form it remains as of now.

The first Green Revolution made agriculture dependent on petroleum and chemical industry whereas the second Green Revolution is mainly driven by biotech and seed firms. It seems a kind of confrontationist position will unavoidably emerge between the India-U.S. Knowledge Initiative on Agricultural Education, Teaching, Research, Service and Commercial Linkages (along with the faithful promoters of the second Green Revolution) vis-à-vis the aforementioned parliamentary committee's decision.

What is happening in West Bengal

Some time ago, a highly publicized International Water Management Institute (IWMI) report upheld and encouraged by the Planning Commission put pressure on West Bengal's Water Investigation and Resources Development Department to lift the regulatory control over pump sets below 5HP as farmers would not require any permission to install them. It is welcome so far as the reduction of procedural hazards is concerned. The IWMI recommendation, however, suffers from glaring one-sidedness in the backup research that supports this change in 'policy'.

First, abstraction of groundwater can only be allowed subject to the condition that there is no post-monsoon reduction in the groundwater table, to be ascertained by the State Water Investigation Directorate. Again, one cannot forget that there are contesting reports about the groundwater status. In 2009, the World Bank was reported to have refused to release a fund of Rs 2,520 crore for minor irrigation projects in India. NASA satellite imagery has also shown rapid reduction of groundwater storage in India, The supporting research takes no notice of fluoride pollution, which is looming larger and larger. Fluorosis is the most prevalent groundwater-related disease in India, the most severely affected country worldwide. A total of 20 out of 28 Indian states have some degree of groundwater fluoride contamination. The total population of 201 districts in India with known fluoride contamination is 411.1 million.

Photo: Dhrubajyoti Ghosh

India has now adopted WHO guideline of 10 microgram/l as permissible limit of arsenic concentration. On this basis, the number of villages at risk will be 49.7 per cent (Chakraborti, 2009) in place of 24.7 per cent as mentioned in the IWMI report. Planners may do well not to forget that the nine highly arsenic-affected districts of West Bengal are the ones that practice near-intensive to intensive agriculture.

There is greater cause for concern in the recommendation to enhance area under boro paddy cultivation using groundwater source. Rightly, the Department of Agriculture has a policy to reduce area under boro cultivation and conversion from rice to maize is already taking place. In fact, the very perception of a drought this year would not have been there had the state thought more in terms of maize. Agricultural experts see this kind of monsoon as ideal for maize.

It is surprising that both the Planning Commission and IWMI have ignored the fact that massive quantity of water is wasted by the farmers and that much more area can be irrigated by reducing wastage of irrigation water. In 2000, it was reported that out of 273 cubic km of water used for irrigation in India, the actual requirement was only 151 cubic km (Tushaar Shah of IWMI was one of the authors).

Amidst the encircling confusion, there is some light though. The earliest version of guidelines for extending the green revolution to eastern India (Rs 400 crore for Assam, Bihar, Jharkhand, eastern Uttar Pradesh, Chhattisgarh, Orissa and West Bengal) laid emphasis on setting up consolidated 1,000 hectares demonstration centres and using hybrid seeds within the projects. However the agriculture officers and scientists discussed the guidelines and debated the practicality of the recommended guidelines.

Significantly, those plots have been brought down to 250 hectares from a 1,000. There will be no hybrid seeds for the kharif season to start with. Incidentally, West Bengal is not allowing the introduction of GM seeds. No farmer is expected to get seeds that are not tested before distribution even if they are certified. Additionally, weedicide or plant-protection chemicals will be supplied strictly on need-based indent of the local agricultural officers. On the whole, a whiff

Photo: Dhrubajyoti Ghosh

Rightly, the Department of Agriculture has a policy to reduce area under boro cultivation and conversion from rice to maize is already taking place

of fresh air seems to have started blowing in the agricultural stewardship of the state.

As a keen observer of ecosystems, one knows the basic principles of ecosystem management. If an ecosystem is so seriously damaged that its functions and services are no longer available in a manner so as to continue its sustainability, the first imperative is restoration. How does one restore the agricultural ecosystems of West Bengal damaged by the overuse of agrochemicals? The initial agenda must be to ensure the return of the earthworms. Thereafter, the fish that used to grow in the paddy fields, which also provided free protein for the rural children of West Bengal, lost over the past few decades because of the excessive use of pesticides, should re-appear.

Villagers know how inextricably the phenomenon of losing fish in the paddy field is linked with the declining health of their children but not a single study or research is available linking these two. It reminds us the story of Mullah Nasiruddin, who was found searching something in his courtyard. His wife enquired what was he searching for. He said it was the key that he had lost in his room. This was nothing surprising, he explained. After all, he could only search for it in a place where there was sufficient light and not in the darkness of the room. Mullah Nasiruddin knew the driving force of agricultural research in our country.

Getting back the earthworms or fish in the paddy fields will be excellent acts of ecological restoration. They are just a few examples of the initial things that could be done. Restoration has to be accepted as a challenge to help the farmers for regaining the sustainability of Indian agriculture. We may call it the Blue-Green alternative to usher a new response that was visualized by the report of the Commission on West Bengal agriculture. Can West Bengal think ahead and take these steps? ●

The author is a U.N. Global 500 Laureate and Regional Chairman (South Asia), Commission on Ecosystem Management, IUCN

IFFCO KISAN SEZ - Nellore

Creating India's First Agribusiness Based Special Economic Zone

Realizing the need to bring in high value agribusiness activity into the country, **IFFCO, Asia's largest** fertilizer company through its SPV IFFCO Kisan SEZ Ltd., has embarked on the development of an **Agri-based Special Economic Zone based on the** concept of **"Agroparks" (AP) in Nellore** in the state of **Andhra Pradesh.** The developer has brought in the expertise and lessons learned by the northwestern European agro sector in **innovating metropolitan agriculture by forging strategic consultants with Wageningen University and Research** Center, the Netherlands and YES BANK Limited.

•IFFCO Kisan SEZ is a notified Multiproduct Special Economic Zone spread over 1000 hectares located 22 KM North of Nellore, A.P. It comes with many customs duty and sales tax concessions provided by the government of India to promote economic activity in notified Special Economic Zones. The concept of Agropark is based on the principles of sustainable development, i.e.

- Application of principles of industrial ecology, i.e. mutual use of waste and by-products.
- Advantages of scale through industrial production and processing.
- Improvement of farmers position as a preferred supplier.
- Independence from seasonality and land during the whole year of production cycle
- Significant reduction of costs

Locational Advantages: IKSEZ is at a distance of just 50 Km from Krishnapatnam Sea Port, a new mega port on the east coast, and within a reach of three hours drive from Chennai International airport.

Nellore, the catchment area which is the Heart of Indian Aquaculture, is a strong source of various agricultural produce such as paddy, sugarcane, fruits & vegetables (especially tomato) and is a prime source of supply of poultry products and milk to near by metropolis. Major fruits include mango, citrus, papaya, banana & sappota.

• Infrastructure that is being provided: The IFFCO Kisan SEZ comes with a bundle of world class common infrastructure conforming to international standards including internal roads, high quality rain harvest supported water supply, uninterrupted power supply, common operation, maintenance and management of security, logistics, ICT etc. Moreover, the Agropark offers a framework of industrial ecology, managing waste and byproducts thus significantly reducing costs.

• Land at IFFCO Kisan Project site is being offered on long term lease basis for 33 years for potential Entrepreneurs for setting up their units on attractive terms and conditions. For further details contact our website www.iffcokisansez.com or can be obtained from,

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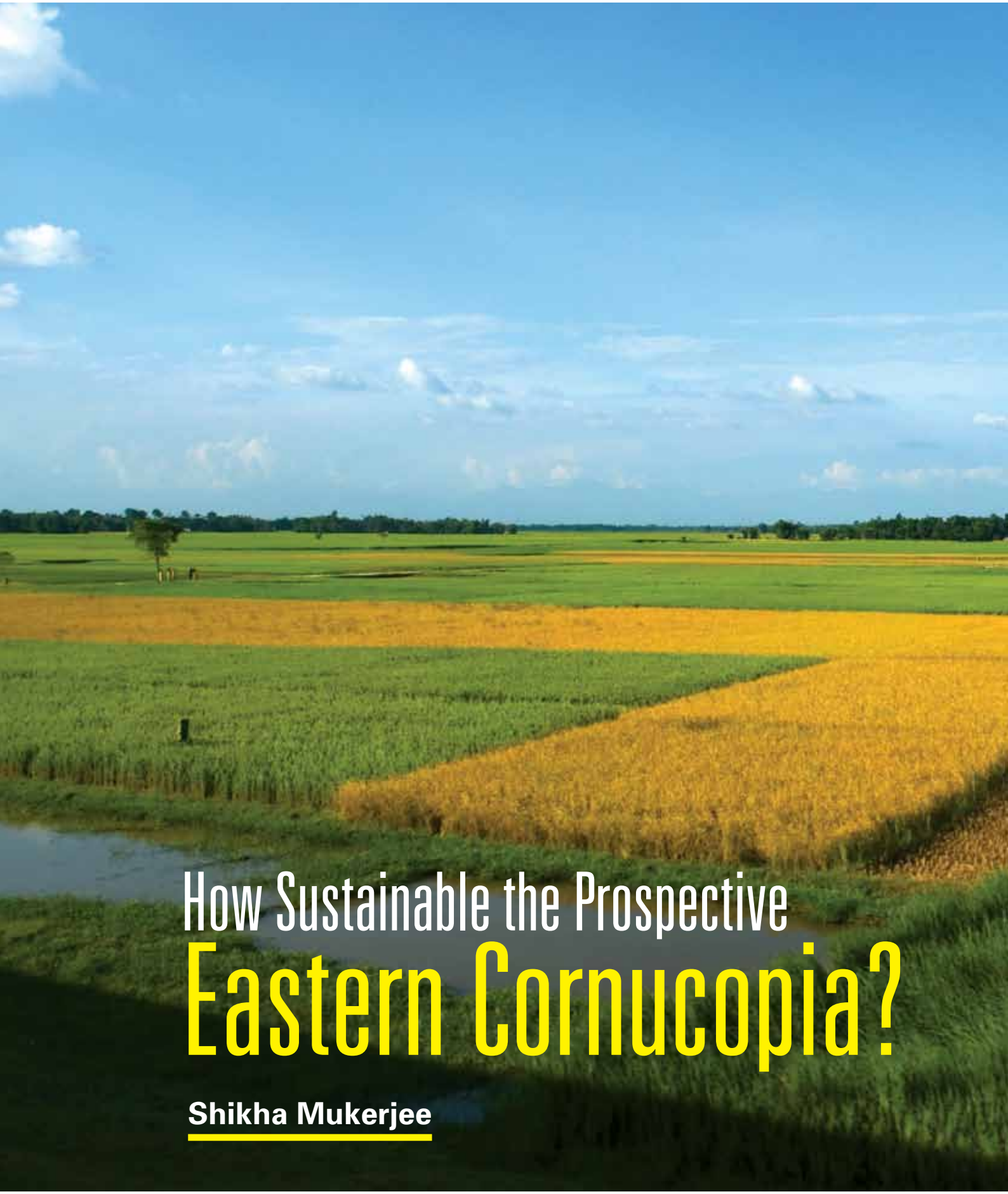


How Sustainable the Prospective Eastern Cornucopia?

Shikha Mukerjee


“Lakshmipada Sardar, from near Baruipur in South 24 Parganas, West Bengal, has used hybrid rice varieties, chemical fertilizers and pesticides from the 1970s.”

Science, folklore, policy lore can be selectively combined in a convenient mix to extend and expand the argument for and against the idea of the "second green revolution" that focuses on raising productivity of primarily rice-growing regions in India located in the eastern Indian states.

There is an apparently straight forward dispute about how the green revolution that purportedly bypassed the rice-growing areas in India will actually harm the environment, the farmer and the economies of the states where it is being unrolled or is about to be unrolled. The disputants, however sincere, are engaged in speculating on the benefits or dangers of the second green revolution based on an, invariably, teleological argument using experiences and expertise to refute the other side.

This clash, of what is effectively a civilization agenda, needs to be reviewed in order to make sense of why the argument is running away with the subject – the need to grow more food, sustainably, to feed India's millions on the one hand and increase incomes of those with lands by nudging them in the direction of economically profitable crop diversification.

As it so happens, the farmer knows what there is to know about diminishing returns from continuous use of fertilizers and pesticides. Lakshmipada Sardar, from near Baruipur in South 24 Parganas, West Bengal, has used hybrid rice varieties, chemical fertilizers and pesticides from the 1970s. He is investing more and more every year in buying "stronger" fertilizer and pesticides, using greater quantities in order to maintain productivity at profitable levels. The pursuit of permanent cornucopia has transformed the farmer from being a cautious conservative on use of new technologies into a reckless, desperate investor in fertilizers and pesticides aided and abetted by "companies"; actually irresponsible dealers who blithely advise the farmer on what to use and how to use it to kill pests and increase yields.

The pursuit of permanent cornucopia has transformed the farmer from being a cautious conservative on use of new technologies into a reckless, desperate investor in fertilizers

Lakshmipada has, after displaying a great deal of aggressive resistance, changed over to organic fertilizers and crop diversification in combination with herb based pesticides in his kitchen garden, adjacent to his homestead. He clearly has no intentions of consuming chemicals along with his vegetables. He also talks about the return of insects that are not harmful and that do not need to be controlled with strong doses of pesticides.

On its part, "government", in this case the Planning Commission, in a review of the management of natural resources at the beginning of the 11th Five Year Plan seemed to have got an understanding of how things had gone wrong after green revolution was adopted as the strategy to lift India out of food scarcity. The evaluation of the promised permanent cornucopia – green revolution – is clear sighted in that the strategy of using technology – machines, chemical fertilizers and pesticides, hybrid seed and irrigation – had worked for a time and then the

long-term damage inflicted by poor management of unscientific and haphazard use of inputs and reckless use of resources has increased the stress on the environment and impoverished the peasantry. The promised cornucopia has turned into a race of diminishing returns that appears to be accelerating.

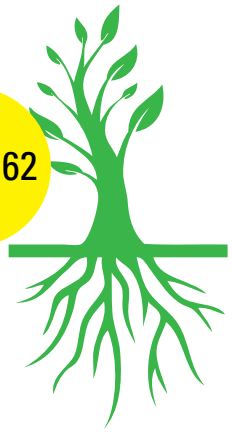
The report begins with a detached "Status and Management Scenario of Natural Resources" overview of the consequences and is worth quoting at length: "Natural resources (land, water, biodiversity and genetic resources, biomass resources, forests, livestock and fisheries) – the very foundation of human survival, progress and prosperity, have been degrading fast and the unprecedented pace of their erosion is one of the root causes of the agrarian crisis that the country is facing. The demographic and socio-economic pressures notwithstanding, the unmindful agricultural intensification, over use of marginal lands, imbalanced use of fertilizers, organic matter depletion and deteriorating soil health, extensive diversion of prime agricultural lands to non-agricultural uses, misuse and inefficient use of irrigation water, depleting aquifers, salinization of fertile lands and water logging, deforestation, biodiversity loss and genetic erosion, and climate change are the main underlying causes."

"The stipulated overall GDP growth rate of nine per cent and agricultural growth rate of 4.1 per cent during the 11th Plan cannot be achieved with the ongoing shrinking and degradation of the country's natural resources. Interlinked as producers and service providers, the resources must be judiciously conserved, developed and harnessed."

Between the Planning Commission that understands "the ongoing shrinking and degradation of the country's natural resources" and Lakshmipada, who knows that the more he spends on technologies of agricultural production the less sustainable and profitable the venture becomes, there is an information gap. Government outreach is indifferent, casual and insensitive in

most places. The target that government works by is productivity per hectare. By that measure, West Bengal has miles to go before it can catch up with Andhra Pradesh, Haryana, Punjab, Karnataka. As against 2,509 kg per hectare of rice produced in West Bengal, Punjab produces 3,858 kg per hectare and Karnataka 3,868 kg per hectare.

The demands on agriculture to be environmentally sustainable or responsible, increase productivity and release land that becomes surplus for other use, diversify, generate higher incomes and provide employment are difficult to satisfy. In West Bengal, the difficulties increase as in the 1980s and 1990s it underwent a significant change with "greater efficiency in input use", and with the removal of "institutional fetters to growth", says member, Planning Commission, Abhijit Sen. Having experienced a spurt that was efficient and that resulted in a once-upon-a-time single cropped rain-fed areas being converted into multi-cropped rain and irrigation supported agriculture, the farmer has experienced it all; a spurt in productivity, by adding inputs followed by the race to keep going by dumping inputs in the hope of maintaining productivity.



Despite policies that underline the need to moderate chemical fertilizer and pesticide use, the government of West Bengal has made no push to re-educate farmers

For West Bengal to transform into the fabled *sonar Bangla*, a land of overflowing granaries, a small but significant increase in productivity, especially in the low productivity districts of North Bengal and the arid areas where the average yield is between 1,500 kg to 1,800 kg to 2,500 kg to 2,800 kg per hectare would be achievable with existing technologies of agriculture. That would ensure that the state remained self sufficient in food and ready for diversification into pulses, oilseeds, horticulture and vegetables.

It is remarkable that despite policies that underline the need to moderate chemical fertilizer and pesticide use, the government of West Bengal has made no push to re-educate farmers and push the green agriculture agenda forward. Comfortable with plucking low-hanging fruit, the local administration has encouraged setting up vermicompost production centres, especially by women's self help groups but the associated agricultural practices and, more important, the development of a market for organically-grown food has not been put in place to make the switch worth the effort.

Lakshmipada knows how to use organic fertilizers and herb-based pesticides to grow vegetables. He produces small quantities that he consumes and sells. He could produce more if there was a market. This last link between the farmer and the market is missing, even though administrative wisdom, based on years of experience, recognizes that support and initiative are needed at this point.

There are other factors too that come into play, such as credit, the role of agencies like the National Bank for Agriculture and Rural Development, NGOs and the role of the distributor of chemical fertilizers and pesticides and the local *mahajan* or money lender. Bank credit to the agricultural sector remains weak; kisan credit cards do not have the flexibilities, thus making the *mahajan* an indispensable part of rural life.

Since in most places, the *mahajan* doubles up as the fertilizer and pesticide distributor and given his indispensability, the farmer will always tend to continue to use what is socially and culturally sustainable. The failure of government, state and central, to work out a credit instrument that fulfills the needs of the small farmer has ensured the continuity of the old dependence relationship with the *mahajan*.

Therefore, the argument between experts and advocates over the advantages of one technology vis-à-vis another amount to nothing more than sound and fury. The *mahajan* and the farmer, locked in a relationship that is intrinsic to the culture and civilization of India will, determine the manner and methods of cultivation. If this means that soil salinity in West Bengal spreads, as it is doing now, so be it. If it means that arsenic in water spreads across more areas in the eight already identified districts with the likelihood of more areas becoming contaminated with arsenic, then so be it.

For an intervention led by the government there has to be a driving political will to change the "system" from technologies that are condemned in the more developed areas of the world to technologies that are environmentally sustainable. ●

The author is a veteran financial journalist and political commentator in print and television

India's cotton farmers' lives transform for the better

Research indicated that 87 per cent of Bt cotton farmers enjoyed higher standards of living, 72 per cent invested in their children's education and life insurance, and 67 per cent repaid their long pending debts*. Many more built *pucca* (stone) homes, purchased farm equipment and motorcycles, leased additional land for cultivation etc. Further, women from Bt cotton households had higher access to maternal care services, while children had higher levels of immunization and school enrolment*. Additionally, female earners witnessed a 55 per cent gain in average income, and 42.4 cr. additional days of employment across the total Bt cotton area**.

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Under the Organic Tree, Who Loves to Lie with Me...

Ajay Vir Jakhar

I arrive in Gillankhera, a village in Haryana, in the middle of a swelteringly hot and humid afternoon. The rains are delayed but expected to arrive. I find Jitendra Singh resting under the shade of a neem tree. A few buckets of water have been sprinkled on the ground around the charpoy and it does seem cooler. Shade is the only respite for farmers in a countryside where the sun-drenched sky is the roof.

Now Jitendra is not conventional in any sense. In circumstances where 90 per cent people would quit farming given a choice, Jitendra, after having enrolled himself as advocate at the Delhi bar council, had the courage to chuck it all up to return home and pursue his dream: to become an organic entrepreneur.

We begin asking questions as we sip strong sweet tea in steel glasses. We can actually satiate our thirst by drinking tea, unlike by just drinking water.

On his return from Delhi, Jitendra travelled widely across the region feeling the pulse of the

people. He was disappointed to see the despair in conventional farmers, who were continuing with the rice-wheat cropping system, which was degrading the natural resource of water and the soil. Not only was the food unhealthy but it posed a health risk.

Jitendra sought counsel from the ever-obliging Grewal brothers: S. Richpal Grewal and S. Harpal Grewal, who had already gone organic. Jitendra also started reading; something he loved. Amongst the articles that came his way was "Banned there, used here" that he read in the Tribune. That was when he realized that such pesticides as DDT and Fenvalrate, which were banned in the USA in early 1990, were being used in abundance in India till late 1990.

> "I cannot say that I am completely satisfied farming organically but I definitely enjoy what I do"

To start an organic enterprise, he needed to get his land certified as organic. The certification method was and still is pretty expensive and cumbersome. The certifying agency takes into account the history of such farm practices as crop pattern, how much pesticides and chemical fertilizers have been used in the past and many more.

Jitendra first got his soil and water tested and was also given a list of dos and don'ts. He made elaborate records of everything on the farm and after three years his farm was certified as organic. The certification needs to be renewed every few years. His farm products sell by simple word of mouth. For example, his dairy products are not certified but people buy them on his reputation alone. The organic certification is required to export or sell to people that one does not know. Today, there are many certifying agencies in India like Indocert in Ernakulum.

Jitendra's experience was interesting. The first realization was that the production would be going down when he converted from conventional to organic farming. It took about five to six years to make operations sustainable. The organic manure works slowly in comparison to chemical fertilizers. In the first year, the wheat yield dropped by between 60 per cent and 70 per cent compared to what it would have under conventional farming. Fortified by all his reading on the subject, Jitendra went on without batting an eyelid.

Today, even the cropping system at his farm has changed from rice-wheat to a mixed farming system, featuring dairying, horticulture, vegetable, fishery and agro forestry. Jitendra considers his dairy milk production unit as the 'core unit', which will provide regular income and employment. Milk is sold and the dung is used for composting and biogas generated used for cooking. Graded wheat is sold to the consumers after it is processed, while the left over grain and straw is used as feed for farm animals.

We walk through the patch of land where Jitendra has also planted trees to make the organic farming viable and sustainable. Diversification was needed because there was no certainty of premium on organic produce. Many fellow organic farmers have had to revert to conventional method of farming but Jitendra persisted with his commitment to organic. He planted poplar, eucalyptus, Burma dek on his farm and, to make the agro forestry project viable, started to breed the Sahiwal, an indigenous cattle. In the first two years, the land under forestry was used for growing green fodder but now it is used as grazing ground for farm animals. He says: "Agro forestry is like fixed deposit in a bank". The initial waiting period is at least seven years. The first commercial wood harvest on his farm is expected in October 2013.

Gradually the benefits of going organic started accruing to this conscientious farmer. Organic farming requires less water in comparison to conventional farming because the organic carbon is high in organic farms on account

time Jitendra is forced to sell his produce without any premium. He sells his organic produce directly to consumers in the nearby towns of Sirsa and Fatehabad.

Jitendra tells me that a comparative study between conventional farming and organic farming of rice-wheat cropping system showed a 20 per cent to 30 per cent drop in productivity in the latter. However, the net returns of organic farming can be about 20 per cent higher as compared to conventional farming provided there is at least a 50 per cent premium available on organic produce. This apart, there is a significant increase in soil fertility parameters under organic. It is another matter that both conventional and organic farmers are facing the problem of sustainability and profitability. Agriculture as a profession is not viable and profitable, as the average land holding continues to shrink.

Both conventional and organic farmers are facing the problem of sustainability and profitability. Agriculture as a profession is not viable and profitable, as the average land holding continues to shrink

of crop rotation, green manuring and mulching. Also, the soil's organic matter is restored through addition of these manures, compost, mulches and cover crops. Even the recommended varieties of wheat and paddy for organic farming require less water. For instance, C-306, 147 variety of wheat requires less water than PBW-343 mainly used by conventional farmers. Basmati require less water when compared to PR-14 variety of paddy.

The main problems faced by organic farmers are unavailability of quality organic seeds, the fact that the farms are labour intensive and weed control is a menace. Besides, there are packing and storage problems. The biggest challenge faced by them is, of course, marketing of organic produce. There is no price support from the government. Many a

After 14 years of being on the field practically everyday, Jitendra is a walking and talking encyclopaedia on organic farming practices and issues. Most importantly, he has no regrets at all. Having wandered for two hours from field to field and met numerous fellow farmers, I feel the sun relenting and finally starting to set. Jitendra's day too draws to an end.

Is he a completely satisfied man?

"I cannot say that I am completely satisfied farming organically but I definitely enjoy what I do". That is more than a great many farmers in India will tell you. •

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