



FOUNDATION FOR ECOLOGICAL SECURITY

With the compliments of

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**Foundation for Ecological Security  
Anand**

## Press Clippings

(1-15 August 2007)

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Date 29/8/07

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TIMES OF INDIA (A) 1.8.07

# Vultures to get new lease of life in Junagadh

Nayan Dave | TNN

**Junagadh:** Inspired by the achievement in conservation of the endangered vulture at the breeding centre at Pinjore in Haryana, forest department in Gujarat has planned to develop vulture care and breeding centre in Junagadh to give a fresh lease of life to the scavengers.

The very first captive Oriental white-backed vulture chicks were hatched at the Haryana breeding centre in the beginning of 2007. Breeding vultures in captivity has been taken up in view of unprecedented decline in its population and experts believe that painkilling drug diclofenac is the main culprit. Populations of vultures has decreased by at least 97 per cent in India over the last 12 years.

Dr Vibhu Prakash, principal scientist of the vulture breeding centre at Pinjore says, "Research by Bombay Natural History Society (BNHS) suggests that tens of millions of vultures used to be present across India, Pakistan and Nepal. Since the early 1990s three vulture species — whitebacked vulture, long-billed vulture and slender-billed vulture — saw a major decline in population."

Of the three endangered species, white-backed and long-billed vultures can be seen in Girnar hill forest near Junagadh and it is also roosting places for these avian species, says Bharat Pathak, conservator of forest (wildlife).

He points out that proposal has already sent to central government for the proposed breeding centre.

In Gujarat, only 2647 scavengers exist as per the state level census con-

## Vulture population in Gujarat

Kutch	910
Surendranagar	338
Surat	308
Ahmedabad	254
Bhavnagar	148
Panchmahal	157
Junagadh	121
Amreli	62
Banaskantha	54
Vadodara	72
Bharuch	42
Mehsana	44
Rajkot	45
Sabarkantha	62
Other districts	30
<b>Total</b>	<b>2647</b>
as per the census- May 2005	



ducted by Gujarat Ecological Education and Research (GEER) Foundation in May 2005. The census was first of its kind endeavour at state level for conservation of vulture in India, says GEER director C N Pande. "As many as six species of vultures can be seen in Gujarat. Of which white backed vulture, long billed vulture and king vulture are breeding locally while other three species — Egyptian vulture and Eurasian Griffon vulture are migratory. In the census only local birds were counted," added Pande.

Experts give two major reasons for the extinction process of vultures —

starvation and excessive use of diclofenac as veterinary pain killer for cattle, whose carcasses vultures feed on. There was some respite for vultures as the killer drug was recently banned by the drug controller of India. Secondly demand for carcasses leads farmers to sell them to slaughter houses and with rising levels of awareness dead animals are being buried, which means no food for vultures.

Snehal Patel and Ruchi Dave of Birds Conservation Society of Gujarat claim that breeding programme is the last option to save the endangered bird.

## After 20m yrs, China dolphin likely extinct

Shanghai: China's rapid industrialisation has likely made extinct a species of fresh water dolphin that had been on Earth for over 20 million years, a marine biologist said on Wednesday.

A team of scientists from China, Japan and the United States failed to find the white dolphin, known as the baiji, during a six-week search of its natural habitat in the Yangtze river late last year. "This result means the baiji is likely extinct," Wang Ding, who led the survey and is one of the world's leading experts on the species, said. The dolphin was a victim of devastating pollution, illegal fishing and heavy cargo traffic on the Yangtze, Wang said. The findings mean the baiji is likely the first mammal

to become extinct in more than 50 years. It is the cousin of the bottlenose dolphin, which is



White dolphin

also on the critically endangered list.

Wang, from the Chinese Academy of Sciences, emphasised that not all hope was lost for the dolphin, which had made its home along the lower reaches of China's now heavily polluted Yangtze River for more than 20 million years. "We are not saying the baiji is already gone," he said. But he lamented that further searches this year had failed

to find any sign of the dolphin.

Wang said that a letter written by the survey team had been published in the latest issue of the *Royal Society Biology Letters* journal in Britain to confirm the dolphin was believed to be extinct. The baiji, identifiable by its long, teeth-filled snout and low dorsal fin, was last officially sighted more than two years ago. The last confirmed count by a research team was conducted in 1997, when just 13 were recorded.

Up to 5000 baiji were believed to have lived in the Yangtze less than a century ago, according to the baiji.org website, which was established by a range of international conservation groups. "The decline in the baiji population has been caused by extreme human pressure on its freshwater habitat," the site said.

## New species of bat, frogs found in Congo

Reuters  
New York, Aug. 8

Six new species, including a bat and two frogs, have been discovered in Democratic Republic of the Congo in an eastern area off limits to scientists for decades because of violence, a wildlife group said.

The New York-based Wildlife Conservation Society said researchers conducted a survey of a remote forested region just west of Lake Tanganyika between January and March.

"If we can find six new species in such a short period it makes you wonder what else is out there," said researcher Andrew Plumptre.

The new species discovered were a bat, a rodent, two shrews and two frogs.

Aid agencies estimate around 4 million Congolese have been killed in fighting or by related hunger and disease since the outbreak of the



A new species of bat discovered in eastern Democratic Republic of Congo is pictured in this undated handout photo. — Reuters

country's 1998-2003 war, in which six foreign armies joined in fighting over its huge mineral riches.

Despite a 2003 peace deal and the country's first free elections in more than 40 years being held last year, militia fighting continues in

parts of the east.

"In spite of the conflict and related degradation in the area, the survey team found that some 1,000 sq. km have remained intact, from the shores of Lake Tanganyika up to elevations of 2,725 metres above sea level," a statement said.

It said the area had been off limits to scientists since 1960 because of instability. The team also included researchers from the Field Museum in Chicago, the National Centre of Research and Science in Lwiro and the World Wildlife Fund.

The statement said the forest was rich in biodiversity, containing a large number of chimpanzees, buffalo, elephants, leopards and monkeys.

Around 10 per cent of the plant samples collected have yet to be identified.

"Given the findings with the vertebrates, it is likely that some of the plants will represent new species as well," said Ben Kirunda of the group's botanical team.

The researchers said they met village leaders who were mostly supportive of making the region a protected area.

INDIAN EXPRESS 14.8.07

## Diclofenac still taking toll on vultures

SAURAV KUMAR  
AHMEDABAD, AUGUST 13

FROM once being prolific to now scarce (only 2,647 by the last count in 2005), the vulture population in the State presents a grim picture. While a host of reasons are responsible for this, the major issue remains the continued widespread use of diclofenac in cattle.

Wildlife activists across the State say that the use of diclofenac has only marginally declined and is still a big threat for the vulture population. Viral Prajapati, of the Nature Club Surat, says: "Diclofenac is still widely used, especially in Bhavnagar district. We are trying to create awareness about it but strict government control is also needed."

Amit Jethwa, president of the Gir Nature Youth Club, echoes the same sentiment. He says, "Diclofenac is freely available in Khamba Gir and extensively used. This will ultimately kill all the vultures here."

Mahua in Bhavnagar district has the largest nesting colony of the White Rumped vulture in the State.

Unfortunately, it is also the place where diclofenac is most rampantly used. "It is found in all corner paan shops there. This can be disastrous in the

long run," says Jethwa.

H G Koshia, Joint Commissioner (Drugs), says: "Diclofenac has not been banned per se under the Drugs and Cosmetics Act. However, we are following the Central Government's guidelines. There were two manufacturers in the State and on our best they have stopped production

Mahua in Bhavnagar has largest nesting colony of

white rumped vulture, and also place where killer drug 'is found at paan shops'



of diclofenac. We also discourage its use."

The government has also stopped the use of diclofenac from veterinary hospitals and dispensaries. However, this has not stopped private practitioners to prescribe it and its ready availability has compounded the problems.

Diclofenac is an anti-inflammatory, painkiller used both in humans and animals.

However, its veterinary use has proved to be disastrous for the vultures. Vultures feeding on carrion of animals that had been given diclofenac, have been found to develop renal failure that eventually causes their death.

It was to diclofenac that the alarming decrease in vulture populations in South-East Asia, primarily in India and Pakistan, was attributed.

The Gujarat Ecological and Research Foundation did the last vulture headcount survey in the state in May-June this year. Though the report of the survey has not been released yet, wildlife activists are expecting significant decline from last year's figure of 2,647. This year the count is expected to hover around the 1,500 mark.

CN Pandey, director of GEER Foundation, says, "It is too early to say that. We are cross-checking data now."

Other reasons that have contributed to the dwindling number of vultures is reduction in the size of nesting grounds and fast disappearing feeding grounds as more and more people are resorting to burial of cattle carcasses.

"Unless diclofenac and other issues are addressed soon, a sky sans vultures may not be too far away," say experts.

TIMES OF INDIA (A) 11.8.07

# Govt, SC may fall out over forest limits

Nitin Sethi | TNM

New Delhi: The full-blown confrontation between the UPA government and the Supreme Court on forest and wildlife issues may just turn nastier.

The environment ministry has proposed definitions of 'forests' that undermine the apex court's order which defined which lands should be classified as forest and therefore be off-bounds for development and mega projects. In its haste, the ministry has not even waited for the final report of its consultant, hired to generate a new definition.

A 1996 apex court order had greatly increased the area that came under the ambit of a very stringent Forest Conservation Act, 1980, which regulates use or transfer of 'forest' for non-forest activities, such as mining, hydropower and other mega-projects. The apex court had instructed that any patch of land having some forest on it should be regulated by the Forest Act regardless of the status granted to it in government records. This had become a major grouse of the pro-industry lobby, which had

to seek clearance for use of such 'forests' and of the tribals as well for curtailing their rights. With the government putting up three draft definitions of 'forests' for comments on its website, all challenging the apex court's definition, the move to legally enforce a new definition has picked up speed. What has raised eyebrows is that the entire exercise of consulting outsiders has gone on even as the ministry quietly devised a definition along with a new Forest Act.

"The definition the ministry had generated earlier while drafting the new forest legislation could end up being a fait accompli despite this exercise of consultation," a source said.

The consultancy for defining forests was given to a Bangalore-based research organisation, ATREE, after it won the bid submitted against a tender put out by the ministry for the assignment. The organisation has held several rounds of discussions within and outside the ministry but has only submitted a rough draft and not its final report, sources informed TOI.

INDIAN EXPRESS 10-8-07

# 6 months on, Biodiversity Board yet to get office, staff

Though vested with powers, Board not fully functional; funds being allotted, collating data: officials

EXPRESS NEWS SERVICE  
GANDHINAGAR, AUGUST 9

PRONE to trumpeting its efficiency when it comes to things administrative, the State Government has been moving at a snail's pace in setting up a fully functional Biodiversity Board.

The Board is mandated under the Biological Diversity Act, 2002, under a national biodiversity authority. Having become effective in 2003, Gujarat set up the Board only in 2006, and took over a year to appoint a Member (Secretary) in February this year.

As if this was not enough, close to six months having elapsed since the appointment, the Board is still to get a functioning office and a staff. Even its first meeting had to be held in June only in chief secretary's meeting room, with the agenda being further appointments and a place for the Member (Secretary) to sit. More than a month later, the Board still functions from nowhere.

Not that it is a powerless body. Headed by the Chief Secretary, the Board has Principal Secretary (Forests), Principal Chief



### PANEL MEMBERS

- ▶ Headed by Chief Secretary
- ▶ Principal Secretary (Forests)
- ▶ Principal Chief Conservator of Forests
- ▶ Experts from field

### MANDATE

▶ To advise the State Government on matters relating to conservation of biodiversity; has been provided with various statutory, regulatory, developmental, and research powers for the purpose

Conservator of Forests, and experts from the field as its members. It is mandated to advise the state government on matters relating to conservation of biodiversity, and has been provided with various statutory, regulatory, developmental, and research powers for the purposes.

The State accounts for five per cent of country's biodiversity, the corre-

sponding figures for flora and fauna being 9.5 per cent and 3.4 per cent respectively. In terms of biodiversity that is characterized by a diverse gene pool, Gujarat has over 900 species of medicinal plants, apart from 450 marine flora, and 783 marine fauna.

Senior officials say things are being worked out though. "We have sanctioned Rs 2 lakh for the Board, while Rs 5 lakh has

already come from the National Biodiversity Board in Chennai. The department has also managed to find some rooms at the Forest Research Centre on the outskirts of the city. The Board should start functioning soon," says a senior forest official.

"Biodiversity is the natural biological capital of the planet and we are charged with monitoring its protec-

tion within our jurisdiction. There is a lot that can be done in Kutch and along the coast in the State. But as of now we have been busy in the process of collating information from similar bodies across the country, and gathering details on rules that help us perform," says NS Yadav, Member Secretary.

HINDU 9-8-07

# The decade of our discontent

P. Sainath

Rural India is a funny place. In 60 years we haven't managed — except in three States — to push through any serious land reforms or tenancy reforms. But we can clear a Special Economic Zone (SEZ) in six months. In the sixth decade of our independence, structural and other inequalities deepen, and rural India is in big trouble.

The first lead story on the front page of a major English daily four weeks ago was striking. A young man from Chandigarh had paid Rs.15 lakh for a 'fancy' cellphone number. It wasn't long before the rest of the media got into the act. Soon we saw his parents distributing sweets to mark their son's achievement. Newspapers editorialised (in front page 'news reports') on how this reflected India's new confidence. Our 'aggr' in the period of economic reforms and liberalisation.

It surely reflects something. A class exists to whom it is perfectly natural for a leading Indian magazine to act as luxury scout. Its publisher's letter tells them that "for \$115,000 a box, 500 limited edition Dragon Gurkha cigars are now available. In 80 year old camelbone boxes that once belonged to a Rajasthani ruler."

The average monthly per capita expenditure (MPCE) of the Indian farm household is a long way from Rs.15 lakh. And further from \$115,000. It is, in fact, Rs.503. Not far above the rural poverty line. And that's a national average, mixing both giant landholders and tiny landholders. It also includes States like Kerala where the average is nearly twice the national one. Remove Kerala and Punjab and the figure gets still more dismal. Of course, inequality is rife in urban India too. And growing. But the contrasts get more glaring when you look at rural India.

About 60 per cent of that Rs.503 is spent on food. Another 18 per cent on fuel, clothing, and footwear. Of the pathetic sum left over, the household spends on health twice

what it does on education. That is Rs.34 and Rs.17. It seems unlikely that buying unique cellphone numbers is set to emerge a major hobby amongst rural Indians. There are countless households for whom that figure is not Rs.503, but Rs.225. There are whole States whose average falls below the poverty line. As for the landless, their hardships are appalling.

It is not that inequality is new or unknown to us. What makes the last 15 years different is the ruthlessness with which it has been engineered. The cynicism with which it has

been constructed. And the scale on which it now exists. And that's at all levels, even at the top. As Abhijit Banerjee and Thomas Piketty put it in a paper on "Top Indian Incomes 1956-2000," "The rich (the top 1 per cent) substantially increased their share of total income [in the reform years]. However, while in the 1980s the gains were shared by everyone in the top percentile, in the 1990s it was only those in the top 0.1 per cent who made big gains."

"The average top 0.01 per cent income was about 150-200 times larger than the average income of the entire population during the 1950s. This went down to less than 50 times as large by the early 1980s. But went back to being 150-200 times larger during the late 1990s." All the evidence suggests it has gotten worse since then.

Industry's hostile response to Prime Minister Manmohan Singh's meek comments on CEO salaries is just a sign of how entrenched such privilege now is. The editorials of most newspapers blew Dr. Singh out of the water. So it is odd and worth noting, that one of the very best pieces on concentration of wealth in recent times comes from the Executive Director of Morgan Stanley. (*The Economic*

*Times*, July 9, 2007). "We believe," writes Chetan Ahya, "that the social pressure arising from widening inequality has increased in the past few years, driven by globalisation and the rise of capitalism." He finds the "rising social challenge on account of the rise in inequality" a worrying trend. He also finds that "the inequality gap in wealth is even starker... Our analysis indicate an increase in wealth of over \$1 trillion (over 100 per cent of GDP) in the past four years — and that the bulk of this gain has been concentrated within a very small segment of the population." Mr. Ahya rightly sees "social and political upheaval" as the outcome of some directions we are taking. As in the case of farmers and SEZs.

## Structural inequalities

All this comes atop existing structural inequalities in rural India. In 60 years, we never resolved the issue of land. Nor those of forests and water rights. Or of appalling levels of caste and gender discrimination. We never really addressed our structural or other inequalities. Now we're working hard at making them worse.

Even at the start of the reforms period, the bottom half of rural households accounted for less than 3.5 per cent of total land ownership. The top ten per cent of households owned well over 50 per cent. That's for all

lands as a whole. If we took into account only irrigated land, the picture is more frightening. Add productive assets, and it gets still worse. In one estimate, over 85 per cent of rural households are either landless, sub-marginal, marginal or small farmers. Nothing has happened in 15 years that has changed that situation for the better. Much has happened to make it a lot worse.

The direction of policy on farming — central to rural India — is simple in its main idea. To take agriculture out of the hands of farmers and place it firmly in the hands of large corporations. Every move, every policy, only pushes this idea further forward. We are witnessing the largest displacement in our history. It is not happening in a dam or a mining project. It's happening in agriculture. And we haven't a clue yet what we will do with the millions we're busy shoving off the land. This is not being done with tanks and bulldozers. We just make farming impossible for small holders. And we create no options for those whose livelihoods we so cheerfully destroy.

The early decades were at least decades of hope. There were improvements, significant if not impressive. In literacy, life expectancy, and other human development indicators. There was a sense that "India lives in her villages." The slogan that caught the nation's imagination, even if in wartime, was 'jai jawan, jai kisan.' The farmer was seen as carrying the nation's future on his or her shoulders. (More normally 'his' since women are to this day denied property rights and not seen as 'farmers.') At least, that was the image.

Sixty years on, rural India is a shambles. The most severe agrarian crisis since the eve of the Green Revolution rages on, but does not hold elite or media interest for long. Farm incomes have collapsed. Hunger has grown very fast. Public investment in agriculture shrank to nothing a long time ago. Employment has stagnated. (Only the National Rural Employment Guarantee Act has brought some limited relief in recent times.) Millions move towards towns and cities where, too, there are few jobs to be found. Many move towards a status that is neither farmer nor worker. A huge pool of menial labour or domestic servants. (In one estimate, there are close to two lakh girls from Jharkhand in Delhi alone, in work of this kind.)

## The decade of our...

Sixty years on, rural India is a shambles. The most severe agrarian crisis since the eve of the Green Revolution rages on.

A credit squeeze has pushed lakhs of farmers into bankruptcy. This after encouraging even pushing them towards high-cost cash crop cultivation with its attendant risks. In Kerala of 2003-04, raising an acre of vanilla cost 15 to 20 times what it took to raise an acre of paddy. But farmers were asked to rush in regardless. The price of vanilla has sunk and the credit flow has stopped. As several such growers have taken their own lives.

We fail to invoke even those measures that blatantly unfair WTO allows us; this means the prices our own farmers get for product like cotton collapses by the season. The huge subsidies attached to U.S. cotton — over a million bales dumped on this country in just 2001-02 — are not challenged. Duties are no raised. We're glad to trade the interests of our poor for another 30,000 H1B visas.

The government tells us over 112,000 farmers have committed suicide since 1993. A gross underestimate but the figure is bad enough. These are suicides driven by debt. And the indebtedness of the peasantry, so the National Sample Survey tells us, has almost doubled in the past decade.

It is not as if there is no resistance, no voices raised. The people have spoken to their governments and all of us in election after election. In protest after protest. And good things, too, have happened. Like the NREGA. But the larger direction is overwhelming. And it is one that races towards catastrophe, disaster having already been achieved. We, however, are more interested in the cellphone number worth Rs.15 lakh. And maybe there's a point in that. The 'fancy' number was purchased on borrowed money. Our orgy in inequality plays out on borrowed time.

# 75% of Indians are poor and vulnerable

TIMES NEWS NETWORK

New Delhi: The number of people below the poverty line may have come down, but 79% of unorganised workers, 88% of SC/STs, 80% of the OBC population and 84% of Muslims belong to the "poor and vulnerable group". That's the grim warning in the report of the Commission on the condition of unorganised sector workers.

Despite high economic growth in recent years, the report notes, "They have remained poor at a bare subsistence level without any social security, working in the most miserable, unhygienic and unlivable conditions".

The category "poor and vulnerable" is one used by the Commission to describe all those who survive on less than Rs 20.30 per capita per day, which is twice the poverty line, or less. The report notes that 77% of India's population falls within this bracket.

That includes 6.4% who



INDIA SHINING?

live on less than Rs 9 per day or three-fourths the poverty line level, another 15.4% who are between this layer and the poverty line, 19% who earn at best 1.25 times the poverty line and 36% who earn between 1.25 and two times the official cut-off for poverty. It, therefore, cautions that while large numbers may have technically ceased to be included in the official poor, they remain vulnerable.

Analysing various factors which have a bearing on the working and living conditions in the informal sector, the National Commission for En-

terprises in the Unorganised Sector, headed by economist Arjun Sengupta, found a close correlation with illiteracy.

The NCEUS, that formally announced its findings on Thursday noted that "The illiterate have a very high probability of being poor or vulnerable, almost nine out of ten, and they are predominantly unorganised workers. Even those with education up to only primary level, 83% are in the poor and vulnerable group."

Analysing the relationship between poverty and vulnerability and the type of employment among unorganised workers, the report observed that 90% of the poor were casual workers while only 10% of the higher income group were casual workers. Among regular wage workers, 66.7% were in the poor and vulnerable groups, while 33% were from higher income group. Among the self-employed, 74.7% were from the poor and vulnerable and 25.3% came from the higher income group.

INDIAN EXPRESS 2-8-07

## Government under your gaze

SANDEEP PANDEY

THE Right to Information (RTI) and the National Rural Employment Guarantee (NREG) Acts are considered to be two of the most progressive pieces of legislation in recent times. They are seen as a much-required corrective in an atmosphere where the government is considered to be coming increasingly under the influence of international financial institutions/corporations and getting more and more indifferent to the concerns of ordinary people.

Take the RTI Act. Meant to create more transparency and accountability in governance, it has for the first time provided an opportunity to ordinary people to intervene in political and administrative decision-making. Politicians and bureaucrats have, thus far, considered it their prerogative to keep information secret. What is not widely recognised is that this mindset characterises not just secretaries and under-secretaries but those who man the lowest tier of government. For instance, in January 2003, the gram pradhans of Ambedkar villages and two MLAs (including a minister in the then Mayawati government) unanimously passed a resolution calling for the jailing of anyone demanding income-expenditure details from the Gram Panchayat Bharawan of Hardoi district, Uttar Pradesh, or for holding dharna to

push for their claims. As people's representatives, they argued, they enjoyed a privileged position and were above providing a statement of accounts for public funds.

Before the RTI Act came into force, officials would humiliate citizens who asked for information and sometimes even threatened them. In their arrogance they did not even bother to do basic book-keeping. The first statement of accounts for the Bharawan Gram Panchayat, which was given to the people by the block development officer (BDO), did not carry any entries under ex-

formed for more than Rs 3 lakh when no work was done at all.

The RTI Act has made a difference to this situation of complete unaccountability. Today, if an ordinary villager goes to an office with an application seeking information under the RTI Act, she would be treated with respect, offered tea and asked about her problem. Officials would promise to address her problem in a bid to convince her to withdraw her application. Although officials try their best to evade accountability, there is a realisation that they cannot continue to func-

one suspected a misappropriation of funds and then it was up to the authorities to institute an inquiry. Now ordinary citizens have the right to all data pertaining to the workings of the NREGA and must receive it within 15 days of their application. They can then place the records before the villagers for physical verification. The social audits conducted at various places in the country under the NREGA have uncovered numerous discrepancies, ranging from fake names in muster rolls to the fact that facilities for workers are not provided for. Labourers are at last getting their dues in most places where the NREGA is in force.

Today, there is a need to build on the newly instilled sense of confidence among the great majority of rural north India that the RTI and NREG legislation has engendered. At least people can now discern the contours of a functioning democracy. But we need to build on the fact that people no longer need to be at the mercy of bureaucrats or politicians. They should now be involved in the process of decision-making and planning, even as social audits are extended to cover all schemes and government offices.

*The writer, a Lucknow-based social activist, is a Magsaysay awardee  
ashaashram@yahoo.com*

**The right to information and jobs guarantee legislation is working in rural north India. It's now time to extend both ideas**

penditure. When asked about it, the officer explained that that was how accounts have been kept all those years. This was confirmed by the District Rural Development Agency, where employees confessed that once funds left their office, they did not bother to follow up on any details of how they were spent — the assumption was that the funds disbursed were spent for the intended purpose. In a detail of accounts the Bharawan Block Panchayat obtained using the RTI Act, it was discovered that the desilting of a canal was shown to have been per-

tion like they used to. This is good news for democracy. The BDO of Behender block in Hardoi recently confessed that it is only since people have started asking for information that the office has been compelled to keep books.

The NREGA goes a step further and secures the legal right of the people of a gram sabha to conduct social audits of work being performed under the NREGA. This is the first acknowledgement by the government that it requires people's help in tackling an imperfect system. Earlier, one could only complain if

INDIAN EXPRESS 2-8-07

## Cross out the Poverty Line

YOGINDER K. ALAGH

INDIA lacks an operative socio-economic vision. The Poverty Line which was developed by a task force that I had chaired in the late seventies has recently been the subject of critiques that were not always based on a reading of the task force's report. Nevertheless, the debate among economists on the Poverty Line — which goes back three decades — is not very relevant to India today. After all, the country is not living from ship-to-mouth as it was in earlier times. Hunger here is much lower now and literacy and awareness, much higher. In fact, the times call for the junking of the Poverty Line of which I was the author and the operationalisation of a working vision on a desirable future for the aam aadmi.

There is, first of all, the question of popular aspirations. Coming as I do from Gujarat, which had witnessed both an earthquake and riots, there is also the question of protecting people who may not be poor but are nevertheless living in great insecurity — both in physical and social terms. Is it possible to configure ways of looking at these problems in a fruitful manner, as a prologue to solving them?

New developments have overtaken controversies over the economic statistics on poverty. Policy-

makers find it impossible to work with odd results such as urban poverty being higher than poverty in rural areas. Studies done by the Planning Commission have shown that poverty estimates are very sensitive to price data variation and this feature — overlooked by economists keen to settle scores with each other — led to confusing results at the state levels. The department of rural development undertook independent studies of Below Poverty Line groups and scholars like R. Radhakrishna came out with dev-

population. What is entailed are not just questions of resource use but also those of resource governance. Indeed, resource-conserving, if well-designed and implemented, will lead to fairer treatment not just for the historically underprivileged but for victims of marketisation as well. This requires transparency and instruments like the right to information law. Of course, this is not going to be automatic or easy. The 1979 Poverty Line has endured, not only on account of the persistence of a few statisticians, but be-

**New developments have overtaken old controversies over poverty statistics**

astating findings on deprivation levels in specific age groups and sections of the population like women. A number of interesting efforts have been made at the local level to develop online identification of poor households in states like Gujarat and Kerala. But these efforts have not yet been used for poverty remediation although they could represent a commendable beginning. The casualness with which they are treated suggest that they need validation at the national level.

We need to unequivocally define the rights of sections of the

cause governments resist attempts at creating new rights. For five decades the Ahmedabad textile workers got an old dearness allowance-linked wage because Gandhiji had worked out a truce between the Majdoor Mahajan led by Anusuya Sarabhai and the mill-owners led by her brother Ambalal Sarabhai. Nobody dared to disturb it.

Apart from courage, we will need to remember that social progress needs mutually conceived and engineered social goals. Reform has to be a social compact in a country which has by

now almost a century-old history of political rebellion.

This kind of focused paradigm is often dismissed by those who believe that Indian policy-makers have ignored the demands of the poor. Their argument is not entirely fair. For a decade and a half, we have had policies which have attempted to tackle inequality. But they have failed because they were based on faulty concepts. A more-of-the-same approach will just not work.

What we need, it seems, is to develop local strengths through milk cooperatives, self-help micro-finance agencies, producer associations and farmer-managed cooperatives along with efficient local governance. The Asian meltdown threw up many strategic reform models. India needs to study them. The country has delayed reform for more than a decade and a half now by clinging to old, half-baked ideas — including, of course, the old Poverty Line. We now need to leave such outmoded concepts behind and begin anew.

Who knows such fresh mobilisation could unleash strengths within us that we had not known earlier.

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INDIAN EXPRESS

## Teach the kisan to fish

ARUN FIRODIA

THE kisan — the small farmer on 'rainfed' land — starves so that we can eat well. If he eats well, we will starve. His richer cousin, the farmer with 'irrigated' land, had created the first green revolution 30 years ago. The richer cousin used hybrid seeds, chemical fertilisers and pesticides. And lots of water. When canal water would not meet his needs, he dug borewells. But, alas, his productivity has stagnated of late. So all eyes are now on the kisan to produce more food. If he succeeds, our food security would be assured. If he fails, we will have to once again start importing food grain.

Since the kisan's role is so crucial, let us learn a bit more about him. As per the National Sample Survey, the majority of kisans own less than four acres, but virtually no other asset. They seem condemned to live miserably in abject poverty. And why is that? Because they operate within the 'negative economy'. By borrowing some figures from the research findings of AFARM, a Pune-based NGO, let us study the kisan's reality. On his four acres, he grows 1,200 kg of coarse grain, like jowar and bajra. He needs 800 kg of this to feed his family of six. He sells the remaining 400 kg in the market and gets Rs 2,400. He gets another Rs 3,000 by selling fodder, thus getting a total of

Rs 5,400 in a year. Since he has to spend about Rs 6,400 in farm expenses, he is left with a loss of Rs 1,000 every year. As and when he needs money for buying medicine or clothes or footwear or tea, he has to borrow money from a local moneylender at exorbitant interest rates. He is then forced to sell his farm produce to the moneylender at distress prices. Unable to break this vicious cycle, he starts thinking of suicide.

Can we help him by pulling him out of the 'survival economy'? Well, the first obvious step is to provide him some water source to increase

plant oilseeds, pulses, or soyabean on the remaining two-thirds. He can sell these crops in the market at a much higher price. This could fetch him a good Rs 24,000. He can also take up some non-farm activity like poultry (100 birds), goatry (11 goats) and dairy (1 cow). They could be fed on fodder in his farm and yield him some manure too. The estimated net annual income from such activity will work out to Rs 12,500 after paying bank instalments. Next, sturdy trees like tamarind, jamun, amla and neem could be planted on the border of his farm, which would

the borders of his farm, which would further add to his income. The banks could provide microfinance to the kisan to buy livestock, chickens and equipment. Banks can charge him the proper interest rate, but a three-year moratorium would go a long way in making farm operations sustainable. This would also end the reign of money-lenders. Banks could also extend other services such as crop insurance. Our banks could learn from the Grameen Bank.

Moreover, he can be enabled to sell his produce directly to the retailer, eliminating the middleman, to protect his returns. He and his neighbours could consider forming a co-operative — Amul has set a glorious example. He can also take to horticulture, floriculture, sericulture and aquaculture, and grow medicinal and aromatic plants and multiply his earnings.

If we want the vast multitudes of small farmers in the country to come out of their 'survival economy' to a 'positive economy', we need a comprehensive policy approach. We just have to stand behind him. India has no option but to focus on the kisan — both by giving him the 'fishing rod' and teaching him how to fish.

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### There is no dearth of options to enable the small farmer to escape the survival economy

his farm output. Our country gets an average rainfall of 1,000 mm but most of it literally goes down the drain. This water can be stored in check dams, farm ponds, trenches, percolation tanks, through watershed development. That will recharge the kisan's well. It will cost a mere Rs 3,000 per acre but will double his farm output. The government should therefore undertake this activity as a top priority under jobs guarantee programmes. The kisan would then need to use only one-third of his land to produce food grain to feed his family and

give him an additional annual income of Rs 6,000.

After adjusting for expenses of Rs 6,000, the kisan's net annual income would now be Rs 36,100. This amounts to just Rs 500 per month per capita (since he maintains a family of six). That is less than what a domestic help makes in a city! The kisan still remains poor. But at least he climbs out of the survival economy and stops thinking of migrating to the cities or committing suicide.

The forest department plants millions of trees. It might as well plant fruit-bearing trees for the kisan on

BUSINESS LINE 1-8-07

## Centre to launch National Food Security Mission

States must draw district-wise decentralised plans: Manmohan

Our Bureau

Hyderabad, July 31

Targeting 4 per cent growth in the agriculture and allied sectors, the Union Government has decided to launch the National Food Security Mission that is aimed at achieving an additional production of 30 lakh tonnes of rice, 3.5 lakh tonnes of pulses, 5 lakh tonnes of oil seeds and 32 lakh tonnes of milk.

At a high-level meet to review the state of affairs with regard to agriculture — attended by Dr Manmohan Singh, Prime Minister, and Mr Sharad Pawar, Union Agriculture Minister, here on Tuesday — it has been resolved to kick off a national campaign to increase productivity, reducing yield gaps.

The meeting followed decisions taken at the NDC meeting in May that included Prime Minister's visit to six States to discuss growth plans for the agriculture sectors.

Addressing the meet, the Prime Minister said the States needed to draw district-wise decentralised plans, keeping in mind the local realities and opportunities.

He also advised them to converge these activities across all departments, while focusing on closing yield gaps and increasing farm li-



**Farm growth:** The Prime Minister, Dr Manmohan Singh, flanked by the Union Agriculture Minister, Mr Sharad Pawar (left), and the Deputy Chairman of the Planning Commission, Mr Montek Singh Ahluwalia, at the review meeting of various State departments of Andhra Pradesh in Hyderabad on Tuesday. — PTI

velhoods. Pointing out that 40 per cent of Andhra Pradesh was still rain-fed, he said pastoralism (a way of rural life intertwined with animal husbandry) held the key for increasing livelihoods in the countryside.

#### FINANCIAL INCLUSION

Stating that more than 50 per cent of the farmers were defaulters in the co-operative sector, he asked the States to work with the Reserve Bank of India for covering them

under the financial inclusion programme.

Mr Pawar said the meeting resolved to set up post-harvest management infrastructure and marketing facilities for horticulture produce.

While helping the public-private initiatives achieve financial closure for Terminal Marketing complexes at Hyderabad, the meeting decided to prepare project proposal of about Rs 400 crore by September for appraisal

by the World Bank under the Multi-State Agricultural Competitiveness Project.

The meeting also resolved to expedite implementation of the Vaidyanathan Committee report and provide credit to additional 18-lakh farmers. It was decided to bring 10-lakh hectares under organic farming in 5,000 villages in rain-fed areas, covering 10-lakh farm families in association with self-help groups and non-governmental organisations.

# Key to economic growth: Delivery of governance to poor

ENS ECONOMIC BUREAU  
NEW DELHI, JULY 31



**W**HAT is the single big idea of economic reforms? One idea that can be implemented despite

the inertia of politics and government? The answers differed but they were linked by a common strand: lack of economic governance and the need to improve delivery mechanisms so that those untouched by reforms could benefit from India's growth story.

This emerged as the central idea of the panel discussion initiated by finance minister P Chidambaram. Answering the question were Arun Shourie, former disinvestment minister; KV Kamath, managing director and CEO, ICICI Bank; Mukesh Ambani, CMD, Reliance Industries; Pranoy Roy of NDTV and Shekhar Gupta of *The Indian Express*. And, of course, the guest who was the pivot of it all: former bureaucrat and *The Indian Express* columnist N K Singh, whose book *The Politics of Change: A Ringside View* (a collection of his columns in *The Indian Express*) was launched here this evening.

So if Shourie called for giving states more incentives for pushing reform, Roy urged the Government to "think big" rather than tinker with minor details. Kamath called for rural India to be linked to the market, Ambani for education reform and Gupta called for shrinking of the government.

The finance minister regretted the slow pace of reforms and said a growth rate of 10 per cent is achievable — it's just that we will have to "seize the opportunity" to take the process ahead in a scenario where we have complex politics and widespread views. He also raised a question as to why reforms take place in a halting fashion, and answered it himself: "The opportunity in India is not smooth, we have to change the process of reform and will have to go faster."

Underlining that in India reformers were "opportunistic reformers," Chidambaram said that the challenge was to be able to identify the opportunity and push the reforms process forward.

Reacting to Chidambaram's observation, Shourie replied by saying: "The book has very few postscripts which suggest that most of the reforms suggested have actually not happened and this leads me to say that very few people have the power to seize the opportunity but many have the power to stop." He emphasised the role of



From left to right: P Chidambaram, moderator Vikram Chandra Singh, N K Singh, ICICI's K V Kamath, Reliance Industries' Mukesh Ambani, NDTV's Pranoy Roy, former Minister Arun Shourie and *The Indian Express's* Shekhar Gupta. ENS

the PM in being the prime mover of the reform process.

Suggesting the one big idea of reform, Shekhar Gupta highlighted the need to provide a level of dignity to the larger section of the society, which is seeking not only *bijli, sadak and pani*, but also *padhai and rozgar*.

In a rare public display of diametrically opposite views coming from two people in the same government, Panchayati Raj Minister Mani Shankar Aiyer, in the audience, was acidic: "Where is the discussion? All panelists have only one view. There is an India outside these views." According to him, the need was to end this "obscurity" of celebrating India's billionaires and look at the huge, invisible India that lived in poverty which has not changed from the pre-reform era. He said that the Centre wasn't decentralising enough to empower the Panchayats.

To which Chidambaram replied saying that the quality of governance at even the state level, leave alone Panchayats, was "depressingly lower" than at the Centre.

Roy argued that no politics can bring change and put his faith in the "people of India" and private enterprise.

He said the government should become irrelevant and asked what the government was doing with forex reserves the country had accumulated: "Why can't we use \$20 billion to solve our water problem that will become a major issue in future?" finance minister replied that forex reserves had to be used outside India and he wondered how the water problem could be solved via this route.

Ambani highlighted the short-term nature of people's expectations. He said, extending a survey his company had done to politics, the way ahead is by "empowering people, who want instant gratification, instant solutions to their problems and promises that will bear fruit five years ahead."

Kamath's response to the one big reform was market connectivity and transfer of purchasing power to rural India: "The rural market needs to be connected. By doing just that you will add 2-3 per cent to India's growth."

To a question by Lord Meghnad Desai, why can't we transfer money directly to the poor?, FM said, "Cash transfer directly in the hands of poor is the single most popular program to poverty alleviation until we provide them jobs. But we need to have the money for it. We will need to dismantle the existing schemes and the system. I will do my sums tonight to see if we have the money." All panelists agreed to that barring N K Singh, who felt that would not be "an efficacious way to empower India." Earlier, introducing Singh's book, Chidambaram said: "The debate in India is not about the left or the right. It's about doing the right thing and the wrong thing."

# Pollution threatens Himalayan glaciers

## Research shows that large clouds of pollution over south and east Asia could be contributing to the heating of the lower atmosphere.

N. Gopal Raj

It is not just the growing levels of greenhouse gases and the resultant global warming that are threatening the Himalayan glaciers. Research to be published in the forthcoming issue of *Nature* indicates that large clouds of pollution which hang over south and east Asia could be contributing as much as the recent increases in greenhouse gases to the heating of the lower atmosphere.

Their combined effect could be warming the lower atmosphere in the region by as much as 0.25 degrees Celsius per decade, which "may be sufficient to account for the observed retreat of the Himalayan glaciers," noted a team of scientists led by V. Ramanathan of the Scripps Institution of Oceanography, California.

Such warming held "substantial implications for the elevated region of the Himalaya, where observed warming of 0.15-0.3 degrees Celsius during the past

several decades has led to the rapid reduction of glacier mass," said Peter Pilewskie of the University of Colorado at Boulder, U.S., in a commentary published in the same issue of the journal.

Fine particles in the atmosphere, known as aerosols, block some of the sunlight from reaching the ground and thereby cause a cooling of the earth's surface. Consequently, the fourth assessment report of the Intergovernmental Panel on Climate Change released earlier this year found that the presence of aerosols could offset some of the global warming.

But particles like soot also absorb sunlight and consequently warm the surrounding atmosphere. Prof. Ramanathan and his team used three small unmanned aerial vehicles equipped with miniaturised instruments, which were flown together from an island in the Maldives, to make measurements above, inside and below a cloud containing aerosols during March

last year. From these measurements, the amount of sunlight being absorbed by the 'atmospheric brown cloud' could be worked out.

"We found that the brown cloud was enhancing [the light absorbed in the atmosphere] by quite a bit," said Prof. Ramanathan in a telephone interview.

Data from NASA's Cloud Aerosol Lidar and Infrared Pathfinder Satellite (CALIPSO) showed that the cloud seen over the Arabian Sea was about 3 km thick and it stretched all the way across South Asia, including the Himalayan region. The East Asian brown cloud was even thicker, he said.

Brown clouds contained a variety of aerosols, including sulphates from coal combustion, nitrates produced by vehicular emissions as well as soot resulting from fossil fuel combustion and the burning of biomass, he remarked. The absorbing aerosol was mainly soot.

Using a climate model, it was found that the brown cloud "nearly doubled the warming trend" caused by the greenhouse gas increase, said Prof. Ramanathan.

It took nearly four years of effort to miniaturise the instruments that the unmanned aerial vehicles carried aloft, said Muvva V. Ramana, second author of the paper, who took his doctorate while with the Indian Space Research Organisation's Space Physics Laboratory in Thiruvananthapuram.

Impact on monsoon

Aerosols deposited on mountainsides around the Tibetan plateau might affect monsoon rainfall patterns over India, according to simulations carried out by William Lau of the NASA's Goddard Space Flight Center and others.

In a talk at a recent conference on monsoon, organised by the Indian Institute of Science in Bangalore, Dr. Lau pointed out that dust particles transported by winds from Saudi Arabia, Pakistan and the Thar desert as well as soot could pile up on the foothills of the Himalayas. Soot was very absorbing of sunlight and dust only moderately so, he told this correspondent. But if the tiny soot particles got deposited on the larger dust particles, the light absorption by dust would increase dramatically.

Simulations using a general circulation model suggested that the absorbing aerosols deposited along the Himalayan mountains could produce considerable atmospheric heating over the Tibetan plateau and set off a process that increased rainfall over northern India and reduced rains over the southern part.

But this result needed to be validated with many more model studies as well as with observations, he cautioned.

HINDU 3-8-07

# Payments for ecosystem services

It is clearly time for a new social contract with the farmer and the tribal, as a moral imperative certainly as a strategic one.

Rohini Nilekani

Two symbols come to mind immediately when we look at India as it is instead of through the aspirational prism of an India shining or poised.

One: the disenfranchised forest-dwelling tribal. The other: the suicide-prone marginal farmer.

What could be the most harmonious and sustainable way in which we can address the problems of these two deeply disadvantaged groups? In the context of a national quest for an inclusive, high growth economy with a low carbon footprint, we obviously need to find creative answers very quickly.

Recently, I was fortunate enough to be at the Tallberg Forum in Sweden, where I listened carefully to other experiences, which led me to a few stories and from them some questions. Jose Campos, Deputy Director-General, CATIE — from Costa Rica, for example, revealed to us that his country developed a fairly just working model for payment for ecosystem services (PES) which helped take the forest cover in the country from about 30 to about 50 per cent in just three decades, has helped reduce poverty and has given Costa Rica a new identity as the Switzerland of Latin America.

What are ecosystem services? Human beings have just begun to understand the real cost of our development model for the earth. We know that nature provides most of the 'services' — that keep all of us alive and healthy such as clean air, enough water and fertile soil. Together, economists and environmentalists have agreed to call them ecosystem services.

The reason they have come to the fore is that these 'services' have been taken so much for granted that we have not allowed for them in our economic models. Now we know they are not 'free' and in fact they extract a heavy price for their neglect. A price all of us can count in our polluted water sources, our air pollution and our fallow lands, and much worse to come with global warming and climate change.

But what can we do about it, especially in the context of a receding state and a tant market?

have something to learn from



Forest dwellers and tribals from various States on a dharna at Jantar Mantar in New Delhi. — FILE PHOTO: V. SUDERSHAN

both the successes and limitations of the Costa Rica model, so that we can fashion our own. Because it is clearly time for a new social contract with both the farmer and the tribal, if not as only a moral imperative certainly as a strategic one. The premise is fairly simple: We need to maintain the service delivery of the ecosystem. Yet in the current state of human development, some people use far more of the ecosystem resources than others. Can they, therefore, compensate those who protect the ecosystem resource base?

Of course, at one level, this is an absurd premise. Why should, say, urban elites get away with their profligate lifestyles just by paying off others to not follow suit?

To answer this, obviously this is not a perfect exercise, but it might be a good beginning. We can either do nothing, as we do now, or look at the state or the market to incentivise the protection of ecosystems. We could, as India has done before, also create a unique hybrid encompassing both.

And if we have envisaged an NREG (National Rural Employment Guarantee), why not imagine a PES?

It will take patience and the evolution of relevant governance mechanisms. What we now have is an isolated bureaucracy that governs, in relative secrecy, many of the transactions around ecosys-

tem services. One example is that of the decisions on private participation in timber production as a means to increase forest cover. Another good example is in eco-tourism. Shockingly, we have no standards of what constitutes an eco-tourist facility and even weaker links when it comes to land use policy. To add to that, as usual, there is too much fragmentation of authority and very little public discourse.

So what can we do? Back to Costa Rica.

In Costa Rica, the government pays \$60 per hectare a year for ecosystem costs to landowners (most forest land is in private hands there), at an exchequer cost of approximately \$20 million annually. There are four defined services — biodiversity, water, carbon sequestration and scenic beauty. Performance indicators are in place, as are elaborate monitoring and assessment systems at a very local level. And today, where beef and timber used to be the biggest export items, ecotourism is Costa Rica's number one industry.

When we asked what made it happen in Costa Rica, Mr. Jose suggested that it was a combination of political will and desire for change, positive externalities including a fall in the price of export items such as beef or bananas, the impact of carbon trading mechanisms, decentralisation, a commitment to

## The decade of our...

financial incentives, and a command and control state that was not inimical to positive market forces. He also cited universalisation of education.

Arguably, many of the above are already in place in India. Now is the time to capture the political tremor to make a new social contract with the tribal and the farmer. Imagine a farmer with a small landholding getting support for water conservation and farming practices that encourage biodiversity across agricultural landscapes. Imagine him directly benefiting from carbon trade. Imagine our 80 million-plus vanvasi citizens earning their livelihoods by preserving the forest and indeed adding to it.

There have been many extraordinary people thinking along these lines. The ecologist Madhav Gadgil, for one. The ecological economist, Sharad Lele, for another. And the social worker Right Livelihood Award winner, Sudarshan, for another. They are all people with years of experience in working in tribal and forest areas. We should share their wisdom and daring. But so far, the government

has been in a continuous state of analysis paralysis on PES. It is time for a rigorous public debate.

Nobody suggests that it will be easy. Especially in our country where land rights are so contested and where the understanding of the commonality between public and private good is at the moment weak. Yet if you do not take a stab at it right now, will it be too late later? Going by official figures, our forest cover today stands at about 22 per cent, although much of this area is actually bereft of tree cover. How can we begin to think of restoring our lost forests and renewing the ecosystem services they provide? Can we do it without the wisdom of those who have lived in and with the forest for hundreds of years? The recently passed Forest Bill gives land rights to forest-dwelling tribals. Wildlife conservationists fear that this could be a wedge that opens the door to large-scale destruction of our flora and fauna. On the other hand, it could be an opportunity to refashion a relationship with those who know how to conserve and preserve. It really is up to us. Can we do it?

(The writer is chairperson, Arghyam, Akshara Foundation & Pratham Books.)

## Agri business

Encouraging farm entrepreneurs is the only way out of low rural growth

LOW farm growth and its consequences on poverty reduction, employment and inter-regional equity (drylands suffer more) are well-established facts. Reason, not emotion, should guide correctives — that should be a well established fact as well, but it isn't. Farmer suicides evoke emotional responses, suicides among small businessmen don't. Farmers are more in number. More than a year back the PM had announced a Rs 17,000 crore relief package in 31 districts (Vidarbha, Andhra, Karnataka, Kerala) where farmer suicides are concentrated. The Task Force established to review the implementation of this package, with a focus on rural indebtedness, has come up with findings — reported in this newspaper on Friday — that reinforce one's sense of déjà vu. There is no co-ordination across ministries and departments, not to speak of Centre-state co-ordination.

There is no monitoring and nothing to link improvements in physical indicators with expenditure. A standardised package was introduced, ignoring location specific features. There are problems with credit delivery. There has been little improvement on water (like watershed development). Not one finding is new; therein lies the tragedy. Had centrally sponsored schemes and rural development

programmes worked efficiently, the farm sector wouldn't have been in distress. Nor scepticism about the PM's package, Backward Regions Grant Fund or Bharat Nirman.

The solutions are simple. First, revive public extension services and regulation (seeds, fertilisers, insecticides). Second, stimulate research (public and private) in dryland crops. Third, allow evolution of risk-mitigating instruments, with credit and insurance treated

together. Fourth, divert public expenditure from input subsidies to rural infrastructure (roads, water, power) and eliminate perverse price signals through procurement. Fifth, decentralise decisions about content of public expenditure, eliminating dysfunctional layers at the Centre, the rural development ministry being a case in point. Sixth, allow disintermediation of distribution chains and free up controls on production, marketing and distribution. Seventh, free land markets by scrapping tenancy controls, if not those on ownership. This would allow farm entrepreneurship to flourish. It also allows recovery if entrepreneurs are exposed to exogenous shocks, unlike the present system, where any shock becomes terminal. But this is the agenda of the brain. The UPA and its CMP think with their heart. That's the tragedy.

TIMES OF INDIA 12.8.07  
**Global warming to shoot up after 2009**

Washington: Global warming is forecast to set in with a vengeance after 2009 with at least half of the five following years expected to be hotter than 1998, the warmest year on record, scientists reported.

Climate experts have long predicted a general warming trend over the 21st century spurred by the greenhouse effect, but this new study gets more specific about what is likely to happen in the decade that started in 2005.

To make this kind of prediction, researchers at Britain's Met Office made a computer model that takes into account such natural phenomena as the

El Nino pattern in the Pacific Ocean and other fluctuations in ocean circulation and heat content. A forecast of the next decade is particularly useful

because climate could be dominated over this period by these natural changes, rather than human-caused global warming,

study author Douglas Smith said over the telephone.

In research published in the journal *Science*, Smith and his colleagues predicted that the next three or four years would show little warming despite an overall forecast that saw warming over the decade. REUTERS



BUSINESS LINE 13.8.07  
**Climate change and agriculture**

The Food and Agriculture Organisation (FAO) Director-General, Mr Jacques Diouf's recent warning that tropical countries or those in the lower latitudes could potentially lose large volumes of crops because of the adverse effects of climate change may be a timely warning for many Asian nations that are essentially agrarian. India could lose up to 125 million tonnes of cereals, the expert forecast. The implication is that it must initiate immediate measures to guard against the fallout of carbon dioxide (CO<sub>2</sub>) and greenhouse gas emissions, rising temperatures, melting glaciers and the occurrence of floods and droughts.

The time-frame in which such cataclysmic changes would occur is still unclear. Even within the scientific community there is no unanimity about the effects of global warming or climate change. Indeed, some perceive this as a concerted effort to whip up mass hysteria. Recent occurrences of unusual floods — in the UK, for instance — have been cited as an outcome of global warming; but there is little solid evidence to relate what could be freak

► **Policymakers must remember that global warming has a creeping effect**

**Climate change and...**

climatic aberrations in some regions to the larger issue of global warming. The threats from rapid climate

change, are very real, however. The gases spewed out by the industrialised western world in the last fifty years have now begun to take their toll on world climate. This needs to be recognised by all governments and international agencies.

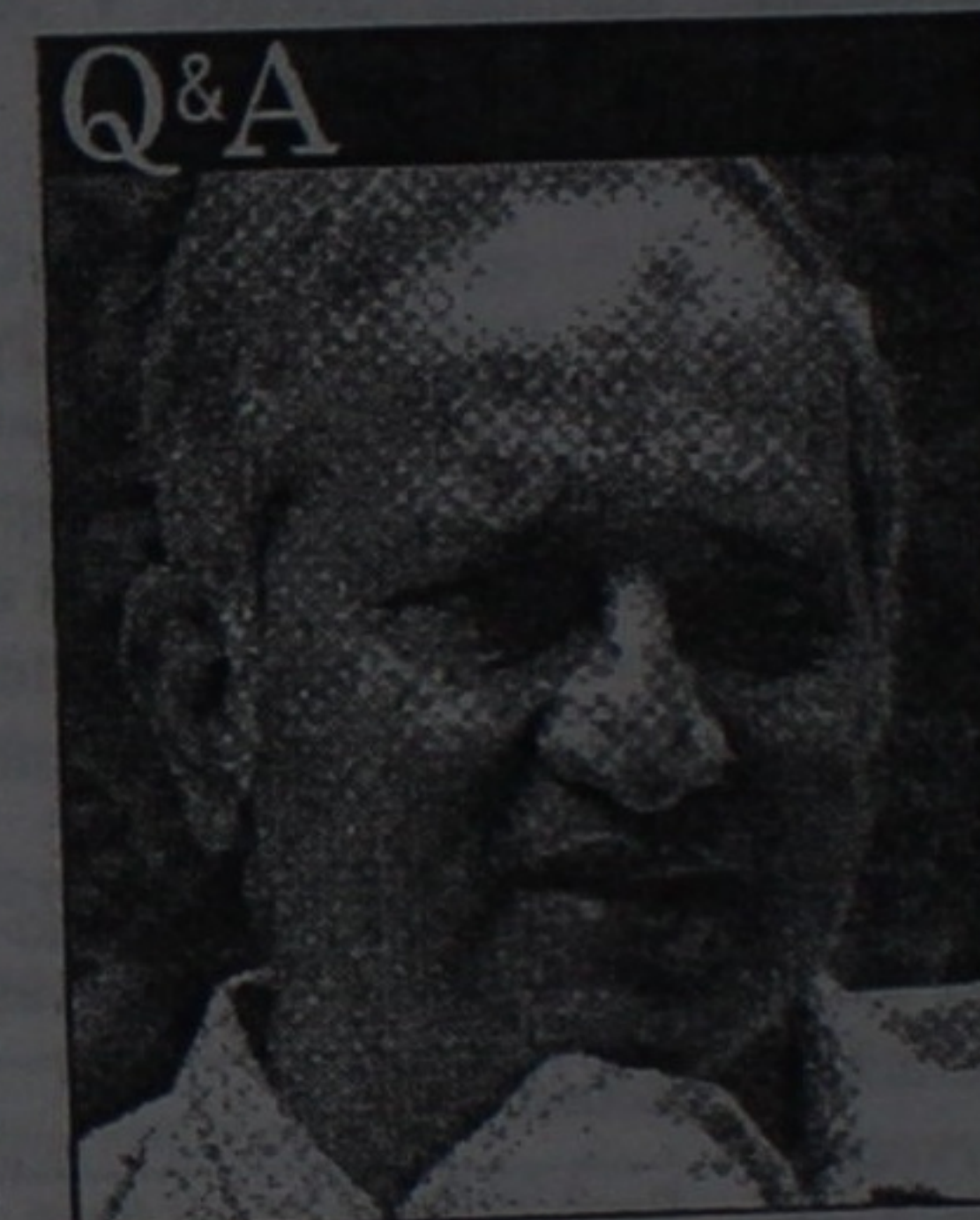
Can the damage of several years be undone? Yes, it would, no doubt, be a gradual process but it is possible if remedial action is initiated right now. The polluters of the

**that can further hurt the already fragile agricultural system.**

past (industrialised nations) must first put cash on the table to fight climate change. Since the turn of the millennium, the 'balance of economic growth power' has slowly but surely begun to shift to Asia, led by China, with India poised to enter the big league. Industrialisation imposes inescapable costs, in the form of environmental pollution. No wonder, the emerging economies face the growth-versus-environment dilemma. India is no exception. Importantly, remedial actions against climate change have to become a truly international effort. Indian policymakers must remember that climate change or global warming has a creeping effect that can further hurt the already fragile agricultural system.

TIMES OF INDIA 14.10.07  
**'Delhi-centric tiger conservation has to end'**

Tiger conservation has once again become the talking point in political and bureaucratic circles. Wildlife conservationist and director of Wildlife Conservation Society (India Program) K Ullas Karanth explains his concerns to Rakesh Prakash:



Q&A  
why we have new numbers popping up every week.

■ India's tiger population has reportedly reduced from nearly 4,000 to about 1,500 in recent years. What is the magnitude of the problem?

The decline in tiger population has been more rapid in the last five years. They face a major threat in Chhattisgarh, Andhra Pradesh, Bihar, Orissa, Madhya Pradesh and the north-eastern states. But the process of arriving at their number seems to be skewed. Though the Tiger Task Force recommended a switchover from pugmark census to sampling-based approach, the new methodology has not passed the test of science. That's

■ Why is India finding it difficult to protect tigers?

The country lacks professionalism in wildlife conservation. People in high places have no idea what tigers require to survive.

Conservation-related decisions are largely taken on the basis of unscientific bureaucratic knowledge. The Delhi-centric approach of top-down tiger policymaking has to end and state governments should be actively engaged in conservation. The front-line defence in forest departments should be strengthened.

■ How serious are forest departments in protecting tigers?

There is a steady drift from focused protection towards taking up rural development activities. This started in the 1990s as the business of eco-development grew. Top-heavy forest departments, by allowing eco-development projects promoted by big business houses, have shifted attention from protecting forests to signing cheques for rural development. This has made the forests porous.

■ Have anti-poaching strategies failed in India?

Poaching is indeed a problem, but the bigger problem is that people have started taking away the food of tigers. Nearly 90 per cent of tiger reserves are seeing depletion of prey-base. A tiger must kill and eat 50-60 deer-sized animals a year just to survive. If deer are hunted out, there will be no tigers. It is necessary to protect tiger prey too.

■ Manmohan Singh recently suggested creation of a development agency geared at increasing local participation in tiger reserve management.

The PM is only endorsing the Tiger Task Force's suggestion of ensuring coexistence between tigers and people, nothing but a poetic vision of tigers walking alongside humans. There should be an application of science and professionalism in management of tigers. Those in power should understand that nature conservation is like buying an insurance policy for the future.

# Rural Unemployment 1999-2005: Who Gained, Who Lost?

There is an overall rise in rural unemployment, in terms of both total and partial failure to find work during the reference week, between the 55th (1999-2000) and 61st (2004-05) round employment surveys of the National Sample Survey. This is something of a puzzle given the reported rise in monthly per capita rural expenditure between the two rounds. The decline in unemployment among males with secondary school or higher education, relative to illiterate males, suggests that the rise in rural prosperity closely matches the pattern of access to rural school facilities. Of the four disadvantaged groups tested for, scheduled tribes face the highest incremental unemployment, which remains unchanged into the 61st round. This is an important pointer to the required regional configuration of workfare programmes like the National Rural Employment Guarantee Scheme, and for the spread of rural schools.

ABHIROOP MUKHOPADHYAY, INDIRA RAJARAMAN

## I Introduction

This paper investigates the configuration of rural unemployment in India, based on the two most recent National Sample Survey (NSS) employment surveys, conducted during the 55th round in July-June 1999-2000, and the 61st round in July-June 2004-05, the sixth and seventh in a quinquennial series.<sup>1</sup>

The reported tabulations classify respondents by the major activity during the reference year preceding the date of survey, called usual status (us); by current weekly status (cws), according to the major activity during the reference week preceding the date of survey; and by current daily status (cds), aggregating the labour status recordings for each day of the reference week.<sup>2</sup>

Great care should be taken in interpreting the unemployment rates reported from these surveys. Unemployment could reflect high reservation wages or unavailability of jobs even at low reservation wages. The clustering of districts by usual rural unemployment rates from the 55th round survey in Rajaraman and Mukhopadhyay (2005) reveals quite clearly the reservation wage effect. All districts in Goa and Kerala, states with high education levels, fell in the district clusters with the highest usual unemployment rates. This paper investigates whether there are other factors at play in the determinants of unemployment.

The single NSS code for usual unemployment is split into two for the reference week. Code 81 is for those seeking work, and code 82 for those not seeking but available.<sup>3</sup> If the distinction is carefully preserved in the field survey, code 81 should in principle capture those actively engaged in job search.

Accordingly, this paper looks at unemployment as defined by code 81 in the reference week data. Two sets of specifications are estimated. The first estimates the factors explanatory of the probability of an individual member of the labour force having been in the unemployed state 81 on all days of the reference week. This is obtained by aggregation, and therefore does not quite correspond to the reported current weekly status figures from the NSS tables, which is based on the major activity state during the reference week. Another set of specifications is performed

for time spent unemployed (code 81) during the reference week, so as to measure the intensity of unemployment across respondents.

Section II presents the tabulated NSS figures from the two rounds. Section III describes the data and definitions used in this paper and the specifications tested. Section IV presents the findings. Section V concludes.

## II Reported Unemployment from the Two Rounds

The reported unemployment rates from the two rounds are presented in Table 1. Two usual unemployment rates are reported by the NSS, unadjusted and adjusted for those with principal status as unemployment, but with some form of secondary activity

Table 1: Reported NSS Rural Unemployment Rates in 1999-2000 and 2004-05

Round	Persons	Males	Females
Per cent in the labour force			
Usual (Unadj)			
55th	1.9	2.1	1.5
61st	2.5	2.1	3.1
Usual (Adj)			
55th	1.5	1.7	1.0
61st	1.7	1.6	1.8
Current weekly			
55th	3.8	3.9	3.7
61st	3.9	3.8	4.2
Current daily			
55th	7.1	7.2	7.0
61st	8.2	8.0	8.7
Per cent of persons			
Usual (Unadj)			
55th	0.7	1.1	0.4
61st	1.0	1.2	0.8
Usual (Adj)			
55th	0.6	0.9	0.3
61st	0.7	0.9	0.8
Current weekly			
55th	1.5	2.1	1.0
61st	1.6	2.1	1.2
Current daily			
55th	2.6	3.7	1.5
61st	3.2	4.2	2.1

Notes: The labour force is defined as those in the population greater than age five either employed or seeking work during the reference period concerned.

Source: NSSO, 2001a, table 7.1 for the 55th round data, and NSSO, 2006a, statement 6.1 for the 61st round data.

during the reference year. The reported figures for current weekly and daily status include both codes 81 and 82, and are therefore broader-based than the more stringent definition of unemployment used in this paper.

By whichever definition, there is a rise in unemployment between the two rounds, sharper for females than for males. The most commonly cited figures from the surveys are for unemployment rates as a per cent of the labour force. These show a rise from 1.9 to 2.5 per cent for usual (unadjusted) unemployment, and from 7.1 to 8.2 per cent by current daily status. The table also provides unemployment figures as a per cent of persons (of age 5 and above), which reflect the change without the first stage selection into the labour force. By this definition too, there has been a rise in unemployment between the two rounds. By both definitions, the rise is sharper for females than for males.

Table 2: Rural India: Males and Females Combined (Ages 15-59)

Baseline	Prob of being Unemp on All Days (Unemp=1) Marginal Effects	Time Spent Unemployed Marginal Effects
Individual characteristics		
Demographic		
Age	0.001*	0.015*
Square of age	-0.0000268*	-0.0002578*
D: Male	0.011*	0.169*
D: Married	-0.016*	-0.127*
Education (reference group: illiterate)		
D: Below primary but literate	-0.002**	-0.037*
D: Primary schooling	-0.002*	-0.048*
D: Middle schooling	-0.0002627	-0.055*
D: Secondary schooling	0.009*	-0.002
D: Higher secondary schooling and above	0.029*	0.132*
Household characteristics		
Per capita land possessed	-0.0001569*	-0.0024*
Household size	-0.0002669*	-0.0054*
Age of household head	0.0001721*	0.00145*
D: At least one household member with at least secondary education (Reference group: households from other social groups)	-0.002**	-0.044*
D: Scheduled caste household	0.001	0.036*
D: Scheduled tribe household	0.005*	0.089*
D: Other backward caste household (Reference group: households from other religions)	0.001	0.0079***
D: Muslim household	0.001	0.0177*
61st round (2004-2005) incremental effects		
D: 61	0.006*	0.068*
D: 61 X D: Male	-0.004*	-0.027*
D: 61 X D: Below primary but literate	0.002	0.026*
D: 61 X D: Primary schooling	0.001	0.018**
D: 61 X D: Middle schooling	-0.000	0.003
D: 61 X D: Secondary schooling	-0.001	-0.016**
D: 61 X D: Higher secondary schooling and above	-0.00035	-0.023*
D: 61 X Per capita land possessed	0.0000069	-0.00042*
D: 61 X D: At least one household member with at least secondary education	-0.001	0.0017
D: 61 X D: Scheduled caste household	-0.0004881	-0.017**
D: 61 X D: Scheduled tribe household	-0.0001042	-0.0045
D: 61 X D: Other backward caste household	0.0001089	0.0044
D: 61 X D: Muslim household	-0.002***	-0.034*
Number of observations	438612	438612

Notes: \* Represents significance at 1 per cent, \*\* at 5 per cent and \*\*\* at 10 per cent.

Excluded from the table and included in the estimation: dummies for sub-rounds and state level dummies Robust estimation. For probit estimates, clustering was done at the household level.

These reported findings are seemingly somewhat at odds with the rural consumption data from the two rounds, which show a rise in mean per capita expenditure.<sup>4</sup>

## III Data and Estimation

The pooled sample from the two rounds in 1999-2000 and 2004-05 includes all states, and all respondents falling in the age range 15 or more but under 60 years of age.<sup>5</sup> The surveys contain information on amount of time spent by an individual, in half-day units, in various activities on each day of a seven-day reference week.

First, we model those seeking work but unable to find any during the reference week. We define a dummy variable D\_Unemp which takes the value one if the respondent reported the unemployed

Table 3: Rural India: Males (Ages 15-59)

Baseline	Prob of being Unemp on All Days (Unemp=1) Marginal Effects	Time Spent Unemployed Marginal Effects
Individual characteristics		
Demographic		
Age	0.002*	0.013*
Square of age	-0.00004*	-0.00023*
D: Married	-0.026*	-0.084*
Education (reference group: illiterate)		
D: Below primary but literate	-0.002	-0.029*
D: Primary schooling	-0.003**	-0.041*
D: Middle schooling	0.0001	-0.05*
D: Secondary schooling	0.009*	-0.018**
D: Higher secondary schooling and above	0.031*	0.056**
Household characteristics		
Per capita land possessed	-0.0003*	-0.002*
Household size	-0.0004*	-0.005*
Age of household head	0.0003*	0.0013*
D: At least one household member with at least secondary education (Reference group: Households from other social groups)	0.0005	-0.025*
D: Scheduled caste household	0.0008	0.018*
D: Scheduled tribe household	0.009*	0.054*
D: Other backward caste household (Reference group: Households from other religions)	0.0003	0.005
D: Muslim household	0.004*	0.033*
61st round (2004-2005) incremental effects		
D: 61	0.005*	0.047*
D: 61 X D: Below primary but literate	0.002	0.020**
D: 61 X D: Primary schooling	-0.0004	0.012***
D: 61 X D: Middle schooling	-0.003	-0.008
D: 61 X D: Secondary schooling	-0.004**	-0.030*
D: 61 X D: Higher secondary schooling and above	-0.003	-0.040*
D: 61 X per capita land possessed	0.00002	-0.0005*
D: 61 X D: At least one household member with at least secondary education	-0.002	-0.002
D: 61 X D: Scheduled caste household	-0.001	-0.021*
D: 61 X D: Scheduled tribe household	-0.0007	-0.001
D: 61 X D: Other backward caste household	0.0005	0.001
D: 61 X D: Muslim household	-0.003	-0.036*
D: 61 X D: Muslim household	221105	221105
Number of observations		

Notes: \* Represents significance at 1 per cent, \*\* at 5 per cent and \*\*\* at 10 per cent.

Excluded from the table and included in the estimation: dummies for sub-rounds and state level dummies Robust estimation. For probit estimates, clustering was done at the household level.

state (code 81) on all half days of the reference week. The reference group therefore is those who are either employed (not necessarily full-time) and those not in the labour force. The model is run for the pooled sample including both genders, and then separately for each gender, since labour force participation rates vary by gender.

We include individual characteristics and household characteristics as independent variables, and estimate a probit model. Per capita household expenditure, although available, was not included among the explanatory variables, because it is endogenous to the probability of being unemployed. We also do not use average wages of the employed as these could be potentially systematically biased.

Next, we delve deeper and model the unemployment content of the reference week. The total time unemployed is added up, and this variable (Time\_spent\_unemp) lies between 0 and 7. Since a large number of these values lie at the extreme values, a tobit model is used for estimation. This model is also estimated for the pooled sample including both genders, and then separately by gender.

State and sub-round dummies were included as controls in both estimations, but the coefficients are not reported. Table A1 in the appendix provides descriptive statistics on all the variables for the pooled sample. We do not provide descriptive round-wise as they are available from reported NSSO tabulations.

#### IV Findings

Table 2 reports the results for both the probit model, and the tobit specification on time spent unemployed, for all respondents between the ages of 15 and 59, and Tables 3 and 4 follow for males and females in that age group respectively. For both specifications, the marginal coefficients are reported.

These specifications are reduced forms and do not separately identify the demand-side factors as distinct from reservation wage impacts on the supply side. The probit specifications are for the extreme case of respondents unable to find any work during the reference week even though seeking work. Time spent unemployed is estimated over the larger set of those with varying degrees of unemployment.

In what follows, the baseline coefficients will first be dealt with, before looking at the change going from the 55th to the 61st rounds.

In both specifications, the same pattern of coefficients shows up for individual characteristics such as age, square of age, the dummy for males, and for the married state. Unemployment is higher for males relative to females, and lower for married respondents. The coefficient for age is positive and significant, and for age squared negative and significant, showing a penalty for age that increases at a diminishing rate.<sup>6</sup>

The results for education across both genders consistently show lower unemployment with literacy going up to initial schooling, and higher unemployment at higher education levels, with variation by gender in terms of whether the change in sign occurs at secondary or higher secondary level. The lower unemployment with education up to primary school is most likely reflective of other correlates of schooling (such as perhaps higher health status of respondents with some schooling) rather than the need for literacy skills on the job. The higher unemployment among those with higher schooling is consistent with the reservation wage effect.

By household characteristics, the negative coefficient for household size is consistent with the negative coefficient for marital status, as marriage increases household size. This suggests increased pressure to work in order to support bigger households. There is a positive coefficient for age of head of household. Per capita land (possessed) is negative and significant, because own land offers continual work opportunities. Respondents from households where at least one member had secondary school or higher education have a lower probability of unemployment, and spend less time unemployed. This is a very important finding, reflecting as it does the importance of family networks in accessing jobs. It explains the political pressure for caste-based quotas in education and jobs. The (unweighted) data used for this paper show that the percentage of individuals living in a household in 2004-05 with at least one member with a secondary school or higher education is 36.61 per cent among SC respondents; 33.97 per cent among STs; 45.63 per cent among OBCs; much lower than the 58.07 per cent among the reference group.<sup>7</sup>

Table 4: Rural India: Females (Ages 15-59)

Baseline	Prob of being Unemp on All Days (Unemp=1) Marginal Effects	Time Spent Unemployed Marginal Effects
Individual characteristics		
Demographic		
Age	0.0008*	0.0078*
Square of age	-0.00001*	-0.00013*
D: Married	-0.008*	-0.078*
Education (reference group: Illiterate)		
D: Below primary but literate	-0.002*	-0.027*
D: Primary schooling	-0.002*	-0.032*
D: Middle schooling	-0.001***	-0.032*
D: Secondary schooling	0.007*	0.015***
D: Higher secondary schooling and above	0.028*	0.152*
Household characteristics		
Per capita land possessed	-0.00007*	-0.0012*
Household size	-0.00012**	-0.0027*
Age of household head	0.00007*	0.0007*
D: At least one household member with at least secondary education (Reference group: Households from other social groups)	-0.002*	-0.027*
D: Scheduled caste household	0.001	0.033*
D: Scheduled tribe household	0.002*	0.05*
D: Other backward caste household (Reference group: Households from other religions)	0.001**	0.008**
D: Muslim household	-0.001**	-0.016*
61st round (2004-2005) incremental effects		
D: 61	0.0015**	0.021*
D: 61 x D: Below primary but literate	0.0004	0.008
D: 61 x D: Primary schooling	0.0003	0.007
D: 61 x D: Middle schooling	0.0008	0.008
D: 61 x D: Secondary schooling	-0.0001	-0.0002
D: 61 x D: Higher secondary schooling and above	-0.0001	-0.0007
D: 61 x per capita land possessed	0.000003	0.00002
D: 61 x D: At least one household member with at least secondary education	0.001	0.007
D: 61 x D: Scheduled caste household	-0.00002	-0.005
D: 61 x D: Scheduled tribe household	0.0003	-0.005
D: 61 x D: Other backward caste household	-0.0003	0.004
D: 61 x D: Muslim household	-0.0004	-0.010***
Number of observations	215552	217507

Notes: \* Represents significance at 1 per cent, \*\* at 5 per cent and \*\*\* at 10 per cent. Excluded from the table and included in the estimation: dummies for sub-rounds and state level dummies Robust estimation. For probit estimates, clustering was done at the household level.

For all disadvantaged groups, there is higher unemployment content in the reference week. The positive coefficients for these groups hold for both genders, with two exceptions (other backward caste males do not have higher unemployment, and Muslim females have significantly lower unemployment). These are incremental coefficients for membership in these groups, all else held constant, and reflect systematic disadvantages for these social groups. Scheduled tribes have the highest coefficient for time spent unemployed among both males and females.

Incremental effects: The intercept dummy for the 61st round is positive and significant in both specifications, showing a rise for all respondents in probability of unemployment as well as time spent unemployed. But there is a reduction in both for males, relative to females. (In conjunction with the positive intercept dummy, this means that the rise in unemployment in the 61st round was lower for males than for females.) Separate estimation for males alone (Table 3), shows reduced unemployment only among males with secondary or higher schooling (relative to the reference group, which is illiterate males). For males with up to primary schooling, on the other hand, unemployment in the 61st round data was actually higher (once again, relative to the reference group). For females (Table 4), there are no changes at all by education level. There is also a decline in unemployment with respect to per capita land possessed for

males, though not for females. There is no change in the coefficient for respondents from households with at least one secondary-schooled member.

This is persuasive but not conclusive evidence that the pattern of rural demand for skills has ramped up for males with secondary and higher levels of formal schooling, though not for males at the low end of the schooling spectrum, and not for females.

But the overall rise in unemployment as reflected by the intercept dummy is a bit of a puzzle, seen in conjunction with the rise in monthly per capita rural expenditure between the two rounds.<sup>8</sup> There has been some rise in the time spent unemployed even for males with more than secondary school education. But since this increase is lower than that for less educated males, there is a changing composition of the employed labour force in favour of the more educated. This, in conjunction with the rise in the proportion of males with at least secondary schooling from 19.7 to 31 per cent<sup>9</sup> suggests one possible answer to the puzzle.<sup>10</sup> If this is so, a testable hypothesis (not tested in this paper) is that the pattern of rural prosperity would conform closely to the pattern of availability of rural schools.

For social groups, the only change in the 61st round is the negative coefficient for SC males, and for Muslim males and females, thus suggesting a reduction of the systematic disadvantage for these two groups. There is however no change for

Table A1: Summary Statistics

Variable Name	Description	Mean	Standard Deviation
D_Unemp	D_Unemp = 1 if individual not working (daily status 81) during any of the 7 reference days, = 0 if not in the labour force OR employed	0.02	0.14
time_spent_unemp	Time spent unemployed in the 7 days of the reference days	32.28	11.99
Age	Age of the individual	1184.73	841.16
Square of age	Square of age of the individual	0.50	0.50
D: Male	1 if individual is a male, 0 if female	0.71	0.46
D: Married	1 if the individual is married, 0 otherwise	0.09	0.29
D: Below primary but literate	1 if individual is literate but has less than primary schooling, 0 otherwise	0.13	0.34
D: Primary schooling	1 if individual's highest education level is primary schooling, 0 otherwise	0.18	0.38
D: Middle schooling	1 if individual's highest education level is middle school, 0 otherwise	0.11	0.31
D: Secondary schooling	1 if individual's highest education level is secondary schooling, 0 otherwise	0.10	0.30
D: Higher secondary schooling and above	1 if individual has at least higher secondary schooling, 0 otherwise	21.71	46.53
Per capita land possessed	Total land possessed by the household/household size	8.21	3.19
Household size	Size of the household	47.18	12.72
Age of household head	Age of the head of the household	0.43	0.49
D: At least one household member with at least secondary education	1 if at least one household member has passed secondary school, 0 otherwise	0.15	0.36
D: Scheduled caste household	1 if individual is from a scheduled caste household, 0 otherwise	0.17	0.37
D: Scheduled tribe household	1 if individual is from a scheduled tribe household, 0 otherwise	0.37	0.48
D: Scheduled caste household	1 if individual is from a 'other backward classes' household, 0 otherwise	0.11	0.31
D: Other backward caste household	1 if individual is from a Muslim household, 0 otherwise	0.52	0.50
D: Muslim household	1 if data belongs to 2004-2005, 0 if it belongs to 1999-2000	0.28	0.44
D: 61		0.04	0.21
D: 61 X D: Male		0.08	0.26
D: 61 X D: Below primary but literate		0.10	0.30
D: 61 X D: Primary schooling		0.06	0.24
D: 61 X D: Middle schooling			
D: 61 X D: Secondary schooling		0.06	0.24
D: 61 X D: Higher secondary schooling and above		11.02	32.60
D: 61 X Per capita land possessed		0.24	0.43
D: 61 X D: At least one household member with at least secondary education		0.08	0.27
D: 61 X D: Scheduled caste household		0.09	0.28
D: 61 X D: Scheduled tribe household		0.20	0.40
D: 61 X D: Other backward caste household		0.06	0.24
D: 61 X D: Muslim household			

scheduled tribes, who have the highest coefficient for time spent unemployed among both males and females.

## V Conclusions

Four conclusions emerge from the pooled investigation in this paper of the change in rural unemployment between 1999-2000 and 2004-05.

The first is confirmation of the evidence from the initial tabulations provided by the NSS, of an overall rise in rural unemployment in 2004-05 relative to 1999-2000, in terms of both total and partial failure to find work during the reference week, between the 55th and 61st rounds.

Second, the pattern of change shows a decline in unemployment among males with secondary school or higher education, relative to the reference group which is illiterate males. This suggests that the rise in rural prosperity reflected in the rise in monthly per capita rural expenditure between the two rounds might closely match employment availability for rural males with more than elementary schooling, and might also be the outcome of the higher percentage of males with such educational attainment. At the same time, there is higher unemployment at the low end of the education spectrum, for literate males with some education up to primary level, relative to illiterate males. This pattern by education level is not visible for females at all.

Third, the negative and significant impact on unemployment of belonging to households with at least one member with a secondary school or higher education remains unchanged, showing the continued importance of networks in securing employment. Putting this together with the apparent evidence on higher employment in rural locations for those with secondary schooling (relative to the less educated), the rise in rural prosperity is probably clustered by both household and region. This network impact also explains the political pressure for caste-based quotas in access to both education and jobs.

Fourth, of the four social groups for whom the incremental coefficient for time spent unemployed serves as an indicator of systematic disadvantage, the highest coefficient is found for scheduled tribes. This survives unchanged into the 61st round, and is an important pointer to the required regional configuration of welfare programmes like National Rural Employment Guarantee Scheme (NREGS), and even more importantly for the spread of rural schools. There are no changes among the three other social groups with two exceptions. There is reduced unemployment among SC males, and among Muslim males and females, with the incremental effect more than equal and opposite in sign to the initial coefficient. Thus by 2004-05 these groups had achieved more than parity with the reference mainstream group.

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## Notes

- 1 The previous five were in rounds 27 (1972-73), 32 (1977-78), 38 (January-December 1983), 43 (1987-88) and 50 (1993-94).
- 2 Respondents in these surveys are given a unique status for a period longer than a day on the basis of the activity pursued on the majority of days during that period, the reference week, or reference year for "usual" status.
- 3 The usual status coding has a single provision, code 81, which combines the two.

- 4 The overall rural average monthly per capita consumption expenditure rose from Rs 486.16 in 1999-2000 to Rs 558.78 in 2004-05, a nominal rise of 14.94 per cent, as against a rise in the Consumer Price Index for Agricultural Labourers over the same period of 10.68 per cent [NSSO 2006b, table p 6].
- 5 The NSS tabulations are for ages 15 and above, with no age ceiling.
- 6 Similar to Murgai and Ravallion 2005a and 2005b, although their coefficient for the square of age in the 55th round is positive as well. Their estimation was confined to the 15 major states, and was therefore conducted for a slightly different pool, regionally at any rate. An exercise conducted here for the casual labour force alone, on the other hand, showed a negative and significant coefficient for age, positive for age squared. Thus in the hired labour market, practice and experience reduce the probability of unemployment, until age reduces physical strength [Rajaraman and Mukhopadhyay 2005]. There is also the same pattern by age in the wage functions for casual labour estimated in Rajaraman, 1986.
- 7 All the estimations in this paper are on the unweighted data, since no attempt was made to calculate summary statistics valid for the whole country. These percentages have to be used with that caveat in mind.
- 8 The rise is only of the order of 4 per cent over the entire five-year period, see footnote 4.
- 9 NSSO, 2001, Appendix Table 6 for the 55th round NSSO, 2006c, Statement 3.8, p 25 for the 61st round. Both estimates are for age 15 and above, and do not cut off those above 59, as the exercise reported in this paper does. The NSS estimates are weighted by the survey multipliers.
- 10 There may also be other additional explanations to this puzzle. For example rising real wages may more than compensate for the rise in probability of unemployment. This is a subject of our ongoing research.

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## Working of Carbon Market

Carbon trading as an instrument for combating climate change has grown rapidly, more in the cap-and-trade regulatory regime than in the voluntary compliance market. There are, however, many issues concerning its contribution to reducing the build-up of greenhouse gases and the role of developing countries, including India, in such trading.

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Climate change, alongside biodiversity loss, is often described as being the major contemporary environmental challenge humankind is facing nowadays. Obviously the earth is in a state of constant change and evolution, and the earth's climate has always varied naturally. However, based on the vast quantity of international literature on these matters for over 100 years, the majority of scientists are now convinced that the current trend is distinct and it is due to human influence. The rate at which the change is occurring is very rapid, with the previous decade being the warmest globally in recent times. Observations and measurements show a global average temperature increase, snow and ice covers decrease, global average sea level rise, change in precipitation patterns, as well as an increase of the intensity and frequency of extreme weather events. All these changes are measured as occurring over a relatively short period of time. A consensus is forming in arguing with very high confidence that the principal cause of the warming currently observed is human activity [IPCC 2007].

Preoccupations about anthropogenic climate change emerged on the political agenda in the mid-1980s. Indeed, it was during that decade, that the scientific evidence of human interference with the climate system started to raise public concern. The consequences of a global average temperature rise of a few degrees are numerous, diverse and alarming. The projected changes in the climate patterns could alter ecosystems which are fundamental to humankind and, amongst other effects, disrupt agricultural production, water cycles and resources.

The mitigation of anthropogenic climate change, by drastically reducing greenhouse gases (GHG) emission and stabilising the carbon dioxide concentration in the atmosphere has become a prerequisite to avoid a strong alteration of the climate system. The carbon market is a product of such efforts.

### India and Greenhouse Gases

The Indian economy experienced strong growth during the last few years. The country's Gross Domestic Product (GDP) grew at the rate of between 4 and nearly 9 per cent in the last few years.<sup>1</sup> Projection

based on scenario analysis indicates that the Indian economy will keep expanding at a fast pace in the near future.<sup>2</sup> With its vibrant economy, still growing population and increasing welfare, India has become a major energy consumer on the global level. In 2004, it ranked fourth in terms of total primary energy supply with 573 million tonnes of oil equivalent (Mtoe), behind the United States (2326 Mtoe), China (1609 Mtoe), and Russia (641 Mtoe).<sup>3</sup> Energy use and electricity consumption per capita are very low in comparison to the US and also lower than China.

Access to reliable, affordable electricity is a prerequisite for socio-economic development. Despite significant progress in terms of widespread access to electricity during the last couple of decades, only about half of the households benefit from electricity access [Planning Commission 2002]. There is a significant regional variation in the rate of electrification across the country, and an even more prominent rural-urban gap.

In terms of GHG, the trends are rising rapidly as well. In 1994, India's GHG

emission represented 1.2 billion tonnes of carbon dioxide (CO<sub>2</sub>) equivalent [Government of India 2004]. It increased by about 4 per cent per annum during 1990 to 2000 [Sharma, Bhattacharya et al 2007]. GHG emissions are expected to further increase at a similar rate as to that of GDP. Nonetheless, per capita emissions in India still represent a fraction of those of industrialised countries [The Energy and Resources Institute and The Centre for Clean Air Policy 2006].

### Carbon Market

Carbon offsetting is at the forefront of climate change mitigation actions. Because GHG are spread out relatively evenly in the atmosphere around the globe, the geographical location of the emissions, or the emission cuts, does not significantly matter from an emission concentration point of view. Therefore, GHG emission reductions can be either performed domestically or abroad. The concept of emission trading is basically motivated by economic arguments. It is claimed to be

an economically-efficient way of mitigating climate change and GHG reduction is undertaken wherever it is the least costly.

With transactions for 1.6 billion tonnes of CO<sub>2</sub> equivalent<sup>4</sup> (CO<sub>2</sub>e), carbon markets, worldwide, were worth \$ 22.5 billion in 2006 [Point Carbon 2007]. This represents a doubling of the volume compared to the previous year. Furthermore, the carbon market is expected to grow significantly in 2007, possibly up to 50 per cent.

One can distinguish two types of carbon markets nowadays. The first type represents the compliance market, which is the product of the cap-and-trade climate policy framework. Emission levels are agreed upon, at regional, national, or international level. The difference, positive and negative, between the actual emissions and the cap agreed upon is then negotiated on a market. That is, a company, or country, which is emitting more than its allowance must compensate the difference by buying emission certificates on the market. And a company which would emit less than allowed in the cap-and-trade framework can put its surplus on the market.

International negotiations under the United Nations Framework Convention on Climate Change gave birth to the Kyoto Protocol. This international agreement, which came into force on February 16, 2005, creates a legally binding set of obligations for 38 industrialised countries, and 11 countries of central and eastern Europe, in order to reduce their emissions of GHG to an average of 5.2 per cent below their 1990 levels over the commitment period 2008-12. The Kyoto Protocol is sometimes seen as the most ambitious attempt in history to tackle an environmental issue. It establishes three cooperative mechanisms to allow for annex 1 parties, countries with binding emission caps, to reduce their costs of meeting the targets by trading emission certificates or undertaking corrective actions abroad rather than domestically. These are: International Emissions Trading, Joint Implementation and Clean Development Mechanism (CDM). As previously stated, the effects of measures, wherever undertaken, are equally valuable from a GHG point of view.

The second type of carbon market, which is currently experiencing yet a stronger growth, is the voluntary market. Unlike the compliance market, there is no binding emission level to be respected in this framework. Rather, entities or individuals deliberately choose to offset their emissions. There are many reasons for doing so, ranging from reputation benefit and marketing, gaining carbon market experience and preparing for potential future regulatory requirements [Business for Social Responsibility and Marketplace 2006], or based on philanthropic motivations.

The first signs of climate change mitigation efforts based on voluntary offsets date back to the end of the 90s and those efforts mainly targeted forestation projects [Trexler and Kosloff 2006]. Since then, the portfolio of project types has expanded and presents a "bewildering array of projects" [Russell 2007].

The voluntary market is currently fragmented and critically lacks consistent standards. This leads to a certain lack of credibility and transparency. Nevertheless, more positive critics view the voluntary market as a means of succeeding where the CDM currently fails. That is including projects left aside by the bureaucratic Kyoto process due to their high transaction costs. Those types of projects are usually smaller-scale undertakings, with a great local community involvement in some cases, and are often accompanied by broader sustainable development benefits at local level, at least such is the claim.

Not just leading companies (such as HSBC, Google, Ford Motor Company, and BP) are engaging in the voluntary offset market, governments and international institutions also are doing so. Furthermore, several recent events (e.g. FIFA world cup 2006, 2006 Formula 1 Australian Grand Prix, etc) have claimed carbon neutrality by offsetting their emissions. Furthermore, individuals are now offered the opportunity to offset their emissions by brokers when travelling by aircraft or driving a car for instance.

The carbon market, voluntary and regulatory, is experiencing strong growth, although some experts qualify it as not yet quite mature and relatively volatile. Also, there is a great deal of uncertainty. The lack of clear perspectives in regard to post-2012 commitments represents a burden on investments, especially in energy systems where medium-term evolutions need to be considered. The price of carbon credits exchanged on the EU Emission Trading Scheme (EU-ETS) for the first commitment period (2005-2007) evolved at around 20 EUR per tonne of CO<sub>2</sub>e in 2005 with a peak at nearly 30 EUR, before an abrupt fall in 2006 followed by a gradual descent to nearly zero nowadays. The price on the voluntary market varies greatly, ranging from \$ 5 to 35/tCO<sub>2</sub>e [Taiyab, 2005; Trexler and Kosloff 2006].

### India in the Carbon Market

India is a key player in the carbon market nowadays and represents a very attractive country for hosting CDM activities. Most CDM projects currently in the pipeline, at validation stage or further, are located in countries with transition economies and medium income. Out of over 2000 CDM projects currently in the pipeline, 650 are located in India, followed by China (524), Brazil (233), and Mexico (165).<sup>5</sup>

Nevertheless, in terms of Certified Emission Reduction (CER) potential, the picture looks slightly different. This consideration is important in the sense that, in the market-based framework in which the CDM evolves, what is put on the market are the CERs yielded by the projects, and not the projects themselves. In that regard, India ranks second with a current potential of 323 000 Certified Emission Reductions (each one equivalent to a tonne of CO<sub>2</sub>) by 2012, far behind China (1 015 000 CER). This is due to the fact that China is hosting a few high-yielding projects in terms of CER.

There is little available information about the state of the voluntary market.

Nonetheless, it is fair to assume that it will follow a similar trend as for the regulatory market. Therefore, India will also play a key role in terms of voluntary offsets.

### Controversy about Carbon Markets

Carbon markets find themselves at the centre of a growing controversy. However, their significance as prime instruments for the mitigation of climate change is also increasing. This section depicts a non-exhaustive series of arguments that are fuelling the controversy.

Firstly, it is necessary to put the carbon markets into perspective. The market volume represented transactions for 1.6 billion CO<sub>2</sub>e in 2006 [Point Carbon 2007]. Although significant, this figure has to be compared to the current estimated 30 billion tCO<sub>2</sub>e annual emissions globally. Also, in terms of investments, the expected financial flow triggered by the CDM is minute compared to other investments, public or private. Indeed official development assistance and FDI represent flows far greater than CDM [Ellis et al 2004]. Therefore, the carbon offset markets seem largely marginal, both compared to other financial flows and in terms of GHG emissions.

The rationale behind carbon trading is an economic one. The market allows for the most cost-effective way of reaching GHG emission reduction targets. At least so is the claim, one that is motivated by short-term perspectives. Indeed, offset represents permanent costs to a company, while domestic measures, such as energy efficiency measures, could yield permanent savings [Russell 2007]. Furthermore, even if carbon trading is a cost-effective way of complying with emission commitments, it is not necessarily a cost-effective way to mitigate climate change. As demonstrated by Wara (2007), the price paid for carbon credit can be several times the price that it would actually cost to reduce emissions in some cases.

Although carbon dioxide is by far the principal gas causing our climate to change, most GHG offset projects target non-CO<sub>2</sub> gases. Indeed, gases with very high global warming potential<sup>7</sup> represent the dominant type of emission reduction projects in terms of volume [Lecocq and Capoor 2005; Wara 2007]. This trend is not expected to change in the near future seeing the yet unexploited potential of those high yielding activities [Cosbey, Parry et al 2005; Sterk and Wittneben 2005]. By flooding the market with cheap emission certificates from non-CO<sub>2</sub> emission

abatements, there is very little incentive for investment in low-carbon energy.

The market, if efficient, will promote the most economic options, the sometimes so-called "low-hanging fruit" [Cosbey, Parry et al 2005], and this raises a series of concerns. First, at a later stage, developing countries will also have to comply with some form of defined emission caps, then they would only have more costly options available in order to do so, this representing a paradoxical and counter-productive effect. Secondly, projects offsetting enormous amounts of carbon, although not problematic per se as they efficiently contribute to the mitigation of climate change, compete in a market with smaller projects that very often have higher accompanied benefits, notably in terms of contribution to local sustainable development.

The price collapse in the EU-ETS during the first commitment period is a source of concern, but understandable. The volatility of the market was not only due to its relative immaturity. Many countries under that scheme have generously allocated emission allowances to their industries. This coupled with domestic emission reduction through

energy efficiency measures exceeding expectations, drove the price down in the market. For the second commitment period (2008-12), countries will have tighter emission targets and thus will not allocate as many emission allowances. Nevertheless, the uncertainty in regard to the supply and demand of carbon credits leads to the belief that such a price downfall is not impossible [Jepma 2007]. Also, the indecision in regard to the post-2012 regime, and thus the absence of a clear price signal, leads to investors refraining from long-term investments. And finally, but perhaps most importantly, the price of carbon credits will be strongly influenced by the amount of emission allocation surplus (sometimes referred to as "hot air") that some countries, notably Russia and the Ukraine, will put on the market [Lecocq and Capoor 2005].

The price in the carbon market is of utmost importance since it defines the cost-effectiveness of emission reduction measures. Low prices give very little incentive for investment in clean energy production. Also, social behaviour changes are unlikely under the current framework. For example, offsetting emissions for a flight

from Europe to India and back would add a marginal 5 per cent to the price of the airfare.<sup>8</sup>

The functioning of the Clean Development Mechanism, although well-intentioned, has been criticised in the last few years. The CDM has a twofold objective at its core, it must 1) offset GHG emissions and 2) contribute to sustainable development in the host country. There has been a lot of debate, often fuelled by watchdog non-governmental institutions, on the ability of a market-based mechanism to serve a dual objective. Experience shows that while some CDM projects do seem to provide local communities with accompanied benefits, a majority of projects underperform in terms of sustainable development [Pearson 2004; Cosbey, Parry et al 2005]. Since the CDM is at best climate-neutral, its contribution to the second objective, sustainable development, is fundamental [Sterk and Wittneben 2005]. In the non-regulated market, the examples of failing offset projects are numerous [Dag Hammarskjöld Foundation 2006].

Another well-debated issue of carbon offset projects is that of additionality. A

project for which carbon credits are issued must represent local GHG reduction that is additional to what would have happened in the absence of the project in order to guarantee its environmental integrity. Although the concept might seem straightforward, the practical application can be biased. The hypothetical scenario of what would have happened in the absence of the CDM project is characterised by a relatively high degree of uncertainty. Because the CDM does not reduce GHG emissions as such in global terms but only offsets them, if the additionality of a project is questionable there is the risk of emission certificates being issued without actually being compensated.

The permanence of the carbon offset is also a source of great concern. Indeed, if carbon credits are issued based on an offset that in a later stage vanishes, the global carbon balance is not neutral anymore but positive. The experience shows that several projects have seen their carbon capture leaking.

The voluntary market, because it is unregulated, suffers from all the shortcomings mentioned above, but to a greater extent. Serious doubts have been expressed about the quality of projects in the voluntary market. Because there is currently no commonly agreed and applied standard, the range in the quality of the projects is wide. More generally and besides the technicalities, there is also a more fundamental discussion on carbon markets. Some critics see carbon offset as the wrong answer to the urgent need of reducing carbon dioxide emissions. Going carbon-neutral, which is currently sort of fashionable, is often seen as a green claim that is good for the conscience, but provides little incentive for behaviour change.

On the positive side, however, the carbon market and its flexible mechanisms might be viewed as a condition sine qua non for some countries to accept participation in the international climate change mitigation efforts. The climate change issue tends to further strengthen the north-south divide. According to historical responsibilities for anthropogenic climate change, the north is undoubtedly contributing to a great extent to the alteration, while the south will suffer most of the consequence. Based on the principle of common but differentiated responsibilities, the carbon market and the CDM in particular might be the notable exception that helps to relax the tensions [Prum 2007]. Indeed, this form of international cooperation allows for the combining of different interests, the need for

industrialised countries to offset their emissions and the development aspiration of developing countries.

## Conclusion

The carbon market is currently booming and India is in a position to play a key role. Numerous projects providing emission certificates for the carbon market, either regulatory or voluntary, are located in India.

The Clean Development Mechanism, in the regulatory framework, represents an opportunity for sustainable development in developing countries, facilitated by the need of industrialised countries to meet their GHG emission targets. However, the link between such undertakings and sustainable development is not straightforward. Indeed, different factors could undermine the valuable objective of the CDM to promote sustainable economic, social and environmental development in the host country. The CDM is largely considered a success. It has nevertheless been laden with a lot of unrealistic expectations (rural electrification, poverty alleviation) for which it is not designed.

The voluntary market, although well-intentioned, currently suffers from a lack of credibility for a number of reasons. Nonetheless, it seems to trigger projects that are left out by the high transaction costs of the bureaucratic regulatory framework. Often, projects providing offsets for the voluntary market have a stronger community involvement and broader accompanied sustainable development benefits although at other times, local complaints have arisen. [9]

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## Notes

- 1 Ministry of Statistics and Programme Implementation, Government of India, <http://www.mospi.gov.in/>, accessed June 4, 2007.
- 2 International Institute for Applied Systems Analysis (2007), Greenhouse Gas Initiative (GGI) Scenario Database, <http://www.iiasa.ac.at/Research/GGI/index.html>, accessed June 4, 2007.
- 3 International Energy Agency (IEA) 2006, Key world energy statistics, <http://www.iea.org/dbtw-wpd/Textbase/nppdf/free/2006/key2006.pdf>, accessed June 4, 2007.
- 4 Different greenhouse gases are commonly converted into carbon dioxide equivalent (CO<sub>2</sub>e) using a factor known as Global Warming Potential (GWP) in order to be comparable and to facilitate accountability.
- 5 Status as of May 31, 2007, Data source: Fenhann, J (2007), 'The CDM Pipeline'.
- 6 IIASA Greenhouse Gas Initiative Scenario Database, <http://www.iiasa.ac.at/Research/>

GGI/index.html, accessed June 4, 2007.  
7 Different gases have different impacts in terms of the greenhouse effect (so-called "global warming potential"). For example, a kg of HFC-23 (a by-product generated in the production of the Hucric refrigerant), is the equivalent to about 10,000 kg of CO<sub>2</sub> in terms of greenhouse effect.

8 Based on calculation from <http://www.myclimate.org/index.php?lang=en> and standard airfare rates.

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# Employment and Poverty in India, 2000-2005

This paper is principally focused on the changes in the size and structure of the workforce and the changes in labour productivity, wages and poverty in India in the first quinquennium of the 21st century. The period between 2000 and 2005 saw a sharp acceleration in workforce growth, and, on the obverse side, a slowdown in the rate of growth of labour productivity across most sectors and in the economy as a whole, and, a slowdown (a decline) in real wage growth in rural (urban) India. Consistent with the trends in labour productivity and real wages, relative to the 1994-2000 period, the pace of poverty reduction between 2000 and 2005 shows, at best, a marginal acceleration (or a marginal deceleration, depending on the choice of poverty lines) in rural India and a clear slowdown in urban India. This period also saw a small rise in the number of working poor and a substantial rise in the number of self-employed and regular wage/salary workers in the "above poverty line" households.

K SUNDARAM

This paper is principally focused on the changes in the size and structure of the usual (principal plus subsidiary) status workforce in India in the first quinquennium of the 21st century. It also examines the changes in labour productivity, wages and poverty over this period. The estimates of poverty are derived by combining comparable estimates (on mixed reference period) for 2004-05 of the proportion of households in "below poverty-line" households from the 61st round Consumer Expenditure Survey of the National Sample Survey and the size-distribution of persons from the 61st round Employment-Unemployment Survey. These estimates suggest that the extent of decline in poverty between 2000 and 2005 is significantly smaller than indicated by Himanshu (2007) and Mahendra Dev and Ravi (2007). Our estimates of poverty also enable us to address the issues of the working poor and of the quality of employment growth over this period.

The paper is organised as follows.

The first section presents and discusses the estimates of population and workforce over the period 1983-2005 as a backdrop to the more detailed analysis of the changes in the size and structure of workforce between 2000 and 2005. Following our earlier paper [Sundaram 2007], the discussion highlights the issue of age-distribution underlying the overall (all ages) worker-population ratios (WPRs) coming from the NSS employment-unemployment surveys, and, using the smoothed age-distribution of population from the population Censuses of 1981, 1999 and 2001, brings out the critical differences between the survey-based and the census age-distributions. It is shown that, with the census-based age-shares as weights to derive the overall WPRs from the survey-based age-specific WPRs, the slowdown in the growth of workforce between 1993-94 and 1999-2000 relative to that between 1983 and 1993-94 is much less marked than in other analyses. A similar comparison of the age-distribution of the population as per the 61st round Employment Survey and that from population projections carried out by Mari Bhat, shows the two age distributions to be fairly close. Consequently,

we use the survey-based WPRs (all-ages) – separately for rural males, rural females, urban males and urban females – to derive the workforce estimates by gender and rural-urban location for 2004-05. These estimates indicate a significant acceleration in the growth of workforce – especially the female workforce – between 2000 and 2005 relative to both the 1980s and the 1990s.

The second section analyses the changes in the structure of workforce. We begin by examining the changes in the activity-status of the workforce. This brings out the sharp growth in self-employment and the reduction in the share of casual labour, with the proportion of regular wage/salary workers not showing much of a variation except for urban females who show a rise in the share of such workers. Even with more or less unchanged shares of RWS workers, the sharp growth in total workforce ensures a significant increase in the average annual increments in such workers relative to both the 1980s and the 1990s to dispel any notion of "jobless growth". This section examines next the changes in the broad industrial and occupational distribution of the workforce in the first quinquennium of the 21st century.

Building on the analysis of the industrial distribution of the workforce, the next section examines the growth in labour productivity by broad industrial sectors and the changes in real wages of adult casual labourers by gender and rural-urban location.

Against the backdrop of the slowdown in growth of labour productivity and in the growth of real wages of casual labourers in rural areas (and a decline in real wages in urban India) Section IV presents the estimates of poverty among the general population. Our estimates indicate only a marginal acceleration (or a marginal slowdown, depending on the choice of the poverty line) in rural India and a clear slowdown in urban India in the pace of poverty reduction between 2000 and 2005 relative to that in the 1994-2000 period.

The final section presents our estimates of the working poor and examines the quality of employment – especially of the

self-employed – in terms of average annual increments of such workers located in "above poverty line" households.

## Population, WPRs and Workforce Growth

Estimates of population, separately for rural males, rural females, urban males and urban females, for (the mid-point) of the survey years, provide the starting point for estimating the size of the workforce by gender and rural-urban location.

Table 1 provides the estimates of all-India population for the four survey years: (January-December) 1983; and (July-June) 1993-94, 1999-2000 and 2004-05. For the first three time points, the segment-wise population totals are based on inter-censal interpolations based on the 1981, 1991 and the 2001 Population Censuses. The estimates for 2004-05 are based on population projections for India and states, 2001-2026 prepared by the Technical Group on Population Projections constituted by the National Commission on Population, May 2006 [ORG and CCI 2006].

As can be readily seen, in all the four population segments, there has been a significant slowdown in the rate of growth of population in the first quinquennium of the 21st century: from a little under 2 per cent per annum between 1994 and 2000 to a little under 1.7 per cent per annum. Nevertheless, India's population has grown by close to 88 million between 2000 and 2005.

In a recent paper [Sundaram 2007] we had drawn attention to the fact that the segment-specific overall worker population ratios (WPRs for short) are nothing but weighted averages of age-specific WPRs with the (survey-based) share of each age-group in the (segment-specific) population total, as per the survey, providing the weights. It was shown that using the survey-based age-distribution results in a sharp slowdown in the growth of prime age (15-59) population – from 2.74 per cent per annum (pcpa) between 1983 and 1994 to 1.93 pcpa between 1994 and 2000. In the context of the observed slowdown in the rate of growth of total population (reflecting fertility decline) over the same period, equally problematic is the acceleration – albeit small – in the rate of growth of population in the 0-9 age-group raising doubts about the order of decline in the share of 0-9 age-group between 1983 and 1993-94 (as per the two surveys).

Taking care of the concerns about age misreporting in the population census by using "smoothed" age-distributions for the

censuses, Table 2 presents the survey-based age-distribution and the (closest) census-based age-distributions for 1981, 1991 and 2001. This brings out the nature of the differences in the two age-distributions, especially for 1983 (relative to the 1981 Census) where the survey-based share of 0-9 is higher for rural males and urban males and for 1993-94 relative to the 1991 Census

Table 2: Survey and Census-based Age-Distribution of All-India Population by Gender and Rural-Urban Location: 1981 – 2004-05

Per 1000 Distribution of Population by Rural Age-Groups

Age-Group	Survey-based				Census-based (Smoothed)			
	1983	1993-94	1999-2000	2004-05	1981	1991	2001	2005
Panel A: Rural Males								
0-9	284	261	255	238	278	268	255	237
10-14	136	120	128	127	127	121	122	118
15-29	244	258	250	253	250	259	261	272
30-59	270	294	296	311	280	289	295	302
60+	66	68	71	71	65	63	67	71
All Ages	1000	1000	1000	1000	1000	1000	1000	1000
Panel B: Rural Females								
0-9	275	254	248	230	280	269	252	231
10-14	121	107	117	113	122	115	116	115
15-29	255	268	258	258	256	265	261	264
30-59	280	304	304	324	284	289	298	311
60+	68	69	73	75	58	63	73	79
All Ages	1000	1000	1000	1000	1000	1000	1000	1000
Panel C: Urban Males								
0-9	241	218	202	183	236	225	196	177
10-14	125	115	116	104	118	113	110	100
15-29	294	292	291	300	298	292	296	303
30-59	287	321	331	349	300	317	336	353
60+	52	55	59	64	48	53	62	67
All Ages	1000	1000	1000	1000	1000	1000	1000	1000
Panel D: Urban Females								
0-9	249	216	201	179	256	236	199	177
10-14	122	114	114	108	122	115	109	98
15-29	291	291	287	283	295	297	293	303
30-59	275	314	327	354	275	295	328	347
60+	63	65	71	76	52	57	71	75
All Ages	1000	1000	1000	1000	1000	1000	1000	1000

Notes: Starting with the more detailed (by 5 year age-group) age-distributions, the census age-distribution for 1981, 1991 and 2001 has been smoothed using the smoothing procedure spell out in the Report of Technical Group on Population Projections (pp 3-4). For 2005, the age-distribution has been computed by the author by interpolation of age-sex-location-specific populations for January 1, 2005 from population projections by age-sex and location for April 1, 2002 and April 1, 2007 kindly made available by Mari Bhat.

Table 1: All-India Population by Gender and Rural-Urban Location 1983 – 2004-05 (All-India Population) ('000s)

Population Segment	1983 (1.7.83)	1993-94 (1.1.1994)	1999-2000 (1.1.2000)	2004-05 (1.1.2005)	Rates of Growth (Per Cent Per Annum)		
					1983-1994	1994-2000	2000-2005
Rural males	281,288	339,642	374,432	400,865	1.81	1.64	1.37
Rural females	266,637	319,411	353,785	379,102	1.73	1.72	1.39
Rural persons	547,925	659,053	728,217	779,967	1.77	1.68	1.38
Urban males	91,217	124,031	145,878	164,732	2.97	2.74	2.46
Urban females	80,445	111,104	131,244	148,332	3.12	2.82	2.48
Urban persons	171,662	235,135	277,122	313,064	3.04	2.78	2.47
Total (R+U) males	372,505	463,673	520,310	565,597	2.11	1.94	1.68
Total (R+U) females	347,082	430,515	485,029	527,434	2.07	2.01	1.69
Total (R+U) persons	719,587	894,188	1,005,339	1,093,031	2.09	1.97	1.69

Notes: Segment-wise population totals for 1983, 1993-94 and 1999-2000 are based on inter-censal interpolations of total population, share of urban area in total population and the share of females in rural and urban area based on the 1981, 1991 and 2001 Censuses. The estimates for 2004-05 are based on an interpolation of the total and urban population as on October 1, 2004 and March 1, 2005 as per Population Projections for India and States, 2001-2026 [ORG&CCI, 2006]. The segment-wise sex-composition as per the 2001 Population Census is used to derive the estimates for 2004-05.

where the survey-based age-shares in this and the next age-group are substantially lower for females.

The previously stated concerns about the consequences of adopting the survey-based age-distribution (acceleration in the rate of growth of population in the 0-9 age-group and a slowdown in the rate of growth of prime age-population) lead us to choose the census age-distribution to weight the age-group-specific WPRs from the NSS Employment-Unemployment Surveys, taken as they are, to derive, for each of the four population segments the overall (all-ages) WPRs for 1983, 1993-94 and 1999-2000.

Table 2 also presents for 2004-05 a comparison of the survey-based age-distribution with our estimates based on interpolations of projected populations for April 1, 2002 and 2007.<sup>1</sup>

For the rural and urban females, the age-distributions are fairly well-matched. For rural males the age-share in the 0-9 and 60+ age-groups are well matched but the projections-based age-distribution shows a higher share for the 15-29 age-group with lower shares for both the 10-14 and the 30-59 age-groups.

For urban males, the projections-based distribution show smaller shares for the 0-9 and 10-14 age-groups and fractionally higher shares for the 15-29 and the 30-59 age-groups. As we shall see presently, the projection-based age-distributions yield a somewhat higher overall WPRs for males in both rural and the urban areas of the country and slightly lower WPR for rural females. Given that our estimates of age-distribution for 2004-05 are based on projections rather than a census count for 2004-05, we accept the survey-based age-distributions for 2004-05.<sup>2</sup>

In Table 3, we present the age-specific WPRs on the usual (principal plus subsidiary) status for the four population segments for 1983, 1993-94, 1999-2000 and 2004-05 to see the changes between 2000 and 2005, which is what we will focus on, against the backdrop of trends since 1983.

For rural males, the changes in age-specific WPRs are either small or broadly in line with the trends since 1983 – except for the (16 points per 1000) rise in WPR in the 25-29 age-group.<sup>3</sup>

For urban males, the sizeable increase in WPRs in the 15-19, 20-24, 25-29 age-groups do appear to be out of line with the trends since 1983.

The increases in WPRs for males – the four cases identified above – pale into insignificance compared to the big jumps in the age-specific WPRs for females. For rural females we have a 22-point (per 1000) rise in the 25-29 age-group, a 42-point rise in the 30-44 age-group and a whopping 51-point rise in the 45-59 age-group.

In the 25-29 age-group, the 22-point rise in WPR on UPSS is made up of a 6-point decline on the principal status and a 28-point rise on the subsidiary status. The increase in the UPSS WPR for rural females in the 30-44 age-group is made up of a 15-point rise on the principal status and a 27-point rise on the subsidiary status while in the 45-59 age-group, the rise in the UPSS WPR overwhelmingly reflects a rise in WPR on the principal status. In all the three age-groups, the WPRs on the subsidiary status are still below the levels in 1993-94. And, there is no a priori basis for not accepting the increases in WPRs on the principal status.

For urban females the increases in WPRs are significant in the 15-19 and the 20-24 age-groups and are out of sync with the trends since 1983. In the 30-44 age-group, three-fourths of the rise in the UPSS WPR reflects a rise in WPR on the principal status and the underlying WPR on the subsidiary status, while

being higher than the 1999-2000 level, are still lower than the level for 1993-94.

In row 9 of Table 3, we present the overall (all-ages) WPRs with the survey-based age-shares providing the weights to derive the weighted-average of age-specific WPRs, while row 10 reports the overall WPRs when the census-based (projections-based for 2004-05) age-shares are used to weight the age-specific WPRs from the respective surveys.

In deriving our estimates of usual (principal plus subsidiary) status workforce, for reasons already discussed, for 1983, 1993-94 and 1999-2000 we combine the segment-specific population totals (Table 1) with the overall WPRs given in row 10. However, we prefer to use the survey-based overall WPRs (row 9) in the four population segments together with the projected population totals for the four population segments, to derive our workforce estimates for 2004-05<sup>4</sup> (Table 4).

The growth rates presented in Table 4 point to the following conclusions:

First, the extent of slowdown in rate of growth of total workforce between 1993-94 and 1999-2000 (relative to the 1983-94 period), from 1.71 to 1.45 pcpa, is much less marked than the decline from 2.04 to 0.98 pcpa indicated in the Report of the Task Force on Employment Opportunities [GoI 2001].

Second, this slowdown in the rate of growth of workforce in the 1990s was primarily a rural phenomenon, though females in both rural and urban areas experienced a sharp slowdown in growth.

Focusing on the 1999-2000 to 2004-05 period, we find:

(1) Relative to the growth between 1994 and 2000, we have a sharp acceleration in workforce growth in all the four population

Table 3: All-India Age-specific Usual (Principal Plus Subsidiary) Status Worker-Population Ratios by Gender and Rural-Urban Locations: 1983 – 2004-05  
Per 1000 Worker-Population Ratios

Sr No	Age-Group	Rural Males				Rural Females			
		1983	1993-94	1999-2000	2004-05	1983	1993-94	1999-2000	2004-05
Panel A: Rural Areas									
1	0-9	13	6	4	2	13	7	4	2
2	10-14	253	138	91	68	240	141	96	74
3	15-19	666	578	503	497	452	364	304	319
4	20-24	897	859	844	849	488	456	410	410
5	25-29	968	958	950	966	557	525	491	513
6	30-44	985	986	982	984	614	598	572	614
7	45-59	955	968	958	962	552	543	518	569
8	60+	670	695	625	644	233	242	218	253
9	All Ages (1)	547	553	531	548	340	328	299	327
10	All Ages (2)	558	545	535	555	341	319	297	322
Sr No	Age-Group	Urban Males				Urban Females			
		1983	1993-94	1999-2000	2004-05	1983	1993-94	1999-2000	2004-05
Panel B: Urban Areas									
1	0-9	4	3	2	1	3	3	1	2
2	10-14	113	66	49	48	70	45	36	33
3	15-19	414	356	314	335	155	123	105	128
4	20-24	727	674	658	684	182	180	155	201
5	25-29	921	904	883	909	229	224	194	229
6	30-44	975	975	969	975	291	295	266	310
7	45-59	926	935	921	923	276	283	250	252
8	60+	505	442	402	366	140	113	94	100
9	All Ages (1)	512	521	518	549	151	155	139	166
10	All Ages (2)	525	517	528	558	150	149	140	167

Notes: Estimates of overall (all ages) WPRs in row 9 represents the weighted average of age-specific WPRs with survey-based age-shares as weights while those in row 10 have the census-based age-shares as weights.

segments, with a near doubling of the rate of growth of total workforce, while the rate of growth of female workforce rises fivefold.

(2) In terms of levels, we have an increase of a little over 57 million in the total workforce of which about 20 million took place in urban India.

(3) In terms of gender-composition, the share of females in the total workforce has increased from 30.8 per cent in 1999-2000 to 32.5 per cent in 2004-05. Even at this level, the share of women in the total workforce is less than their share in 1983 (33.5 per cent) and, only marginally higher than their share in 1993-94 (32.2 per cent).

(4) To conclude this section, it is useful to note that if we had used the age-shares from the 2001 Census to weight the 2004-05 age-specific WPRs, the total, all-India workforce would have been 444.4 million or about 13.5 million lower than our present estimates. The difference (13.5 million) measures the impact of the changes in age-distribution since 2001 and is a rough indicator of the so-called "demographic dividend".

## II Structure of Workforce: Activity-Status, Occupational and Industrial Distribution

We begin this discussion of the changes in the structure of workforce by focusing on the activity-status distribution of the workforce separately for rural and urban India and for males and females (Table 5).

In rural India, we have a significant reversal of the past trends in the activity-status distribution of the workforce. The share of the self-employed, which had declined from 610 (per 1000) in 1983 to 580 in 1993-94 and further to 554 (per 1000) in 1999-2000, rose sharply to 601 in 2004-05. The rise in the share of casual labourers from 314 in 1983 to 355 per 1000 in 1993-94 and further to 377 in 1999-2000 gives way, in parallel, to an equally sharp fall to 328 per 1000 in 2004-05. As for the regular wage salary workers (RWS workers for short), after a decline in its share between 1983 and 1993-94 (from 76 per 1000 to 65 per 1000), the share of RWS workers registers a small rise – both between 1993 and 1999-2000 (to 69 per 1000) and between 1999-2000 and 2004-05 (to 71 per 1000).

In urban India, after moving narrowly (between 417 and 423 per 1000) over the period 1983 to 1999-2000, the share of the self-employed records a sharp rise (from 420 to 454 per 1000) with an offsetting decline in the share of the casual labourers. The share of the RWS workers, which had fallen between 1983 and 1993-94 (from 403 to 394 per 1000), after rising by 5 points (per 1000) by 1999-2000, slips down fractionally (to 396 per 1000) to be just above its share in 1993-94.

By gender, the rise in the share of the self-employed (and the offsetting fall in the share of the casual labourers) between 2000 and 2005 is sharper for females than for males. Over the same period, the share of RWS workers in female workforce also records a significant rise (from 77 to 90 per 1000) while, for male workers, the rise in the share of RWS workers, while present, is more subdued.

Let us focus briefly on the growth of regular wage-salary workers, which, we have argued elsewhere [Sundaram 2007] is a good indicator (better than the Directorate General of Employment and Training estimates) for tracking the growth of "jobs" in the country (Table 6).

In the country as a whole, the number of regular wage/salary workers has increased by a little over 10.7 million in the five years separating the 55th and 61st round employment-unemployment surveys, i.e., at over 2.14 million per annum. In contrast, the annual average increment to the number of RWS workers between July 1, 1983 and January 1, 1994 (the 1980s) was about a third at 0.41 million. Between 1993-94 and 1999-2000 (the 1990s) the average annual increment to the number of RWS workers, at 1.46 million was more than twice that realised during the 1980s. So that the widely-held perception of the 1990s being a period of "jobless growth" based on a simple comparison of the DGE&T numbers on organised sector employment is at

Table 4: All-India, Usual (Principal and Subsidiary) Status Workforce by Gender and Rural-Urban Locations 1983 – 2004-05  
Usual (psps) Status Workforce (000s)

Population Segment	Number of Workers (000)				Annual Rate of Growth (Per Cent Per Annum)		
	1983	1993-94	1999-2000	2004-05	1983-94	1994-2000	2000-05
Rural males	156,959	185,105	200,321	218,872	1.58	1.33	1.79
Rural females	90,923	101,892	105,074	123,966	1.09	0.51	3.36
Rural persons	247,882	286,997	305,395	342,838	1.41	1.04	2.34
Urban males	47,889	64,124	77,024	90,438	2.82	3.10	3.26
Urban females	12,067	16,555	18,374	24,623	3.06	1.75	6.03
Urban persons	59,956	80,679	95,398	115,061	2.87	2.83	3.82
Total (R+U) males	204,848	249,229	277,345	309,310	1.89	1.80	2.21
Total (R+U) females	102,990	118,447	123,448	148,589	1.34	0.69	3.78
Total (R+U) persons	307,838	367,676	400,793	457,899	1.71	1.45	2.70

Notes: Segment-wise estimates of workforce for 1983, 1993-94 and 1999-2000 have been derived by combining the population estimates in Table 1 with the overall (all ages) worker-population ratios reported in row 10 of Table 3. Estimates for 2004-05 have, however, been derived using the overall (all-ages) worker-population ratios reported in row 9 of Table 3 based on the population age-distribution as per the Survey as they are broadly in line with the projected age-distribution.

Table 5: Per 1000 Distribution of Workforce by Gender, Activity-Status and Rural-Urban Location: All-India, 1999-2000 – 2004-05  
Per 1000 Distribution

Population Segment	1999-2000				2004-05			
	SE	RWS	CL	All	SE	RWS	CL	All
Rural persons	554	69	377	1000	601	71	328	1000
Urban persons	420	399	181	1000	454	396	150	1000
Males	510	179	311	1000	542	183	275	1000
Females	549	77	374	1000	610	90	300	1000
Total persons	522	147	331	1000	565	152	283	1000

Table 6: Number of Usual Status Workers by Activity-Status, Gender and Rural-Urban Location: All-India, 1994-2000

Population Segment	1994-2000				1994-2000			
	SE	RWS	CL	All	SE	RWS	CL	All
Rural person	169,194	20,010	115,191	305,395	206,183	24,260	112,395	342,838
Urban person	40,105	38,056	17,237	95,398	52,244	45,059	17,308	115,061
Males	141,468	49,518	86,279	277,345	167,750	56,405	85,155	309,310
Females	67,831	9,468	48,149	123,448	90,877	13,364	44,548	148,589
Person	209,299	59,086	132,428	400,793	258,427	69,769	129,703	457,899

Source: Derived from Tables 4 and 5.

complete variance with the fact of much faster and rising growth of jobs in terms of the number of RWS workers in the country since 1993-94.

In terms of absolute numbers, the largest increase over this period has been that of the self-employed: by over 49 million with 75 per cent of this increase taking place in rural India. The number of casual labourers, on the other hand, declined by a little over 2.7 million.

We turn now to a discussion of the changes in the industrial distribution of the workforce (Table 7). At the outset, it needs to be emphasised that the classification adopted in the 55th and the 61st round surveys is based on NIC 1998. So that while the composition of broad industry groups are by and large comparable with the results for 1993-94, there are some differences. Notably, repair services is now a part of the Trade, Hotels and Restaurants and not of Social, Community and Personal Services as earlier. So that, for rural and urban areas taken together, the share of the Trade, Hotels and Restaurants for 1993-94 would need to be raised by about 9 points per 1000 to be comparable with the shares presented here for 1999-2000 and 2004-05 [Sundaram 2001].

As one would expect, we have a continuation of the long-term trend of a decline in the share of "Agriculture and Allied Activities" and, at the present pace of decline, another decade might see the share of agriculture in employment going below the 50 per cent mark. Despite this sizeable decline in its share, the absolute number of workers in this sector has increased by nearly 18 million, i.e., over 30 per cent of the incremental workforce (Table 10).

In all the four population segments the first quinquennium of this century has witnessed a rise in the share of manufacturing in workforce and this increase has been particularly large (over 4 percentage points) for urban females. Combined with a 2.7 per cent per annum growth in the total workforce, this rise in share of manufacturing in all segments has resulted in a spectacular 4.8 per cent per annum growth in total manufacturing sector employment. This sector accounted for a little over 20 per cent of the incremental workforce during this period.

The secondary sector, covering Manufacturing, Electricity, Gas and Water Supply and Construction, raises its share from 15.8 per cent in 1999-2000 to 18.2 per cent in 2004-05. This sector added a little over 20 million to its workforce and accounted for 35 per cent of the incremental workforce over this period.

In the tertiary or the services sector, we have a reduction, albeit small, in the share of the Social, Community and Personal services. The other services sectors - Trade, Hotels and Restaurants, Transport, Storage and Communication and Finance, Insurance, Real Estate and Business Services - each added between 4 and 6 points (per 1000) to its share. Overall, the share of services went up only slightly from 23.7 to 24.8 per cent.

Focusing on female workforce, we have a more moderate decline in the share of agriculture and allied activities (by 28 points per 1000 as against the 45 points decline for males). Almost all of this decline in the share of agriculture is offset by the rise of the share of manufacturing (17 points) and social, community and personal services (8 points).

To complete our discussion of the changes in the structure of workforce, the estimates of the occupational distribution of the work force are presented at the one-digit occupation, division level (Table 8) as well as for identified two-digit occupation groups in Table 9.

Consistent with the declining share of agriculture, the share of Division 6 (Farmers, Fishermen, Hunters, Loggers and related workers) records a 32 point decline between 2000 and 2005.

Table 7: Industrial Distribution of Usual (Principal plus Subsidiary) Status Workforce by Gender and Rural-Urban Location: All-India, 1999-2000 - 2004-05  
Per 1000 Distribution of Workforce

Industry-Group	1999-2000			2004-05		
	Rural Male	Rural Female	Rural Person	Rural Male	Rural Female	Rural Person
Panel A: Rural Areas						
Agriculture and allied activity	714	853	762	665	832	725
Mining and quarrying	4	3	4	6	3	5
Manufacturing	73	76	74	79	84	81
Electricity, gas and water	2	0	1	2	0	1
Construction	45	11	33	68	15	49
Trade, hotels and restaurants	68	20	52	83	25	62
Transport, storage and communication	32	1	21	38	2	25
Finance, insurance, real estate and business services	5	0	3	7	1	5
Social, community and personal services	57	36	50	52	38	47
All	1000	1000	1000	1000	1000	1000

Industry-Group	1999-2000			2004-05		
	Urban Male	Urban Female	Urban Person	Urban Male	Urban Female	Urban Person
Panel B: Urban Areas						
Agriculture and allied activity	65	176	86	61	181	87
Mining and quarrying	9	4	8	9	2	8
Manufacturing	224	240	227	235	282	245
Electricity, gas and water	8	2	7	8	2	7
Construction	87	48	80	92	38	80
Trade, hotels and restaurants	294	169	270	280	122	246
Transport, storage and communication	104	18	87	107	14	87
Finance, insurance, real estate and business services	45	25	41	59	32	53
Social, community and personal services	165	317	194	149	327	187
All	1000	1000	1000	1000	1000	1000

Industry-Group	1999-2000			2004-05		
	Male	Female	Person	Male	Female	Person
Panel C: All Areas						
Agriculture and allied activity	534	752	601	489	724	564
Mining and quarrying	5	3	4	7	3	6
Manufacturing	115	100	110	124	117	122
Electricity, gas and water	4	0	3	4	0	3
Construction	57	17	45	75	18	57
Trade, hotels and restaurants	116	42	93	127	41	99
Transport, storage and communication	52	4	37	58	4	41
Finance, insurance, real estate and business services	16	4	12	22	6	17
Social, community and personal services	102	78	95	94	86	91
All	1000	1000	1000	1000	1000	1000

However, reflecting the rise in the share of the self-employed and the decline in the share of casual labourers, at the two-digit level, we have a small rise in share of "Cultivators" and a sharp, 49 points per 1000, decline in the share of agricultural labourers. The fact that decline in the share of Occupational Division 6 (32 points) is smaller than the decline in occupational groups 61 (cultivators) and 63 (agricultural labourers) taken together, (43 points) implies that there has been a measure of occupational diversification within Division 6.

At the upper end of the skill-spectrum, the share of both Divisions 0-1, and 2 (Professional, Technical and related workers and Administration and Managerial Workers) shows a rise - smaller for Division 1 relative to Division 2 - in all the segments distinguished. Within the broader Division 0-1, for females, there has been a marginal reduction in the share of healthcare sector and a slight rise in the share of Teachers.

Continuing the trend noted over a longer period, since 1961 [Sundaram 2001], the share of clerical workers in the urban workforce declines further (from 79 per 1000 to 68 per 1000) in the first five years of the 21st century. However, reversing earlier trends, the share of sales workers shows a rise in all the segments, despite a fall in the share of "Merchants and Shopkeepers" in urban India (Table 9).

Except for a marginal decline in their share in the rural workforce, service workers (Division 5) record a marginal rise overall, reflecting a rise in the share of service workers, primarily as domestic workers (with the share of personal services showing a small decline), in the female workforce.

In the broad occupation category of Production Process and related workers, Transport Equipment Operators and Labourers not Elsewhere Classified (Divisions 7, 8 and 9, taken together), we have a rise in the share of Tailors, Dressmakers, etc., in all the population segments. Also, reflecting the rise in the share of construction activities, occupational group 95 (Brick Layers and Other Construction Workers) records a rise in its share in almost all segments - except for females. The decline in the share of this occupation group in female workforce is in line with the decline in the share of construction for urban females by 10 points (per 1000). As for the share of transport equipment operators, where the presence of female workers is negligible, we have a rise in the rural, urban and the total workforce.

Overall, despite the above-noted changes, our conclusion about the occupational structure of the Indian workforce as of 2000 [Sundaram 2001] still holds true: India remains a land of farmers, fishermen, hunters and loggers, with marginal gains in the share of production process workers and of professional

Table 8: Occupational Distribution of Usual (Principal plus Subsidiary) Status Workforce by Gender and Rural-Urban Location: All-India, 1999-2000 to 2004-05  
Per 1000 Distribution of Workforce

Occupation Division Codes	Description	1999-2000					2004-05				
		Rural	Urban	Male	Female	Person	Rural	Urban	Male	Female	Person
0-1	Professional, technical and related workers	20	89	38	33	36	22	92	40	38	40
2	Administrative, executive and managerial workers	14	84	37	15	30	16	92	43	17	35
3	Clerical and related workers	13	88	40	12	31	12	76	35	12	28
4	Sales workers	39	166	87	28	89	48	176	103	33	80
5	Service workers	24	96	39	44	41	23	100	39	48	42
6	Farmers, fishermen, hunters, loggers and related workers	754	92	529	748	596	723	87	489	724	564
7,8,9	Production process and related workers, transport equipment operators and labourers nec	137	388	230	120	198	158	378	251	128	211
	All	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

Table 9: Per 1000 Share of Some Key Identified 2-digit Occupation Codes of UPSS Workforce: All-India 1999-2000 to 2004-05  
Per 1000 Share in Workforce

Occupational Group Code	Description	1999-2000					2004-05				
		Rural	Urban	Male	Female	Person	Rural	Urban	Male	Female	Person
08	Nursing medical and health technicals	1	7	2	5	3	2	7	3	4	3
15	Teachers	12	38	16	24	18	14	43	18	29	21
30-35	Clerical workers	11	79	34	12	27	9	68	30	11	24
40	Merchants and shopkeepers	27	97	55	19	44	32	89	58	20	46
51-54	Domestic services	5	44	9	28	15	8	55	13	35	20
55-58	Personal services	10	13	11	10	11	8	16	11	8	10
61	Cultivators	371	35	283	309	291	384	37	283	326	297
63	Ag labourers	305	31	205	317	239	245	23	163	247	190
71	Miners and quarrymen	3	3	3	2	3	3	3	4	2	3
75	Spinners, weavers, etc	10	28	13	18	15	9	29	13	16	14
77	Food and beverage processors	6	13	8	7	8	6	8	7	6	7
79	Tailors, dress makers, etc	9	34	14	16	15	12	46	17	28	20
95	Brick layers and other construction workers	21	44	33	10	26	31	47	45	5	33
98	Trspt eqpt operators	14	52	33	0	23	17	54	38	Nil	26
99	Labourers nec	24	49	36	15	30	24	30	32	12	25

and technical workers and administrators, executive and managerial workers.

### III Labour Productivity and Real Wages

Table 10 presents our estimates of number of workers by broad industry groups, built up by combining segment-specific estimates of workforce (Table 4) and (segment specific) industry-group shares (Table 7), for all-India for 1999-2000 and 2004-05. Combining these estimates with the NAS - estimates of GDP (at constant 1999-2000 prices) for the two years, we derive constant price estimates of GVA per worker for the two years. Below the estimates for 2004-05, we also present the compound rates of growth of the relevant variables over the period 2000-2005. For easy comparison, column 9 presents comparable rates of growth for GVA per worker over the period 1993-94 to 1999-2000.

Having discussed the rates of growth in sectoral workforce in the previous section, let us focus on the trends in labour productivity across sectors as measured by GVA per worker, and their rates of growth between 2000 and 2005.

In terms of levels, Agriculture and Allied Activities, with over 56 per cent of the workforce, not only continues to have the lowest GVA per worker but also, its position vis-a-vis the productivity of the total workforce has worsened from being 42 per cent of overall GVA per worker in 1999-2000 to just 37 per cent in 2004-05.

Construction, with about 6 per cent of the workforce, has the second lowest GVA per worker (still three times that in the agriculture sector). Over the period 2000-2005, labour productivity grew at less than one-fourth of one per cent per annum adding less than Rs 150 per year.

Table 10: Number of Workers, Gross Value Added and GVA Per Worker at 1999-2000 Prices by Broad Industry Groups: All-India, 1999-2000 - 2004-05

S No	Industry Groups	1999-2000			2004-05			Rate of Growth of GVA/Worker 1994-2000 (9)
		No of Workers (000)	GDP (Rs Crore)	GVA Per Worker (Rs)	No of Workers (000)	GDP (Rs Crore)	GVA Per Worker (Rs)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	Agriculture and allied activities	2,40,896	4,54,061	18,849	2,58,663 (1.43)	4,97,351 (1.84)	19,228 (0.40)	2.65
2	Mining and quarrying	1,883	41,594	2,20,892	2,548 (6.24)	52,594 (4.80)	2,06,413 (-1.35)	10.69
3	Manufacturing	44,260	2,64,113	59,673	55,900 (4.75)	3,60,822 (6.44)	64,548 (1.58)	5.61
4	Electricity, gas and water	1,054	44,732	424,402	1,211 (2.82)	53,097 (3.49)	4,38,456 (0.65)	11.59
5	Construction	17,747	1,05,149	59,249	25,998 (7.94)	1,55,920 (8.20)	59,974 (0.24)	(-0.48)
6	Trade, hotels, restaurants and repair services	41,453	2,54,143	61,309	49,593 (3.65)	3,71,410 (7.88)	74,892 (4.08)	4.16
7	Transportation, storage and communication	14,848	1,31,754	88,735	18,587 (4.59)	2,38,705 (12.62)	1,28,426 (7.67)	2.73
8	Finance, insurance, real estate and business services	4,925	1,40,567	2,85,415	7,780 (9.58)	2,16,131 (8.99)	2,77,810 (-0.54)	6.84
9	Social, community and personal services	33,727	263,994	78,274	37,619 (2.21)	3,43,218 (5.39)	91,235 (3.11)	7.63
10	All	4,00,793	17,92,292	44,719	4,57,899 (2.70)	23,93,671 (5.96)	52,275 (3.17)	5.37

Notes: (1) Figures for GVA (and GVA per worker) in row 8 exclude contribution to GDP from dwellings by way of actual and imputed rentals.  
(2) Figures within brackets indicate the compound rate of growth (per cent per annum) between 1999-2000 and 2004-05 of the variable in each cell.  
(3) Figures in column (9) for rate of growth of GVA per worker between 1993-94 and 1999-2000 are based on GDP values at 1993-94 prices and with the 1993-94 workforce estimates by sectors revised as per NIC 1998 and comparable to the present set of estimates.  
Sources: (1) Estimates of number of workers computed by the author, separately by gender and rural-urban location for each broad industry-group combining level estimate of total workforce (Table 4) and industry-group shares in Table 6.  
(2) Estimates of gross domestic product as 1999-2000 prices from CSO, National Accounts Statistics 2006, July 2006.

In the manufacturing sector, where employment grew at an impressive 4.75 per cent per annum between 2000 and 2005, the growth in GDP averaged 6.44 per cent per annum. The high employment elasticity of manufacturing sector implicit in these two numbers also implied that labour productivity in this sector grew at less than 1.6 per cent per annum - roughly half the rate of growth of labour productivity of the total workforce. So that, the growth of labour productivity in manufacturing relative to that in excess of labour productivity in manufacturing relative to that in the economy as a whole falls from 33 to 23 per cent over this period.

Two sectors, Trade, Hotels and Restaurants, and Transport, Storage and Communication (together employing 14 per cent of the total workforce) - especially the latter - record a strong growth in labour productivity over the period 2000-2005.

Except for the two sectors noted above, and the Construction sector, where a small negative growth between 1994 and 2000 turns into a small positive growth between 2000 and 2005, in each and every other sector and for the economy as a whole, labour productivity growth over the period 2000-2005 has been lower, and significantly so, than the growth in labour productivity realised between 1993-94 and 1999-2000.

While the levels of and trends in labour productivity directly impinge on the returns to labour of the self-employed across sectors, in a market economy, they also shape the level of and the trends in real wage rates of casual labourers.

Given the significant slowdown in the rate of growth of labour productivity between 2000 and 2005 relative to that realised between 1994 and 2000, the significant slowdown in the rate of growth of real wage rates for rural male and rural female casual labourers (Table 11) should not surprise anyone. What is striking however, is the fact that, both for males and females, the real wage rates for adult casual labourers in urban areas have actually declined. Significantly, over this period there has been very little

increase in the number of casual labourers (only 70,000 over a five-year period) in urban India.

### IV Estimates of Poverty in India: 1994-2000

Two recent papers by S Mahendra Dev and Ravi, and Himanshu (both in EPW, February 10, 2007), have analysed recent trends in poverty and inequality and have come to broadly similar conclusions: that the pace of poverty reduction accelerated (sharply according to Himanshu) between 2000 and 2005 relative to the reduction between 1994 and 2000.

In the absence of a size-distribution of persons by expenditure classes on the mixed reference period in the only published report (Report No 508) based on the 61st round Consumer Expenditure Survey, Himanshu's results are based on estimates of household consumer expenditure canvassed on a worksheet in the NSS 55th and 61st employment-unemployment surveys both using a mixed reference period. Mahendra Dev and Ravi too have to approximate the size-distribution on mixed reference period with only the size-distribution of persons on uniform reference period and mean per capita expenditure on MRP, which, in many cases, fall outside the defined expenditure class intervals, as available raw materials.

However, at least at the all-India level, there is a better alternative available in Tables 6R and 6U of Report 508. They present the per 1000 break-up of households by adjusted MPCE Class (based on 365-days' data for clothes, footwear, education, medical (institutional) and durable goods). This can be used directly to estimate, in the first instance, the proportion of households below the poverty line in 2004-05 with parallel estimates from the NSS 55th round Consumer Expenditure Survey - with or without adjustments for so-called "contamination". And, corresponding to this proportion of households below the poverty line on the mixed reference period drawn from the 61st round Consumer Expenditure Survey, we can derive the proportion of persons below the poverty line or the headcount ratio (HCR) from the 61st round Employment-Unemployment Survey.<sup>5</sup>

However, this is possible only at the all-India level. So that, we cannot derive the all-India HCR as a weighted average of state/segment specific HCRs. However, given an all-India poverty line, this procedure can be implemented by using the all-India poverty line on the all-India size-distribution - in this case, of households - from the 61st Consumer Expenditure Survey in the first instance, and, thence, derive estimates of headcount ratios (of persons below poverty line) from the 61st round Employment-Unemployment Survey.

Before presenting our results, which are based on a slightly different set of poverty lines for all-India, let us first put together the results based on the Planning Commission poverty lines for 1999-2000 and 2004-05 (Table 12).

As can be readily seen, the order of decline, between 2000 and 2005, in the proportion of poor households (4.5 percentage points in rural India and 1.5 percentage points in urban India) and that in HCR for persons (respectively, 4.3 and 1.5 percentage points in rural and urban India) are roughly the same.

In contrast, Mahendra Dev reports a decline in HCR between 2000 and 2005 of the order of 5.6 percentage points for rural India and 3.7 points for urban India, while Himanshu reports a whopping 9.1 percentage point reduction for rural India and a 3.9 percentage point reduction for urban India.

It needs to be stressed that our estimates of the proportion of households below the poverty line for 2004-05 are based on the 61st round Consumer Expenditure Survey results for mixed reference period and are, therefore comparable with the results of the 55th round Consumer Expenditure Survey. So that, prima facie, there is a strong presumption that the results of both Himanshu and Mahendra Dev and Ravi about the order of decline in HCRs in both rural and urban India over the period 2000-2005 need to be substantially revised downwards.

To answer the question whether the pace of poverty reduction has accelerated between 2000 and 2005 relative to the period 1994-2000, Table 12 also presents the estimates of HCRs for

Table 11: Rate of Growth of Real Wages of Adult (15.59) Casual Labourers: All India 1983-2004-05  
Rate of Growth (Per cent per annum)

Segment/Period	1983-1993-94	1993-94 to 1999-2000	1999-2000 to 2004-05
Rural males			
Agriculture	2.75	2.78	1.43
Non-agriculture	2.39	3.70	0.73
All activities	2.51	3.59	1.80
Rural females			
Agriculture	3.09	2.94	1.10
Non-agriculture	4.08	4.07	1.57
All activities	4.10	5.04	1.44
Urban males			
Agriculture	1.97	2.73	(-) 1.22
Non-agriculture	1.45	2.93	(-) 0.51
All activities	1.50	3.09	(-) 0.39
Urban females			
Agriculture	4.21	2.96	(-) 2.35
Non-agriculture	2.97	4.18	(-) 0.74
All activities	2.91	3.91	(-) 1.05

Source: For rural areas, estimates for the periods 1983-1993-94 and 1993-2000 are drawn from Sundaram (2001). For urban areas, estimates for the periods 1983-1993-94 and 1993-94 to 1999-2000 are drawn from Sundaram and Tendulkar (2006). For the period 1999-2000 to 2004-05, growth rates of real wages (at 1999-2000 prices) in both rural and urban areas have been computed from published reports (Nos 458 and 515) of NSS Employment-Unemployment Surveys for 1999-2000 and 2004-05.

Table 12: Estimate of Head Ratios of Households and Persons with Planning Commission and Alternative Poverty Lines: All-India: 1993-94 - 2004-05  
Headcount Ratios (Per cent)

	Households			Person		
	1993-94	1999-2000	2004-05	1993-94	1999-2000	2004-05
Panel A: With Planning Commission Poverty Lines						
Rural	28.0	23.3	18.8	31.8	27.0	22.7
Urban	22.7	18.1	16.6	28.1	23.4	21.9
PC Poverty Lines:						
	1993-94:	Rural: 205.84	Urban: 281.33			
	1999-2000:	Rural: 327.56	Urban: 454.11			
	2004-05:	Rural: 356.30	Urban: 538.60			
Panel B: With Alternative Poverty Lines						
Rural	30.3	25.1	21.7	34.2	28.9	25.5
Urban	21.3	17.8	17.4	26.4	23.1	22.8
Alternative Poverty Lines:						
	1993-94:	Rural: 211.30,	Urban: 274.88			
	1999-00:	Rural: 335.46,	Urban: 451.19			
	2004-05:	Rural: 371.29,	Urban: 546.20			

Notes: (1) Alternative poverty lines have been updated by reference to CPIAL for rural India and CPIIW for urban India.  
(2) All estimates for 1993-94 are on mixed reference period and estimated from Unit Record Data. See Sundaram and Tendulkar (2005).

households and persons for 1993-94 with Planning Commission poverty lines for all-India.

In terms of households below the poverty line in rural India, the average annual decline between 1994 and 2000 was 0.75 percentage points per year, i.e., at a compound rate of a little over 3 per cent per annum while the rate of decline between 2000 and 2005 was 0.9 percentage points per year or, on a smaller base, at a little over 4.2 per cent per annum.

In urban India, the rate of reduction in HCR of households was 0.77 points per annum at a compound rate of 3.7 per cent per annum between 1994 and 2000, while between 2000 and 2005, the urban HCR for households declined by just 0.3 points per year or 1.7 per cent per annum.

In terms of persons, with the Planning Commission poverty lines, in rural India, HCR declined by 4.8 percentage points or 0.8 points per year or at 2.7 per cent per annum between 1994 and 2000 and by 0.9 points per year or at 3.4 per cent per annum between 2000 and 2005 indicating a small increase in the pace of poverty decline in the first five years of the 21st century. In urban India, however, in terms of HCR for persons also we have a clear slowdown – from 0.78 points per year between 1994 and 2004 to just 0.3 points per year between 2000 and 2005.

Our estimates of poverty, based on alternative poverty lines (Panel B, Table 12) however indicate that this result of a slightly faster pace of poverty reduction between 2000 and 2005 is reversed with a small reduction in the pace of poverty reduction from 2.8 per cent per annum to 2.5 per cent per annum. Our estimates with alternative poverty lines also reinforce the result of a slower reduction in urban poverty between 2000 and 2005 relative to that between 1994 and 2000.

The above results of a marginal rise (or a marginal reduction depending upon the choice of poverty lines) in the pace of poverty reduction in rural India and a clear slowdown in the pace of poverty reduction in urban India between 2000 and 2005 are consistent with the slowdown in the rate of growth of labour productivity across most sectors and in real wages of casual

labourers in rural India and the absolute decline in real wages of casual labourers in urban India that we discussed in the previous section.

## V The Working Poor and the Quality of Employment

In this the final section of the paper, we track the changes in the number of workers in "below poverty line" or BPL households or the working poor and its complement, those located in households above the poverty line or APL households. As we have argued elsewhere [Sundaram 2007], changes in the number of workers in APL households are a good indicator of the quality of employment – especially of the self-employed.

Consider first our estimates of the working poor and the underlying headcount ratios for workers differentiated by gender, activity-status and rural-urban location (Table 13).

In the country as a whole and taking all activity-status and gender categories together, we find a small increase (1.3 million) in the number of working poor who totalled a little under 105 million at the beginning of 2005. This rise in the number of the working poor occurs despite a fall in the headcount ratio for the total workforce: from 25.7 per cent to 22.8 per cent between 2000 and 2005.

The rise in the total number of working poor is primarily the net result of two offsetting movements: an increase of a little under 6.2 million in the number of self-employed poor more than compensating a decline in the number of casual labourers by a little under 5.5 million. While the rise in the number of self-employed poor occurs despite a 1.6 percentage points decline in HCR, the reduction in the number of casual labourers in BPL households reflects the combined effect of an absolute reduction in the number of casual labourers – from 132.4 million in 2000 to 129.7 million in 2005 – and a reduction in the HCR for such workers from 39.3 per cent to 35.9 per cent over the same period.

By gender, women workers experience a sharper reduction in their HCR relative to their male counterpart. Consequent upon an over 5 percentage point reduction in HCR, there is a sharp reduction in the number of female casual labourers in BPL households – by 3 million – in the first quinquennium of this century. Curiously, despite a marginal reduction in their HCR, there is a rise in the number of female RWS workers in poor households. The biggest contributors to the rise in the number of female workers in BPL households are, however, the self-employed. The number of poor female self-employed workers increased by over 3 million (despite a reduction in HCR for female self-employed workers) between 2000 and 2005.

In urban India, while the RWS workers record a small reduction in HCR (but a very marginal rise in the number of such workers in BPL households) both the self-employed and the casual labourers – especially the latter – record a rise in HCR. At 2.6 percentage points, the rise in HCR for casual labourers in urban India is quite sizeable but is also entirely consistent with the absolute decline in real wages of such workers discussed earlier. Overall, the number of working poor in urban India rose by a little over 4 million between 2000 and 2005.

In rural India, there is a decline in HCR for all the three activity-status categories. Aided by a 2.8 million reduction in the total number of casual labourers in rural India and a decline in their HCR by 4.4 percentage points, the number of rural casual labourers in BPL households declined by close to 6 million between 2000 and 2005. This is only partially offset by the rise in the number of self-employed poor in rural India (by a little over 3 million). So that, despite a significant growth in the total rural

workforce, we have a 2.8 million reduction in the number of working poor in rural India.

Finally, we look at the quality of employment growth. In an earlier paper [Sundaram 2007], we had argued that a useful indicator of employment quality especially for the self-employed where the returns to labour per se are ill-defined and virtually impossible to measure through single visit surveys such as the NSS Employment-Unemployment Surveys – would be whether they are located in "above poverty line" or APL households.

In Table 14, we present our estimates of the average annual increments to the number of workers in APL households for three time periods: 1983-94; 1994-2000; and 2000-2005. They are presented separately for the rural and the urban areas and for the country as a whole. In each case, the three activity-statuses – namely, self-employment, regular wage/salary work and casual labour – are distinguished.

In comparison with the 1980s (the period between the 1983 and 1993-94 NSS Employment-Unemployment Surveys), we find that, in rural India, while the annual increments to the self-employment workers in APL households records a sharp rise of nearly 6.8 million between 2000 and 2005 after a 1.5 million reduction between 1994 and 2000, the average annual increments to casual labourers falls in APL households by close to 2 million between 2000 and 2005 after a small rise (0.7 million) between 1994 and 2000. The annual increments to RWS workers in APL households records a steady rise over the three periods.

Taking all three activity-status categories together, the average annual increments to the rural workers in APL households has risen by a little over 80 per cent in 2000-2005 period relative to that

Table 13: The Working Poor in India by Gender, Activity-Status and Rural-Urban Location: All-India, 1999-2000 to 2004-05  
Number of UPSS Workers in BPL Households

Population Segment	1999-2000				2004-05			
	SE	RWS	CL	Total	SE	RWS	CL	Total
Rural (Males + Females)	35,151 (20.8)	2,615 (12.4)	44,528 (38.7)	82,294 (26.9)	38,281 (18.6)	2,611 (10.8)	38,590 (34.3)	79,482 (23.2)
Urban (Males + Females)	9,243 (23.0)	4,103 (10.8)	7,522 (43.6)	20,868 (21.9)	12,271 (23.5)	4,740 (10.4)	7,994 (46.2)	25,005 (21.7)
Males (Rural + Urban)	28,449 (20.1)	5,432 (11.0)	32,560 (37.7)	66,441 (24.0)	31,402 (18.7)	5,451 (9.7)	30,090 (35.3)	66,943 (21.6)
Females (Rural + Urban)	15,945 (23.5)	1,286 (13.6)	19,490 (42.2)	36,721 (29.7)	19,150 (21.1)	1,900 (14.2)	16,494 (37.0)	37,544 (25.3)
Person (Rural + Urban)	44,394 (21.2)	6,718 (11.4)	52,050 (39.3)	103,162 (25.7)	50,552 (19.6)	7,351 (10.5)	48,584 (35.9)	104,487 (22.8)

Notes: Figures within brackets refer the proportion of workers in that population segment and activity-status, who are located in below poverty line (BPL) households. HCRs are based on the alternative poverty line indicated in Table 11.

Table 14: Average Annual Increments to Workers in APL-Households by Activity-Status and Rural-Urban Location: All-India, 1983-2005  
Average Annual Increments to Workers in All-Households

	Rural			Urban			All Areas		
	1983-94	1994-2000	2000-05	1983-94	1994-2000	2000-05	1983-1994	1994-2000	2000-05
SE	2597	1149	6772	572	923	1822	3269	2072	8594
RWS	283	435	651	629	1038	1363	912	1473	2014
CL	1910	2613	629	112	385	(-) 80	2022	2998	543
All	4890	4496	8052	1313	2346	3105	6203	6842	11,152

between 1994 and 2000 and by close to two-thirds relative to the average annual increments in such workers between 1983 and 1994.

In urban India, the average annual increments to workers in APL households has increased over the successive periods, with the 2000-2005 period recording a 32 per cent jump relative to that realised between 1994 and 2000. Relative to the 1980s, the annual average increments to "good quality" employment has more than doubled in the first five years of this century. This has been made possible by a near-doubling of the annual average increments to the number of self-employed located in APL households in the period 2000-2005 relative to the 1994-2000 period. Not surprisingly, given the rise in HCR among urban casual labourers between 2000 and 2005 noted earlier, there is an absolute decline in the number of urban casual labourers located in APL households.

In the country as a whole, a little over 11.1 million workers were added every year to the above poverty line households between 2000 and 2005 which very nearly equals the average annual increments to the total workforce over this period (with BPL workers growing by 0.26 million per annum). Mirroring the situation in rural India, there has been a big jump (over 30 per cent) in the average annual increments to the self-employed workers in APL households.

It is also significant that the number of RWS workers in APL households has increased by a little over 2 million per annum between 2000 and 2005 – more than double the average annual growth in such workers in the 1980s. Even between 1994 and 2000, the average annual increments to RWS workers in APL households was over 50 per cent higher than that between 1983 and 1994. This, taken with the larger increments to the total number of RWS workers should dispel any lingering notion of the period since 1993-94 being a period of "jobless growth".

As a group, casual labourers, have not done as well – especially in the urban areas – as the other two activity-status categories. The sharp slowdown in the average annual increments to casual labourers in APL households between 2000 and 2005, relative to both the 1994-2000 and the 1983-1994 periods, well reflects the slowdown in the growth of real wages of adult casual labourers in rural India and the absolute decline in real wages of these workers in urban India between 2000 and 2005.

To summarise:

The first quinquennium of the 21st century saw a sharp acceleration in workforce growth – especially of females – with a little over 57 million added to the total workforce. Of this incremental workforce 49 million were self-employed and 10.7 million were RWS – workers – dispelling any notion of "jobless growth". The number of casual labourers, however declined by a little over 2.7 million.

In terms of industrial distribution, a spectacular 4.8 per cent per annum growth in manufacturing employment and a continued decline in the share of agriculture – to a little over 56 per cent – is noteworthy. Despite some occupational diversification, India still remains a land of farmers, fishermen, hunters and loggers, with marginal gains in the share of production process workers and of professional and technical workers, and administrators, executive and managerial workers.

The obverse side of the acceleration in workforce growth is the slowdown in the rate of growth of labour productivity across most sectors and in the economy as a whole. Not surprisingly, we also have a slowdown in the rate of growth of real wages of casual labourers in rural India and an actual decline in real wages in urban India.

Our analysis of poverty shows that, on a comparable basis, reduction in poverty is substantially smaller than indicated by Himanshu and Mahendra Dev and Ravi. Relative to the pace of poverty reduction between 1994 and 2000, we have, at best, a marginal acceleration (or, deceleration, depending on the choice of the poverty lines) in rural India, and a clear slowdown in urban India in the pace of poverty reduction between 2000 and 2005.

Finally, reflecting largely the net result of a decline in the number of casual labourers in BPL households (5.5 million) and a rise in the number of self-employed from (6.2 million), the number of working poor rose by a little over 1 million between 2000 and 2005 with their number totalling a shade under 104.5 million as on January 1, 2005. **EPW**

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### Notes

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- 1 These projections were carried out (and kindly made available to me) by PN Mari Bhat. Needless to say, the responsibility for the interpolation-based estimates of age-distributions for January 1, 2005 rests solely with the author.
- 2 If we had gone with projections-based age-distributions, the estimated workforce would be higher by 3.5 million, which, at 0.76 per cent of the estimate based on the survey-based age-distribution, is quite small.
- 3 The WPR in the 60+ age group for 1999-2000 is perhaps too low and the 2004-05 figure more in line with the trends since 1983.
- 4 As noted in an earlier footnote the differences are quite negligible.
- 5 A similar methodology was used by us earlier to analyse the poor in the Indian labour force [Sundaram and Tendulkar 2003].

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## Illusions of Change

The National Rural Employment Guarantee Act as implemented by the Orissa government has resulted in grandiose claims of expenditure but very little to show in reality.

VIDHYA DAS, PRAMOD PRADHAN

The path winds around the village, along a water channel dug a long time ago, irrigating the backyard vegetable and maize fields, before it dips down to fields of red yellow mud with large clods of earth turned up by the plough, preparatory to monsoon cultivation. We tramp over the fields, on and on. Every now and then we ask Hody Disari, "is this it?". She replies, no, this belongs to the shundies, this belongs to the people from Gunar village, and then, finally, we are standing at the foot of a small hillock. It has been ploughed, and banded. It is to be settled for Deena Jahni in an effort to help the landless have land. Hody, is your land also here we ask. No, she says, it is a bit further away. And so we move on. And on and on, more fields, larger hill-locks, and then, we are on another path, the scorching sun frizzles the hair on our head, and then she points out, that is my land. We stop short. It has defeated us. The land is a little slope across more fields, and a

ravine that probably fills with water during the rains, another ten minutes tramp, but we do not try to reach it. The sun, and the heat and the distance have quite curtailed our ambitions. But Hody, and her son have been working on the land. They have put stone bunds across it, and brought it under the plough. They will plant trees on the border once the rains start, and sow 'ragi' (millet) for their annual crop. It is a labour of love and hope.

Even as we stare in mute defeat, there is hope and excitement amongst the people, in anticipation of the promised land, something I did not expect. Koraput is difficult terrain. One can just go thus far on even turf, then the land dips, and rises, ravines open up, and hills rear ahead. Years of effort to eke out a living with little options have exposed rock and stony sub-soil, and one stumbles on scrub and pebbles, and thorny bushes as one tries to reach any destination. Moving is difficult, cultivation a challenge, to put it very mildly. New land settlements are possible only in the most hostile of terrains as much of

the cultivable land has already been taken up.

Hody is a widow in Upar Gadala village, Koraput district. The village is part of our efforts for "entitlements" so that landless people can have some land, and move on to settled cultivation, and allow regeneration of tree cover on the hill slopes. In Upar Gadala, 18 families are thus to be benefited. So far a fair amount of cooperation from the district administration has helped to identify land, make the necessary changes in land types, and identify the beneficiaries. However, they are yet to receive the title deeds or 'pattas'. But as the process has been started, we hope things will move, with perhaps some more pushing. They have started working on this dry difficult upland, in anticipation of the rains, in anticipation of the crops, and the harvest, in anticipation of some security, in a life lived on the edge. They know that this is not going to give them much returns. In terms of actual income, and increased food supply, life is going to improve marginally, but, land is a security beyond all that for these people who have been so disempowered, so exploited all their lives.

And this is where an Act like the National Rural Employment Guarantee Act (NREGA) had really raised our hopes, against hopes we must say. There were really good and wonderful people leading the movement that led to this Act, monitoring its implementation, setting examples for others to follow. Surely much can come out of such a beginning. With grim determination, we start following up things as the NREGA year starts with fanfare and announcements. "There is (sic) substantial funds, we can even provide work to two people from a family", announces the secretary at a meeting. This is indeed positive thinking we feel, and we start talking about it, spreading the message, reading out and explaining the Act, and the notices in the villages. The cards are slow in coming. The Luising sarpanch in Phiringia block, Phulbani district is excited. He tells us about how he has been running around to get people work, and get them job cards. The Block Development Officer (BDO) tells us "start the work, we shall give the job cards later". "That's not right, the card is central to the guarantee" we tell him. He

assures us that he will look into it. A couple of months later, we find in Taladangadang that the job cards have been distributed, but the contractor has taken all the job cards of the wage earners. We have received the minimum wages they assure us, but without the muster role, without the job card, there is no way we can find out. If payment has been made as per rules, why have the job cards been taken away?

But, that was several months ago, and now things could have changed. Indeed, several positive and constructive steps have been taken by the Orissa government for the better in its implementation of the Employment Guarantee Act. In the last financial year, the material to wages ratio was shockingly 54 to 46, with some of the districts showing ratios such as 57 to 43, etc. In the last three months of the current year, however, things have improved, and the material to wage ratio has come down to 26 per cent to 74 per cent, with the balance being made up by "contingencies". Circulars of the public relations (PR) department detail how the works should be taken up, and payments should be made, and also strictly lay down that contractors

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are not to be engaged in the execution of the work, emphasising that the works are to be taken up departmentally by the gram panchayats/panchayat samities or line departments according to prescribed guidelines. These instructions also provide for payment of wages through the banks and post offices provided the wage earners are willing.

In another progressive move, in November 2006, the chief minister issued a letter doubling the piecework rates for earth work. Thus, the rates for work on ordinary soil went up from Rs 50 to Rs 100 for 100 cubic feet of earth dug up, from Rs 67 to Rs 135 for 100 cubic ft of hard soil, and from Rs 105 to Rs 210 for every 100 cubic ft of stony soil. The government also increased the daily wage from Rs 55 per day to Rs 70 per day from May 1, 2007 onwards. The state has also been the first in adapting Information Technology to monitor the NREGA in all its 3672 gram panchayats, being way ahead of Andhra Pradesh, Karnataka, the supposedly IT pioneers in India, as also other states implementing NREGA. Thus according to several press reports, Orissa is the first state to place the name, age, job card numbers, and other details of each job card holder on the net, and enable access to online records of muster rolls, works undertaken, with costs and bill numbers, etc.

The state has also been projected as the first state in implementation of the NREGS, showing a total expenditure of more than Rs 700 crore, a fund utilisation of 82.39 per cent, surpassing all the major states in percentage of expenditure against available funds. Out of the 19 districts, taken up in the 2006-07 financial year, Mayurbhanj has come out on top with Koraput and Nuapada coming second and third respectively. The state claims to have issued job cards to 23.30 lakh households, and provided employment to 11.19 lakh households. On an average, reports say, each household has been provided with 31 days of employment, while no household has completed 100 days of employment.

#### Delusion and Reality

Impressive achievements indeed. However, there is shocking invisibility of these achievements on the ground. Even as the reports of Rs 700 crore plus utilisation started coming out, many of us were puzzled to see the near non-existence,

and non-impact of these achievements in the rural areas. Just a few months earlier, the Association for India's Development (Aid) had reported several discrepancies in the muster rolls, and the attendance registers in two villages in Gajapati Block. In addition to this, the job cards were also reported as being kept in the panchayat, and were not with the wage earners. But, the most surprising part of the report was the response of the district collector. According to the Aid (Orissa Rural Employment Guarantee Scheme Watch) report:

"(The collector) came up with some good suggestions such as the project completion actuals should be written on backside of boards that have been put. He also suggested that we conduct a joint audit to understand the corruption issues. He was wondering if piece rate was being employed for payments made. We pointed out that there is a complication if people are paid by piece rate rather than day-wage rate in terms of transparency, since on job card and muster rolls, days worked are only being entered and payments made. If piece rate is being converted to effective day rate then the days entered won't correspond to actual days the worker worked making the system murky. In any case this can not explain how people worked zero days were paid nothing and still days have been entered on job card. He mentioned that Orissa government policy will be to more and more pay by piece rate method."

This response is shocking because the district collector is responsible for ensuring 100 days work to the people. In fact at the launch of the NREGA in the state, the chief minister had met with the district collectors of the 19 selected districts to emphasise precisely this point, and underlined that a district collector would be punishable for the tardy implementation of the scheme. Thus, when a district collector wonders how people are being paid and makes inane suggestions like writing completion reports on the backside of boards, instead of at least expressing a strong denial or disbelief at the findings of Aid, one wonders, what is really happening. But, the experience of Aid is not unique. The non-delivery, and the continued and increased exploitation of the rural poor under the NREGA is obvious and apparent to even the most indifferent. There are major lapses in almost every work taken up.

In two letters to the chief minister, we had pointed out the major discrepancies in the NREGA work in several villages in

Koraput, Rayagada, and Nawrangpur districts. In villages like Podabandh and Pudugusil in Rayagada district, people had worked and not received wages and asked to sign on blank muster rolls before they could receive payment. In Kanheimunda in Nawrangpur, there were several discrepancies in the records in the job cards, and in the payment received. In a village like Tikarapada, in Koraput district, people had received more money than the number of days worked, but the much talked about e-records indicated that the muster roles showed 28 days as against the 12 days of payment made. In actual fact, people had worked only five days. Since these letters, there has been little follow-up in the villages. One must apply to the BDO, then to the district collector, and then only to the state level authorities and the CM's office. But, this is precisely where people face a problem. Their applications are stone-walled, by the simple absence of any officials to receive these applications. If there are officials present, they refuse to give receipts, which makes it difficult for the applicants to follow up. In any case the tribal villages are at least an hour's walk away in majority of the cases from the block head office. There are little options, with the poor public transport, which can cover only a partial distance because of the paucity of roads.

In Kaliamb and Hatimunda villages, Dumbaguda Panchayat, in Koraput district, people worked for 15 days. Payments were made to some, and not to others, the job cards of course in all cases were left blank. A second phase of work was begun, the tribal members in the villages refused to work, as most of them did not receive payment in the first phase. We cautioned them that if they did not attend the work provided for their village, they would lose out on their 100 days employment entitlement. Their bleak expressions underline the lose-lose situation they are in. To reach Dasmantpur block headquarters to make any appeals or complaints, they will have to walk a little more than three hours one way.

That these are not isolated events, confined to a few pockets overlooked because of their remoteness has been underlined by a recent study by Parshuram Ray of Centre for Environment and Food Security, Delhi. This study has uncovered that irregularities are the norm. Some of the stark findings of the study are as follows: Number of Villages with complete and correct job card entries: zero out of hundred; Number of villages where 100 days

employment has been provided: zero out of hundred; Number of villages where workers have been able to cross-check their muster rolls: zero out of hundred; Number of villages where no employment, and no job cards have been given: 11 out of hundred; Number of villages where no employment has been given: 37 out of hundred.

#### Empowering the Little People?

But more than this non-delivery is the connivance in corruption that appears to prevail from top to bottom. There is a complete disregard for any form of accountability, and people's complaints and appeals are ignored again and again. In Nuapada district, the CEFS report brings out the stark contradictions. Here one confronts padlocked houses as one enters Mahulkot village. Several families have migrated for work to Raipur, AP, etc. Forty children from different villages study in a residential care centre for the children of migrant parents run by a local NGO. The children look emaciated, and neglected, and say that their parents have been away for more than six months. They are reluctant to talk. Payments have been made in the month of May for a road work in the month of March. There are no entries in any of the job cards. A note, signed by the APD on January 28, 2007 in one of the job cards says "social audit has taken place, entries in the job cards do not match the muster rolls". This job card also does not have any entries. In Khamtarai village,

people have worked for eight days to dig a pond, in the month of April. No payment has been made, nor are there any entries in the job card. As the CEFS team tries to probe further, Jati Majhi erupts in anger, "What has the government done for us? The contractor is far better, even if he makes us work too much, and pays little, he pays regularly once a week, atleast we are able to buy rice to eat. The government makes us run to them several times, and then does not even bother to pay."

Ray outlined the problems they had faced in the Nandapur block, when they tried to get information. The BDO refused to give information and shouted at them. When his team tried to get the necessary permission from the PR department, they were advised to first get necessary orders, and then visit the block offices to check the NREGA records. This is the treatment meted out to those who can talk on equal terms, and are well informed about the rules and Acts. If a village youth tries to demand wages, or tries to appeal for proper implementation, one wonders, what she or he would have to face. According to the OREGS guidelines, the BDO is actually the programme officer (OREGS) for grievance redressal at the block level. His main functions are "scrutinising village plans, matching employment opportunities with the demand for work at the block level, and supervising the implementing agencies, safeguarding the entitlements of the OREGS workers, ensuring that social audits are conducted by the palli sabha/gram sabha,

and responding to complaints. He is chiefly responsible to ensure that any one who applies for work, gets employment within 15 days. He will also assist the panchayat samiti in its functions, and will be answerable to the district programme coordinator."

Further, the guidelines also specify that a photocopy of the muster roll will be kept/sent for public inspection in every gram panchayat, and in the office of the programme officer. The OREGS guideline further emphasises that the original muster roll will form part of the expenditure record of the executive agency, and that key documents related to the NREGA should be proactively disclosed to the public, without waiting for anyone to apply for them, as suggested by the state employment guarantee council. Nobody is perhaps concerned that each and every one of these provisions were being violated in Nandapur block, as also in most other blocks. What are the consequences for wilfully violating the NREGA? What did the chief minister mean, when he said in the first meeting for the NREGA, that district collectors are punishable for violating the Act? According to Section VI, of the National Act, whoever contravenes the provisions of this Act, shall on conviction be liable to a fine which may extend to one thousand rupees. This provision hardly seems to be much of a deterrent to the likes of the Nandapur BDO. Or perhaps, that was the source of his fear, and anger.

Can we ever hope to help people like Hody Disari, and Deena Jahni through the

NREGA? It is perhaps easier to throw up one's hands, and say, "Nothing in this country will ever work. Laws are just pieces of paper." What is the hope for the tribal communities? As we said, the NREGA is backed by wise and experienced people. If they fail to look at the little people, if they simply assume that the present provisions, backed by the occasional 'public audit', will suffice, we must begin to doubt their wisdom. For too long have the people, the dalits, the tribals in this country suffered. We do not see how things can change for them. We do not see how we can fulfil the expectations and hope that Hody and her fellow tribesmen have placed in us. We had started out with much hope and even some excitement, looking forward to constructive works enabling people to

develop their lands, bring waste land and commons under productive use, and an overall improvement in the livelihoods of people who have been for years on the margins. All this would need less to say take time, but, with the right provisions and processes in place, at least one could make a beginning. Or so we had thought.

The government has taken, as pointed out earlier, several progressive steps. But, it should not sit back and count its laurels. The government of Orissa must rise to the occasion, and take immediate steps to stop this most hypocritical and cruel joke on its poorest and most vulnerable communities. **EPW**

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# Mirage in Vidarbha

The Prime Minister's package for farmers in the region has done little to mitigate their distress, and suicides continue to be a way out. BY DIONNE BUNSHA IN VIDARBHA

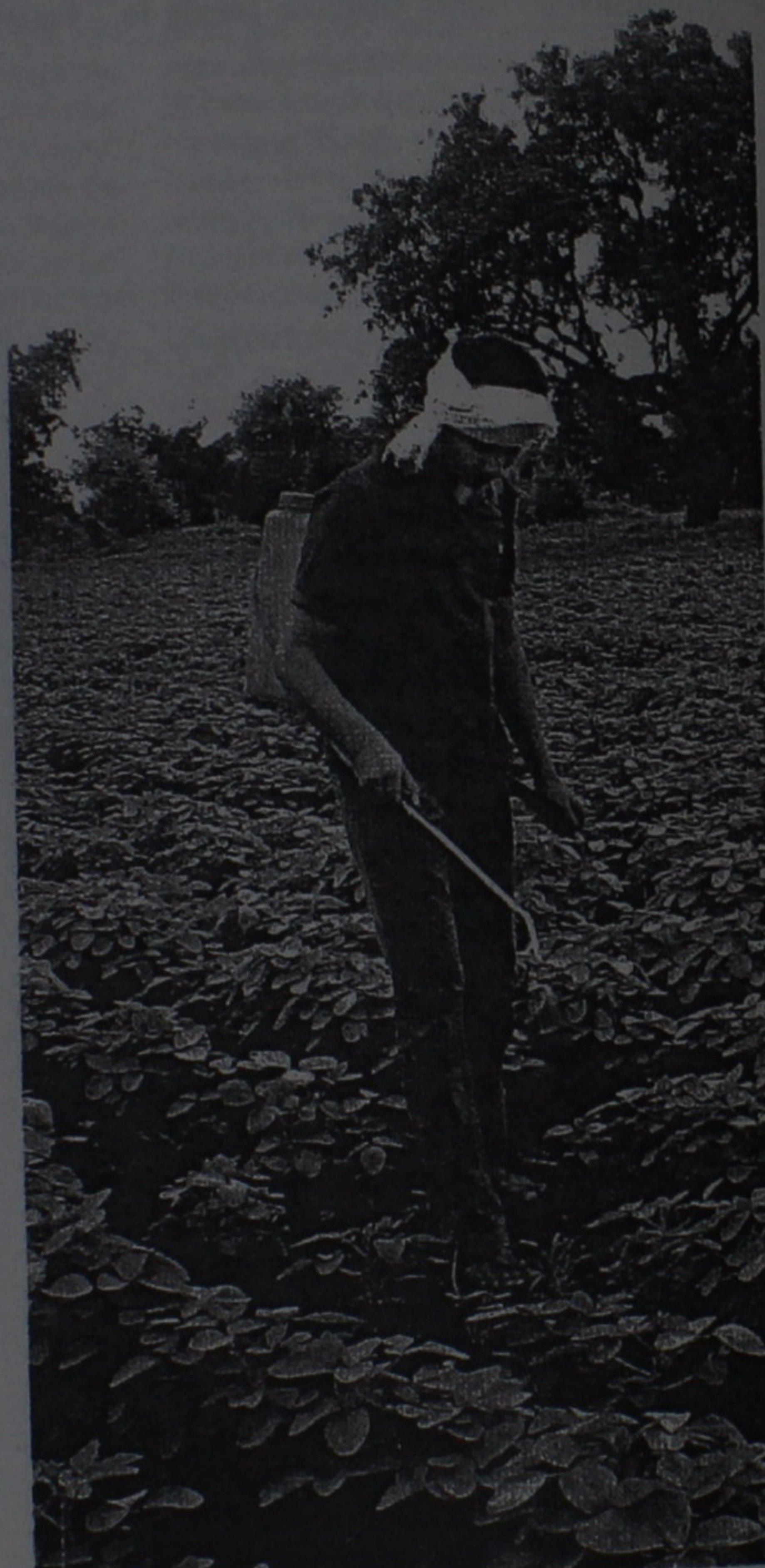
The highlight of the Rs.3,750-crore "package" was a directive to banks to issue crop loans even to farmers who defaulted on their repayments. Many farmers are now burdened with a double debt.

FARMERS in India may believe in a hundred gods, but they have no faith in politicians. So when Prime Minister Manmohan Singh visited Vidarbha last year and announced a "package" to stem the suicides by farmers in this cotton-growing region of Maharashtra, no one was convinced. Not even the officials who should be responsible for implementing the package.

"Why is there a need for a package only for this area? Isn't there an agrarian crisis all over the country? The suicides are a symptom of a much deeper agrarian distress," said Sudhir Goel, Divisional Commissioner, Amravati, who is in charge of executing the Prime Minister's package. "The main problems are the monsoon and the market. Rain-fed agriculture is very risky. After spending so much on cash crops, the farmers find that the returns are lower than the cost. There has to be crop insurance, higher support prices, institutional changes and a shift away from high-cost intensive farming. What's the point in putting money into a non-sustainable system of agriculture?" None of these issues has even been mentioned by the "reformer" Prime Minister.

The officialdom claims that the number of suicides fell after the package was introduced. They have to prove that Manmohan's magic wand has done the trick.

But the real sleight-of-hand is in the bureaucratic jugglery. The number of reported suicides has increased from 1,071 in 2001 to 1,520 in 2006 (Table 1). But the State government says that the number of "eligible" cases for compensation, the "authentic" farm suicides, has fallen. To prove their competence,



THE ONLY COTTON farmer of Shingnapur village in Amravati district. Others have shifted to soyabean.

they are denying poor widows compensation.

Statistics (Table 2) show that the percentage of suicide cases "ineligible" for compensation has increased to 85 per cent in 2007 from 60 per cent in 2006. After the package, the ineligible suicides are far more. According to the authorities, these ineligible cases are those of people who killed themselves for reasons other than the farm crisis—alcoholism, daughter's wedding expenses, family tensions or excessive health expenses.

But Goel admits: "Of course, all these problems are linked to the agrarian distress. But the rules say that a suicide victim's family is eligible for compensation only if the deceased was indebted, harassed by the bank or moneylender, or suffered crop loss. So, many don't get it." Even though bureaucrats have witnessed the suicide phenomenon for years, their thick-skinned response to this disturbing trend has not changed much.

Every day, at least three suicides are reported in the Vidarbha region. But officials claim that people are killing themselves in order to enable their families to avail themselves of the Rs.1 lakh compensation. Or that these farmers are alcoholics any way. But there is no understanding of the distress that drives them to alcoholism or to have fights with their family.

Like most government projects, the Rs.3,750-crore package offered by the Prime Minister is one more instance of money pumped into schemes gone awry.

The highlight of the package was a

Suicides by farmers in six districts (up to December 31, 2006)

Year	Police record of suicides (Total)	Suicides			Investigated cases	Eligible for compensation
		Farmers	Family members	Total		
2001	2,719	378	893	1,071	29	29
2002	2,638	393	674	1,067	104	72
2003	2,626	369	631	1,000	144	89
2004	2,740	494	666	1,160	441	250
2005	2,425	469	559	1,027	431	274
2006	2,832	836	684	1,520	1,448	577

Source: Government of Maharashtra

## REHABILITATION REPORT CARD

Progress made under the Prime Minister's Special Rehabilitation Package up to July 15, 2007

**3,750** crore rupees over three years. 10.07 lakh farmers have been given **farm loans**, up from 4.48 lakh.

**2,013** crore rupees has been the **credit flow**, up from Rs.746 cr.

**825** crore rupees waived as **interest on loans** worth Rs.1,407 crore for 9.33 lakh farmers.

**17,171** hectares additional **irrigation potential** has been created. This is projected to go up to 54,279 ha by June end.

A total of 14 projects in three years.

**1.24** lakh seeds distributed, as part of the **seed replacement programme**, to 3.63 lakh farmers for crop diversification.

**3,070** check dams under construction; 2,591 **check dams** completed.

**4,121** families given two milch animals to promote **dairy activity**. 5,045 families given assistance under the calf rearing programme.

Every day, at least three suicides are reported in the Vidarbha region.

directive to banks to issue crop loans even to farmers who defaulted on their repayments. As a result, the number of farmers taking loans went up from 4.48 lakhs to 10 lakhs, according to government statistics. (There are 17.64 lakhs farmers in the six districts covered by the package). However, this kharif (monsoon) season, the number has come back down to 4 lakhs. Most farmers could not repay the loans taken and were denied fresh loans. Many are burdened with a double debt to pay off.

"Those who can bribe officials get loans and aid. But those who really need help do not get it," said Devdas Tirmare, a farmer from Shingnapur village in Amravati district. "I didn't get any loan. They made us run around with a lot of paperwork. After a while, I gave up and took Rs.20,000 from the moneylender at an interest rate of 60 per cent per annum."

Even the lucky few who got bank loans had to borrow from moneylenders since the Rs.4,000 per acre crop loan (for cotton) is not enough to meet all farming costs.

Vidarbha has only 10 per cent of its agricultural land under irrigation. With rain-fed agriculture, the uncertainty is immense and the crop yield is less. Hence farmers are always on tenterhooks. Moreover, they are in a race to buy expensive, better-yielding seeds. As a result, one finds only genetically modified Bt cotton seeds in the shops.

"People are unnecessarily opting for high-cost and high-risk products. The input dealers (who are also moneylenders) force them to buy expensive

### Monthwise and yearwise distribution of suicides in package districts in 2006 & 2007

Months	Compensation				Under inquiry	Total	
	Eligible		Not eligible			2006	2007
	2006	2007	2006	2007			
January	58	9	60	50	0	118	59
February	49	19	61	81	0	110	190
March	61	15	50	81	0	111	106
April	59	12	30	77	3	89	92
May	55	8	60	72	8	115	102
June	60	1	58	33	39	108	79
July	48	--	61	1	13	109	15
August	46	--	74	--	--	120	--
September	44	--	112	--	--	156	--
October	40	--	120	--	--	160	--
November	34	--	91	--	--	125	--
December	33	--	94	--	--	127	--
<b>Total</b>	<b>577</b>	<b>36</b>	<b>871</b>	<b>444</b>	<b>87</b>	<b>1,448</b>	<b>593</b>

Source: Government of Maharashtra

products and their debt increases," says Kishor Tiwari, leader of the Vidarbha Jan Andolan. The demand for the latest Bt cotton 2 seeds was such that they were selling in the black market. But few would have read the warning on the seed box because it is in English: "Bt cotton should not be cultivated in light and shallow soil without assured irrigation." Very few cotton farmers here own irrigated land.

The government claims that the projects under the package have irrigated 17,171 hectares - less than 0.5 per cent of the total agricultural land in the region. But none of the farmers or activists that this correspondent met had even heard of these irrigation projects. Over 5,000 check-dams are expected to be constructed soon. That will help ease the burden of a few farmers whose fields are close to these bunds. But what about the hundreds of others?

"Two check-dams and two mud bunds have been constructed in our village, but they are in the jungle, where there aren't many farms. Only one farmer may have benefited, and

#### ONLINE

Vasantrao Naik Sheti Swavlamban Mission  
<http://www.vnss-mission.gov.in/>

### Cost of cultivation vs Minimum Support Price (2005-06)

Crop	MSP		
	Cost/qtl (in Rs.)	(in Rs.)	(in per cent)
Paddy	928	570	61
Jowar	851	525	62
Tur	2,031	1,400	69
Cotton	2,585	1,760	68
Soyabean	1,473	1,010	69
Wheat	1,204	640	53
Gram	1,961	1,425	73

QTI-Quintal MSP-Minimum Support Price  
 MSP sometimes does not cover even the cost of inputs

Source: Government of Maharashtra

that too only for two months in the monsoon," said Maruti Ade, sarpanch of Karegaon in Yavatmal. "Most people aren't aware that these government schemes exist. You have to apply for them. But no government official has ever come here, so how will people know?" he asks.

As part of the package, the State government says that it has given 4,121 families a pair of milch cows each to provide them an additional income. But there is a catch - the family has to pay half the price of the cows and buy them only from the government-designated agent and that too, only the breed that the government decides on.

"I spent Rs.8,500 to obtain a buffalo through the scheme, but it doesn't give any milk. Instead, I'm spending

Rs.250 every month to feed it. I plan to sell it off soon, but no one is willing to buy it either," said Nanda Bhandare from Bhadumadi village in Yavatmal, whose husband killed himself last year.

"It is simple. All that the Prime Minister needs to do is make sure that we get a good price for our produce and write off our existing loans. It will also eliminate all the corruption associated with this government scheme," says Suryopal Chavan, an All India Kisan Sabha activist from Shingnapur, a village that had set up a kidney sale centre as a mark of protest (*Frontline*, March 24, 2006).

Now, the village has only one farmer cultivating cotton. The rest have shifted to soyabean cultivation because the expenses are less. "If soyabean production increases, traders will lower prices for the crop, and farmers will suffer losses. Either way we lose. That's why the government must assure a fair and stable price," said Chavan.

The State government admits that the assured support price for most crops does not even cover the cost of inputs (Table 3). For cotton, the cost per quintal is Rs.2,585, while the support price is Rs.1,760.

"By denying them a fair price, we are making farmers bonded labourers in their own fields. They can't even recover the cost of their family labour. Is it any wonder that they are in debt? They are gambling with borrowed money without any coping mechanism," said Goel.

"When property or share prices increase, the state rejoices that the economy is booming. But if food prices go up, why do they shout inflation?" asks Vijay Jawandhia, Shetkari Sanghatana leader. While the prices of all other goods have skyrocketed, the price of cotton is the same as it was 10 years ago.

"I have just one question for the PM," says Jawandhia. "You give subsidies to increase the export price of sugar. You give subsidies to reduce the import price of wheat... Is it a sin to grow foodgrains in this country?" □

## Climate science and the Indian scientist



**W**ill Indian scientists measure up to the challenge of climate change? I ask this question because of the nature of the science as well as the nature of our scientists.

Climate change science is young, being tutored and evolving. We know much more today about what the future will hold if we do not reduce emissions drastically. Yet our knowledge is still probabilistic. It concerns changes we can model for climate sensitivity, using the best evidence we have today. But all models are victims of their assumptions. And all predictions are victims of their times. The challenge is that even if we know little about how the accumulation of greenhouse gases will impact us, we cannot afford to wait until we have all the answers. We can't afford to be uncertain in our actions, even if we are uncertain about our science.

Take glaciers. We know that glaciers melt. It is because of this melt that we get water. But are these glaciers melting at an unnatural pace today? Will such melting lead to more water in our rivers to begin with, leading to floods, and then less, leading to water scarcity? The answers, after much scientific skulduggery, are just beginning to crystallise.

Western scientists agree that something is afoot. They know because they can physically map the glaciers to see the pace of the recession. They can also measure the mass—average ice thickness—to check for reduction. In addition, complex statistical models—which combine evidence from several observational datasets—are confirming the probability of this rapid recession.

These models had initially not predicted that melt water would seep into the crevices of the glaciers, lubricate them and so accelerate melting. When this was physically noticed, it was factored into the models for greater reliability. But there are many unanswered questions. For instance, will there be a collapse of the Antarctic ice sheet? There are huge uncertainties regarding critical thresholds of collapse. But in all this, uncertain science cannot afford to breed complacency. It has to reveal what it knows, with what measure of reliability and also discuss what it does not know, as yet, because of its own limitations of data or understanding. It is growing, but after all, it is a young science.

In India, we are just beginning to map impacts on our glaciers because of human-induced climate change. We can draw inferences from the changes that are being observed and predicted in the rest of the world. But we will have to do our own leg work—to understand both what is happening and what the receding glaciers will do to our water security. The question is: can we do this?

I ask this because in many ways climate change science, because of its many variables and very many scenarios, is a game of chess which can only be played by investigative and highly inquisitive minds. The scientist will get clues and the answers will have to be tweaked: from scientific evidence, from plain common sense and from what can be observed in the real world.

It is not in the nature of our science to do this kind of imaginative, investigative research. It is certainly not in the manner of our science to draw inferences when there is uncertainty. In the easiest of times, our scientists find it against their nature to cross over the threshold, from what is already established science to what is emerging science. They prefer to play safe with what they know. In the case of climate science, they prefer to be cautious in their words, very conservative in their assessment and take refuge in the inherent uncertainty of science.

For instance, it will be easy for 'safe' science to say that even if glaciers are

receding at a rapid pace, it is nothing new or surprising. They are simply passing through a phase of recession as a natural cyclic process. It will also be possible to say (and I have heard this said very recently) that even if we know glaciers are melting, there is no evidence to say that this melt will lead to any significant changes in our hydrological systems. Why? Because our ongoing research does not show anything deviant. It is another matter that the data or method used for the research might be insufficient. Or that the scientist may not have investigated the slim leads that nature was disclosing about herself.

Let's accept that there is a problem. The Indian scientific establishment has been for far too long just that, an establishment. It has chosen only to work with established science that is peer-reviewed, empirical and unchallenged. Worse, because of the nature of its institutions—which are closed to outsiders on the one hand but subservient to officialdom on the other—it will not engage in any public discourse.

But climate science demands new approaches. It demands breaking away from what is already known to discover what needs to be known and how. It will require crossing the line so that inferences can be drawn, however tentative. It will require, most of all, active engagement with the 'outside' world of ordinary people. It will need to pay careful heed to everyday events and meticulous observation of scientific processes as they play out in our gardens, in our agricultural fields and in our glaciers.

Finally, if I can say (without offence), Indian science, to respond to climate change, will have to get a little less male and perhaps even a little less old. 'Male' science (if we can allow for some generalisation) is not interested in soft issues like the environment or nature. These are non-issues in a world of nuclear, space or rocket technologies. Why young? Because climate change science (and the world) needs all the impatience and the desperation of the young. ■

—Sumita Narain

## Eco-insensitive

Environment Tribunal Bill

NIDHI JAMWAL Mumbai

THERE'S been a last ditch attempt to protect local management of ecologically sensitive areas from the government axe. Environment groups in Maharashtra have approached the Union ministry of environment and forests (MOEF) asking it to not to disband local authorities and monitoring committees that are at present legally entrusted with the planning and management of these areas.

The immediate threat to ESAs comes from MOEF's draft National Environment Tribunal Bill, due to be taken up at the upcoming parliament session. The bill seeks to dissolve authorities set up under Section 3(3) of the Environment Protection Act, which includes all ESA authorities and also the committee set up for evaluating their proposals.

MOEF has proposed to set up a national level and four regional-level tribunals to implement the recommendations of the 186th Report of the Law Commission. The report discusses setting up of the tribunals and states that the National Environment Appellate Authority and National Environment Tribunal be dissolved. MOEF has gone even a step further by proposing to dissolve 16 such authorities.

The bill talks of handing over powers of the existing authorities/committees to State Level Environment Impact Assessment Authorities, the agency responsible to grant or reject environment clearances under Environment Impact Notification, 2006. This move will severely impact localised management and monitoring of ESAs, say environmentalists. ESAs are notified by MOEF as per the powers granted to it under the section 3 of the Environment (Protection) Act, 1986 and section 5(1) of the Environment (Protection) Rules, 1986. The ESAs that have approached MOEF are Matheran, Dahanu and Mahabaleshwar-Panchgani. For the past few years, MOEF has been under pressure to open up ESAs for 'development' purposes (see 'Black attack', *Down To Earth*, December 15, 2004).



## Wages of protection

Wildlife habitat conservation in US town compensated

COMPENSATING people for conservation is happening at a regional scale. Local residents of Jamestown in Rhode Island, US, are paying farmers to delay haying their fields until after birds have completed nesting.

Experts claim it as a unique test to establish investment markets for ecological services. The compensation is meant to protect habitat for bobolinks, a grassland-nesting bird whose population is declining in New England.

### UPDATE

Russia may lift the ban on exports of rice, groundnut and sesame seeds from India soon. The ban was imposed in April after Russia's monitoring agencies claimed to have found a pesticide, dimethotate, which is not allowed under Russian laws (see 'Russia outlaws Indian rice' *Down To Earth*, June 30, 2007). India and Russia signed a protocol on export of rice earlier this week in Moscow wherein India assured that future consignments will be free of contamination. The Russian government has promised India that the lifting of the ban on the three products will be announced shortly.

### Early hay

Hay is grown for livestock and can be harvested twice a year and the first one (during May-June) usually interferes with nesting of bobolinks. Bobolinks nest in undisturbed hayfields during March-April. "Changes in climate have caused farmers to harvest hay earlier over the years, cutting into the bobolinks' nesting patterns and leading to a decline in the birds," says Stephen Swallow, professor of environmental economics at the University of Rhode Island (URI).

The mowing machines destroy the birds' nests, eggs and young. The researchers found that delaying the harvest provides sufficient time for birds to mature and flyaway. "For that, farmers needed compensation as cost of delaying the harvest and purchasing replacement hay. By doing so, birds could be easily saved without negatively impacting the farmers," said Swallow.

"The Jamestown residents and farmers for the first time experimented to use a market approach to enhance ecosystem services," says Emi Uchida, assistant professor at URI. "Ecological markets are a way to correct such environmental problems by enabling businesses and individuals to express their values and invest in the environment," said Swallow.

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# Maharashtra cornered

State of Environment Report 2007 presents a sordid tale

NIDHI JAMWAL Mumbai

ALMOST 75 per cent sewage treatment plants in Maharashtra run without valid consents, reveals Maharashtra's State of Environment Report, 2007. The report, a public document released by Maharashtra Pollution Control Board (MPCB), outlines present conditions and some future projections on environment. Prepared by the Mumbai-based Indira Gandhi Institute of Development Research, the report is based on data studied against parameters such as water, air, noise and forests etc. However, there are concerns that some of the data are outdated—data on wastewater generation, for instance, is 10-year old. It also lacks trend analysis and fails to make proper projections.

### Sewage, water supply

The report says about 99 per cent of sewage generated by municipal councils and over 50 per cent sewage discharged by municipal corporations goes untreated into either of three major river basins—Godavari, Tapi and Krishna. Wastewater generated from Latur, Ahmednagar and Nanded is 20 mld (million litres per day), 22 mld and 25.6 mld, respectively.

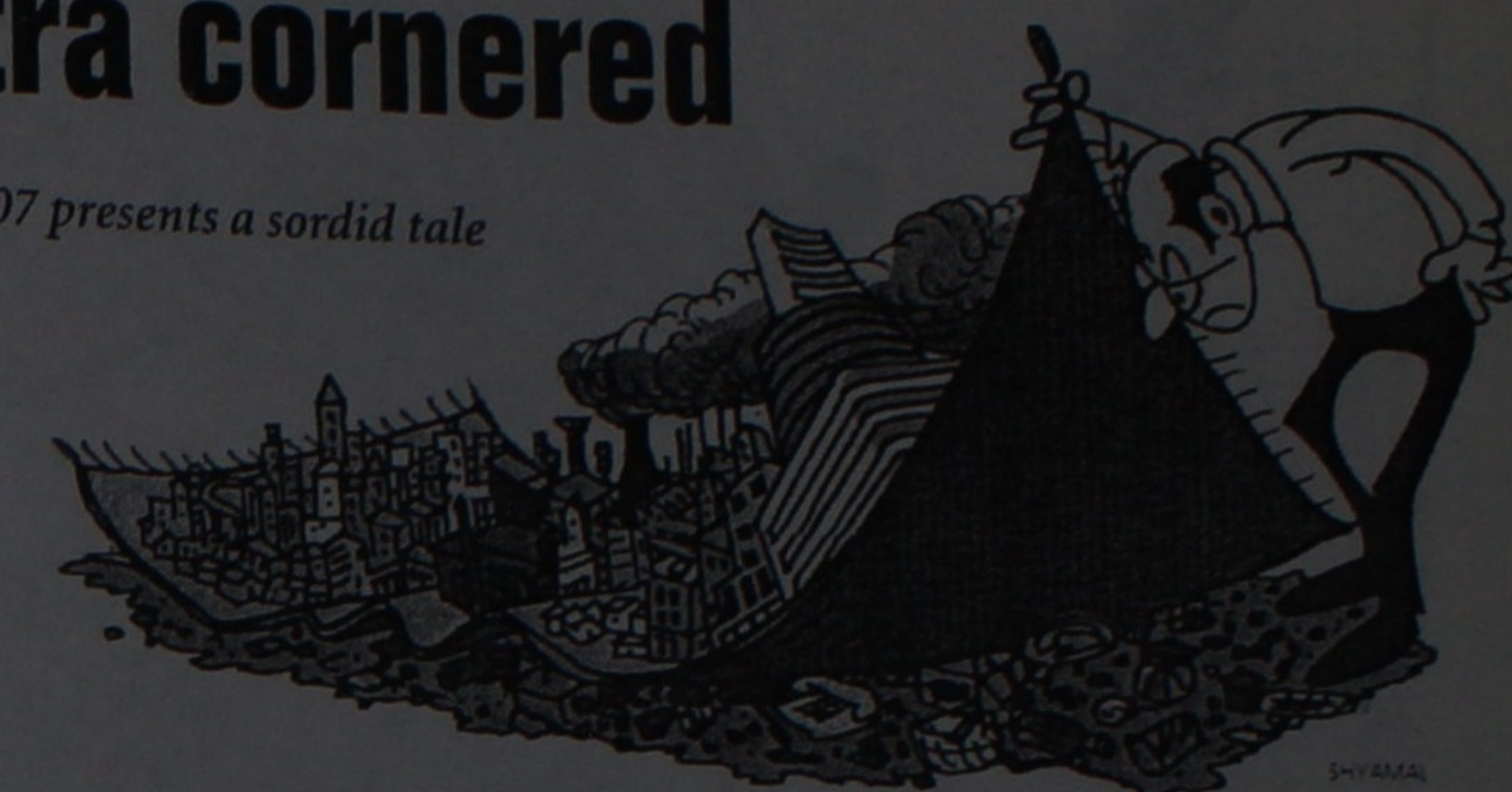
The water supply data in rural areas is for the year 2000, showing only 55 per cent villages and 64 per cent hamlets have a per capita water supply of more than 40 lpcd (litres per capita per day).

Wide disparities, however, exist between supply in urban and rural areas. Mumbai has a maximum average water supply of 200 lpcd but even within the city, the slum areas barely receive 90 lpcd and the well-off areas get 300-350 lpcd (see table: *How even?*).

### How even?

Distribution of water in 40,402 villages and 45,528 hamlets

Category	2000	2006
Villages with per capita water supply of more than 40 lpcd	54.07	61.03
Villages with per capita water supply of less than 10 lpcd	8.25	9.58



### Pollution

Increase in vehicles is the reason of growing pollution in the state, the report states. Maharashtra Pollution Control Board's monitoring results for 2005-06 show that levels of respirable suspended particulate matter and suspended particulate matter exceed in more than half the locations monitored. The monitoring report has found that two-wheelers constitute major share (69.32 per cent) of vehicles in the state followed by four wheelers at 13.37 per cent. Pune region alone accounts for about 20 per cent of the total vehicles in the state followed by Greater Mumbai at 13 per cent. Further, two wheelers and four wheelers (except taxis) constitute 81 per cent of the total vehicles in Greater Mumbai.

Clearly, private vehicles take up more and more road space at the cost of public transport.

### Solid waste

The section on solid waste in the report puts together available data on municipal solid waste (MSW), hazardous waste, electronic waste and biomedical waste. Maharashtra generates over 16,000 tonnes per day of MSW, of which almost 50 per cent is generated by Mumbai :7,000 tpd. Pune generates

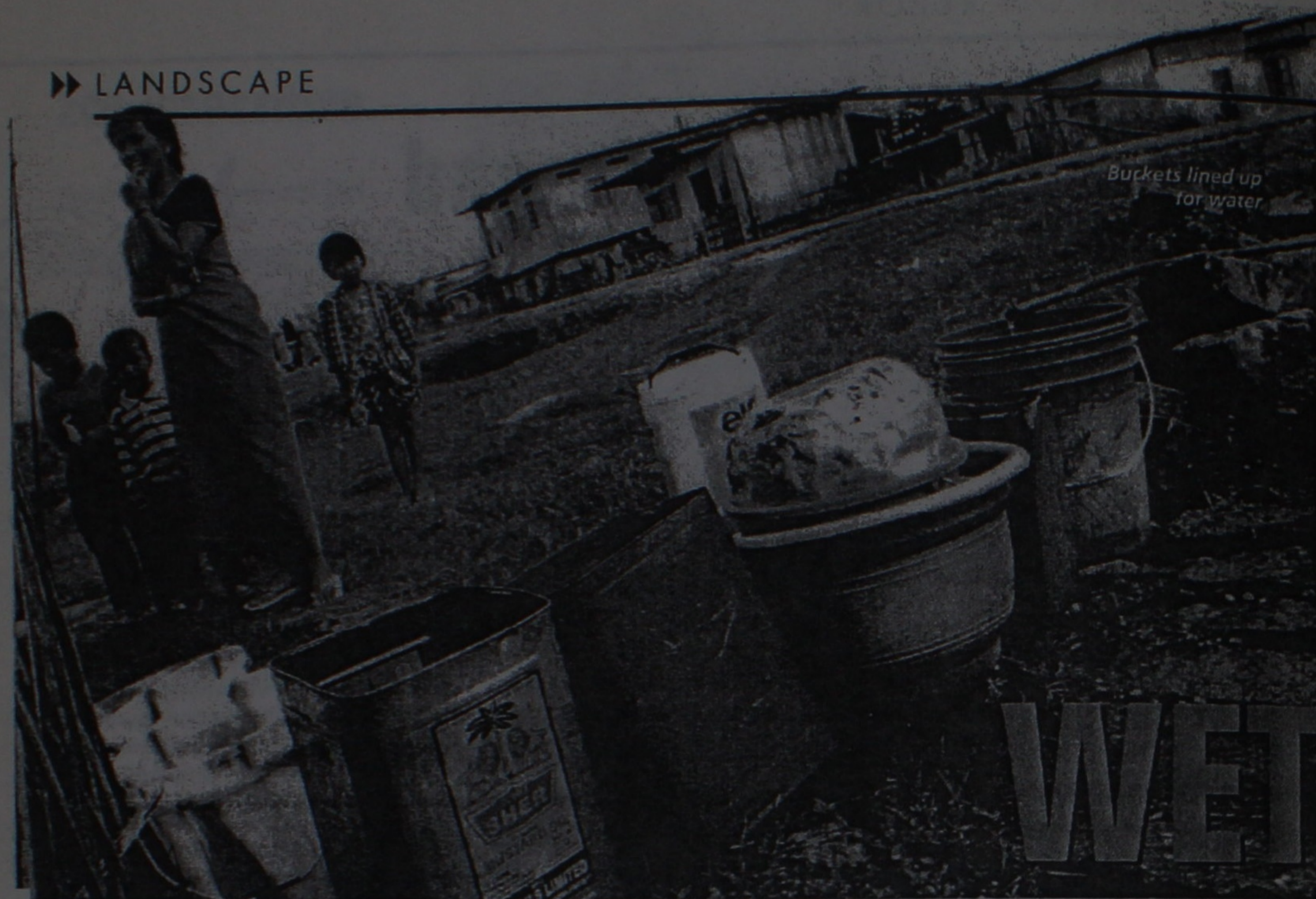
2,123 tpd, while Thane generates 880 tpd of MSW. According to the projections made by Nagpur-based National Environmental Engineering Research Institute, MSW in the state is estimated to increase to 8.05 million tonnes by 2011 and 11.77 million tonnes by 2021. Electronic waste generation is already at 20,270.6 tonnes per annum.

Hazardous waste generation is pegged at 1.4 million tonnes annually (50 per cent of the total hazardous waste generated in the country) with Thane, Ratnagiri and Raigad generating the maximum amounts. The report also claims that Maharashtra produces almost 60 per cent (31.5 tonnes per day) of the total biomedical waste produced in the country.

### Forests and biodiversity

The report has taken Forest Survey of India's (FSI's) data to show a dramatic increase in the state's forest cover; from 30,740 sq km in 1980-82 to 47,482 sq km in 2001. The data, however, has questionable basis. *Down To Earth* had earlier analysed FSI's data and found gaping holes in the forest cover figures (see 236,800 hectares more, *Down To Earth*, May 15, 2003). Moreover, the report has made recommendations, which are way too general—check urbanisation, coordination between agencies, forge public private partnerships, for instance.

Overall, however, the state of environment report makes for a good beginning with much scope for improvement though. It is also to be seen if this report will be updated annually. Only then will it be a fruitful exercise.



Buckets lined up for water

WET

PHOTOGRAPHS: SURYA SEN / CSE

It used to receive maximum rainfall in the world, once. Cherrapunjee is beset by water problems now.



50/ARLES BIRN

When Sted Syiemlieh was a little boy, people in his mountain village, Tyrna, a few km from Cherrapunjee in Meghalaya, could predict when the skies would open up. "It was always at the same time," the 75-year-old farmer says. "Those days, we could tell how long the rain would last. If it went beyond three days, we knew that the rains would go on for nine days. So, we would prepare to plant our crop accordingly," he says.

Back then people in his village used to plant oranges, coffee beans, paan and bay leaves, betel nut, sweet potatoes, yam and other tubers which they traded

for rice, vegetables and dried fish at the weekly *haat* some 25 km away, in what's now Bangladesh. That trade stopped decades ago with the drawing of borders. "Those days, we did not have to worry about food like we do now," Syiemlieh says. "Now everything is upside down. It's difficult to predict when the rains will come."

Difficult to predict maybe but skies do open up in Meghalaya's East Khasi Hills. It had been pouring incessantly since we left Shillong for Cherrapunjee in the wee hours of June 16. Thick, swirling clouds that give this northeastern state its name—Meghalaya, abode of clouds—had reduced visibility to near-zero in places.

"It's no longer Cherrapunjee, we call it Sohra, now," Raymond Kharmujai, a young local journalist and my guide for the day, informs me. After over 180 years of going by the name given by the British, who couldn't quite master *So-ha-ra*, the once undisputed wettest place on earth has now officially reverted to its traditional Khasi name.

Located at 4,267 feet above sea level

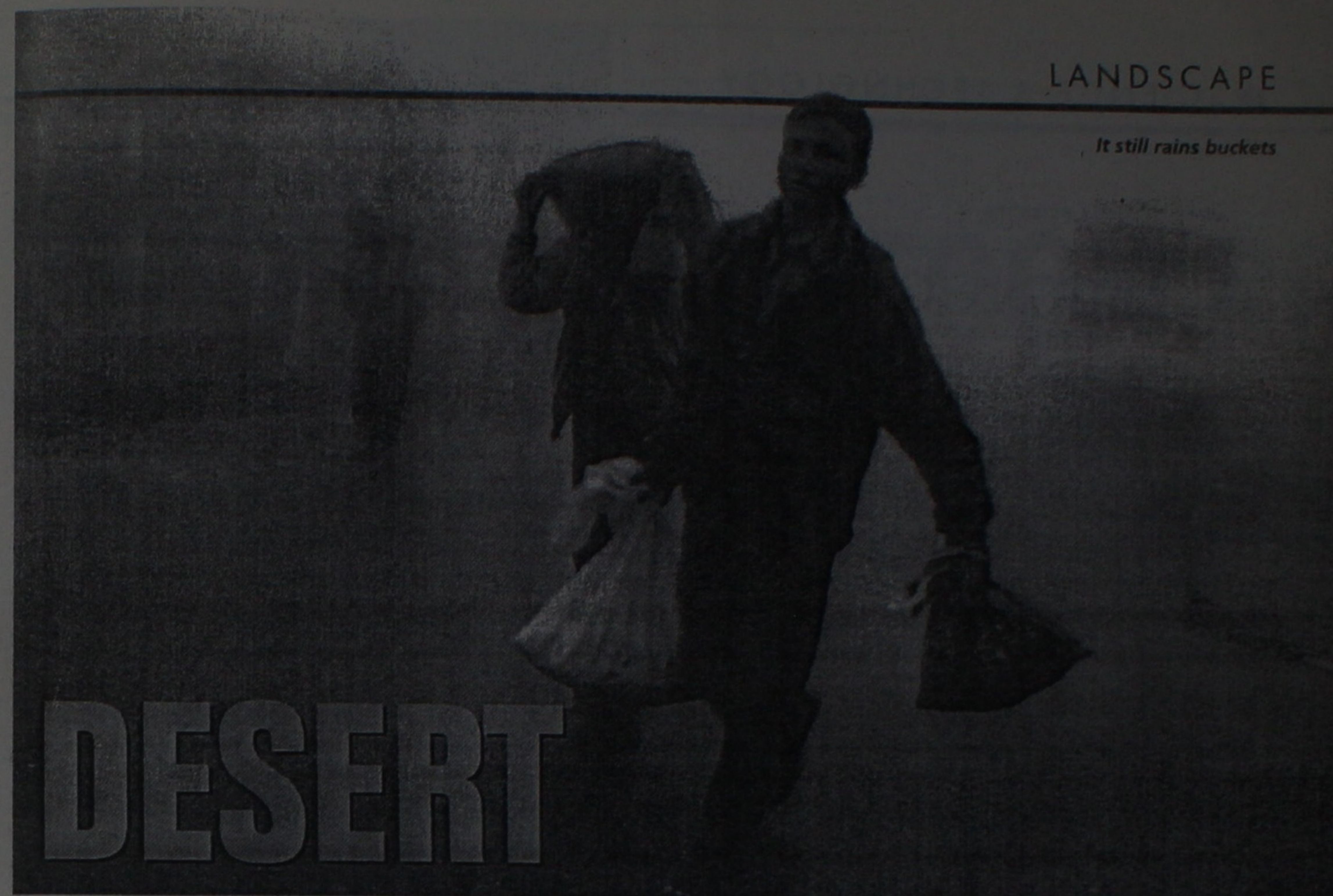
and well connected to the Sylhet plains (in what's now Bangladesh), Sohra was the first British headquarters in north-east India. The English who settled here in 1820, calling it the "Scotland of the East", were also the ones who discovered its special status as the wettest place on the planet. But the rains proved too much for even the hardy colonists, and in 1850 they beat a retreat from Sohra.

#### Ghostly shapes

As our car snaked down the winding road, I peered through the rain-streaked window to discern the ghostly shapes we were speeding past. The landscape was barren but grassy. What used to be hills but were now just silent, wounded pieces of earth, gouged out, cut in half, denuded for their timber and soil.

Here and there by the roadside, there were little holes in the earth surrounded by heaps of coal leaking streaks of black water—rat-pit coal mines, they are called. And limestone kilns with thatched roofs—out of commission during the monsoons—but still giving out the acrid smell of burnt lime.

It still rains buckets



DESERT

MAUREEN NANDINI MITRA / CSE

It still rains quite heavily. But most of the water drains away. MAUREEN NANDINI MITRA finds out why



50/ARLES BIRN

Sted Syiemlieh: Earlier we knew how long the rains would last. We would plant our crops accordingly, and there was always enough.

Meghalaya has extensive deposits of coal and limestone (used to make cement), concentrated largely in the southern slopes of the state—the East Khasi Hills, the Garo Hills and the Jaintia Hills districts. The total estimated reserve of coal is 640 million tonnes and limestone reserves are estimated at about 5,000 million tonnes.

#### Off season

It's a Sunday morning and Sohra town is pretty much deserted. All shops are closed, and the downpour has kept most people off the street. So we move on to explore the nearby villages, stopping at one of the lime kilns by the roadside. Two workers stand guard over stacks of damp firewood. The rest, says one of them who gives his name as Sangma, will return in October, after the monsoons end. When it's functional, the kiln sometimes burns for weeks. The two workers live in a little raised shack by the kiln and make occasional trips to Sohra town market for food. "Not much to do here during this season, just watch the rain and try to keep dry," says Sangma.

#### Rampant deforestation

Sohra and its surrounding areas receive both the southwest and northeast monsoon showers. From June to September, the monsoon comes in from the Bay of Bengal over Bangladesh.

The heaviest rainfalls are experienced during these four months. Because there are no mountains in Bangladesh, the rain-bearing clouds are forced to deposit much of their moisture and rain on these hills. In the winter it receives the northeast monsoon showers.

For many years Sohra was considered the wettest place on earth. It features in the Guinness Book of Records as the place with the highest rainfall ever in a calendar year—22,987 mm between August 1880 and July 1881. It also holds the record for the highest rainfall in a single day: 2,455 mm in 1974.

But it's no longer the wettest place, largely due to rampant deforestation. The small town and the villages around Sohra—home to over 70,000 Khasis—have been receiving less and less rain over the years.

EVOLUTIONARY SCIENCES

## Discovery channel

First Indian study on species discovery pattern

KIRTIMAN AWASTHI

THERE is little chance for a new bird or butterfly being discovered in the Western Ghats now, says a recent study. It has, however, not ruled out the discovery of frogs and grasses.

First time in India, a team of researchers including scientists from the University of Agricultural Sciences in Bangalore have classified the patterns of species discovery of eight important animal and plant groups in the Western Ghats. The study has analysed the factors which helped in the discovery of these species.

The species studied included birds, butterflies, frogs, tiger beetles, grasses, ferns and orchids. The findings have been published in the June 2007 issue of the *Journal of Biosciences* (Vol 32, No 4).

The researchers gathered data on four animal groups (birds, butterflies, frogs and tiger beetles) and four plant groups (asters, grasses, orchids and ferns). "The selection of species was based on the availability of relevant data and the clarity of their taxonomic status," says R Uma Shaanker, professor at the department of crop physiology, University of Agriculture Sciences, Bangalore.

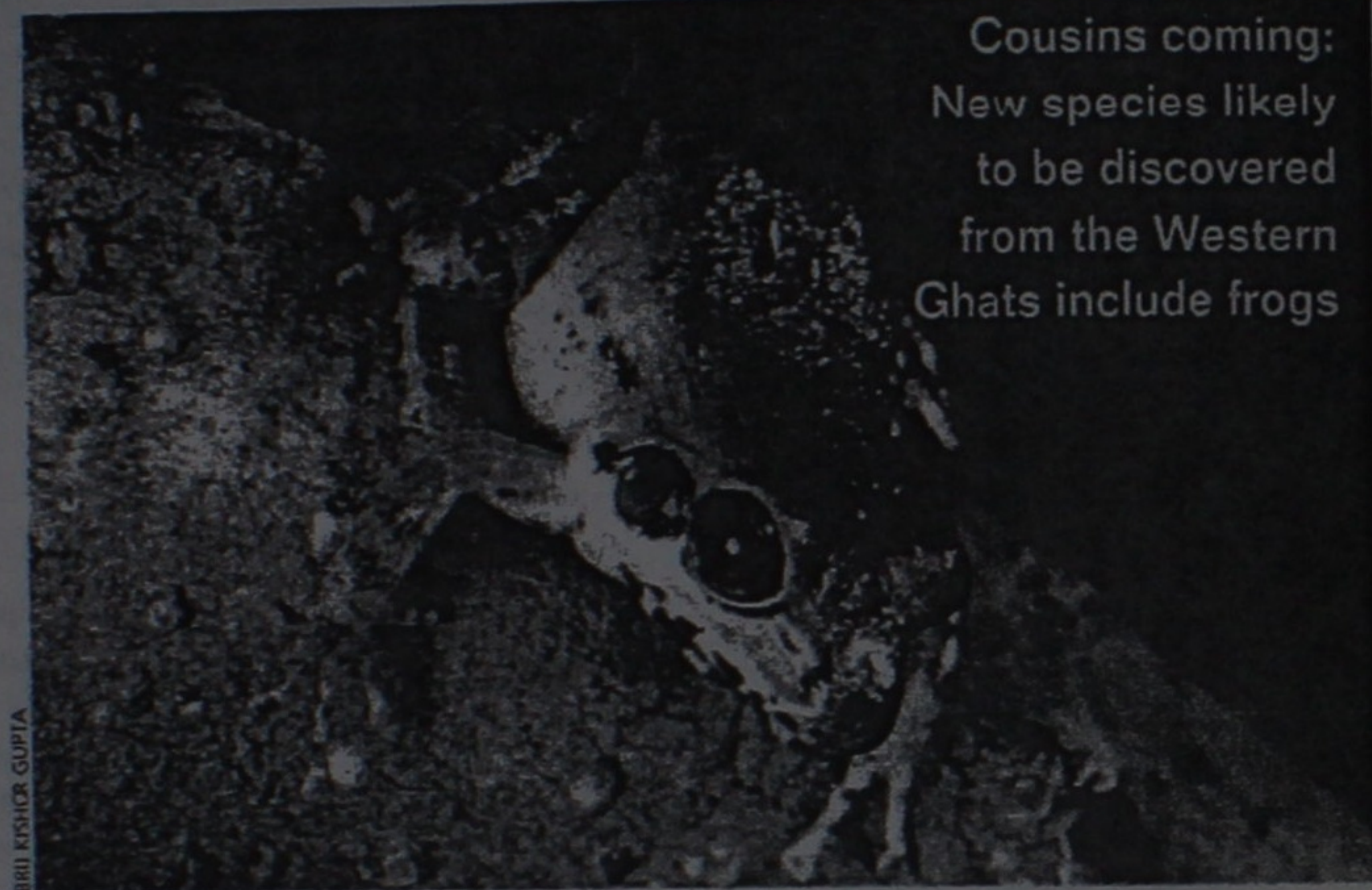
### Determining factors

Many of the species recently discovered in the Western Ghats, a biodiversity hot spot, were amphibians. "Species discovery in a region follows a specific pattern. A number of factors determine the way species are discovered," says Shaanker. They include, he says, body size, colour, range of movement and visual appeal of the species.

Many studies have linked the rate of species discovery to body size, for example, in British beetles, to body size and range of species movement in neotropical mammals and North American butterflies. In South American oscine passerine birds, the chance of discovery was influenced by quantity, geographic

and altitudinal ranges of their movement and body size.

In the Western Ghats, say researchers, factors such as body size, colours on feathers, nature of the habitat and feeding habits determined the discovery of birds. For butterflies, the researchers found body size (wing span), number of colours on the wings and the altitudinal range as determining



Cousins coming:  
New species likely  
to be discovered  
from the Western  
Ghats include frogs

factors. On flowers like orchids, the study considered the number of flowers in inflorescence—floral arrangement in a plant—size of the flower, length of inflorescence and the characteristics of the habitat.

The discovery pattern for birds and butterflies showed saturation which means, in all likelihood, there is little chance for further discovery among the group.

The last bird—maroon-breasted sunbird *Nectarinia lotenia*—from the Western Ghats was found in 1944 and the last butterfly—small long-branded bush brown *Mycalesis igilia*—was found in 1911.

Discovery pattern for ferns, tiger beetles and asters also showed that there is only marginal scope of discovery.

### Chance list

There are more species yet to be discovered among frogs and grass. Locally seen—endemic—frogs have an edge over their non-endemic counterparts, says the study. The orchids too share the same pattern. "Non-endemic species are more widespread and the chance for them being discovered are high while endemic species are confined to a narrow range," said Shaanker.

Birds were the earliest to be discovered while the discovery of frogs occurred later, says the study. Among plants, orchids were the earliest to be discovered while grasses were found much later.

On the evolutionary front, grasses

are among the most modern taxonomic group of species. Researchers, however, do not agree that the pattern of species discovery is linked to evolutionary trends. "A few taxonomic might have reached saturation. This does not mean that more biodiversity cannot be uncovered," clarifies Shaanker. The advancement in the science of taxonomy like using genetic analysis can help in identifying new species, he adds.

"Despite the excellent taxonomic literature available for India, not much is known about the species discovery patterns in the country," says Shaanker. According to researchers, the study has significant implications for strategising the species discovery process in the country and help scientists in fixing the groups of species to be explored. ■

Indian farming must think beyond mere seasonal gambles

by Lola Nayar

## A MONSOON RO

FIRST, the good news. After over a decade, India is likely to witness three consecutive years of positive growth in the farm sector, if the weather gods continue to be benevolent this year. Until now, despite a not-so-good July month, the summer monsoon, which accounts for four-fifths of annual rainfall,

has been 4 per cent higher than normal. It seems agriculture is on a revival path, and Union finance minister P. Chidambaram's dream of a double-digit GDP growth may soon become a reality.

Although experts don't wish to speculate on the impact of the 30 per cent shortfall in rainfall during the week ended July 25, they say that an overall one per cent increase can result in 0.21 per cent growth in agriculture, provided other factors remain favourable. If true, agriculture can grow by over 3 per cent this year, instead of the 2.5 per cent estimated by the prime minister's economic advisory council (EAC). Even the 2006-07 GDP growth is expected to be pegged higher than 9.4 per cent with a revision in farm production estimate.

Both Chidambaram and PM Manmohan Singh have often stressed in the recent past that for India to achieve double-digit growth, it is important that the agriculture sector clocks 4 per cent annual growth. And that the manufacturing and services sectors keep growing at the current frenetic pace. If monsoons are good next year too, despite the government's current objective to cool down the overheated economy, a 10 per cent growth is in the realm of possibility.

"The recent progress is largely because of a revival in investments in irrigation and rural infrastructure as well as credit flow to the farm sector," notes M.S. Swaminathan, chairman, National Commission on Farmers. Prof Ramesh Chand of the National Centre for Agricultural Economics and Policy Research points to the quantum jump in public investments in agriculture—up from Rs 7,000

crore in 2000-01 to Rs 13,200 crore in 2005-06. Overall, while Rs 60,000 crore was allocated for agriculture in the 10th plan, the figure is being hiked to Rs 1,33,000 crore in the 11th plan.

Mangala Rai, director general, Indian Council of Agricultural Research, feels there is another factor that has fuelled the current growth phase. He thinks that wherever better crop varieties have been promoted, yields have increased sharply. In the case of wheat, farmers in Punjab have double the productivity levels compared to their counterparts in Uttar Pradesh and Bihar. Similarly, Andhra Pradesh farmers have higher yields of pulses and chickpea, which normally grow better in the north.

Despite this rosy scenario, experts feel this is just a short-term phase. For instance, Chand stresses that "agriculture distress cannot be stemmed with two or three years of investments and growth". Cautions Swaminathan: "We can't be complacent since over 60 per cent of our cultivated area is still rainfed. We must accelerate progress in water-harvesting and efficient use." These experts think India has to evolve a long-term vision to combat the existing agriculture crisis.

India is not on firm ground when it comes to ensuring food security; in fact, foodgrain production has stagnated at 209-213 million tonnes in the past several years, with sharp dips during years of poor monsoons. (This year, the estimates have been raised by 4 million tonnes to 216 million tonnes.) In addition, the share of agriculture has declined to 18

Long green Growth stems from farming



# MANCE?



per cent of the GDP even as it continues to sustain 58 per cent population. "Therefore, there is no time to relax or rejoice," contends Swaminathan.

Even the current wave of positive growth is a sort of a misnomer when looked over a longer time period. For example, the overall average annual growth rate is short of the targets set under the 10th Plan. ICAR's Rai adds that while the average annual growth between 1996-97 and 2003-04 has been around 2.7 per cent, there has actually been a negative growth of 0.3 per cent in monetary terms. This implies that farmers are earning much less than what they were in the 1980s and early 1990s.

Critics feel the negative growth in economic terms is due to a "policy fatigue" that prevent decision-makers "from taking bold steps". The government doesn't look at agriculture in commercial terms, and sees the farmers as mere producers,

## CHAFF AND THE GRAIN

- India is banking on 4% agriculture growth for achieving double-digit GDP growth
- Public Investments in agriculture have risen to Rs 13,200 cr in 2005-06 from Rs 7,000 cr in 2000-01. But its share in planned expenditure has come down to below 2%.
- Production has gone up wherever high-yielding crop varieties have been adopted
- Not much progress has been made on Irrigation infrastructure as most farmers are still dependent on monsoons which can make or mar production
- Policy and management fatigue are attributed to farm crisis

not also as rural consumers. "In such circumstances, who will invest in farm sector," asks Rai. Trends in the past decade indicate farming has become unviable.

This is clearly proved by the scores of debt-trapped farmers, who continue to commit suicides every week, particularly in relatively prosperous states like Maharashtra and Andhra Pradesh. Last week, in keeping with the government objective of ensuring inclusive growth and preventing suicides, the prime minister's office held parleys with states to ensure greater focus on agriculture.

G.K. Chadha, a member of the EAC, looks at growth with a sense of optimism. "But I feel investments need to be pushed further as we are not able to generate enough rural employment, improve incomes, or eradicate rural poverty," he adds. For this to happen, investment—both public and private—have to incre-

ase further. Experts say that while public investments have gone up in quantitative terms, they have declined from over 4 per cent of budgetary allocations in 1980-81 to under 2 per cent this year.

For improving incomes of the small and marginal farmers, president of Indian Society of Agricultural Economics S.S Dohl moots setting up of environment-friendly industries in rural areas, which employ 70-80 per cent local workers. "There must be a pull factor for marginal farmers who can work in these industries, and also do part time work on their farms," he says. Adds Chadha: "Although production is beginning to match the shift in consumption patterns, India needs to take a quantum jump from the current technology fatigue and push for newer crop varieties."

Then there is the question of "management fatigue" among the decision-makers. S.S. Acharya of the Jaipur-based

Institute of Development Studies points to some recent blunders. One of them related to the government's move to import one million tonnes of wheat. As the tenders to import wheat at \$260 per tonne were kept in abeyance, India is faced with prices of over \$300 per tonne. "We are a big player in the global market and should have our own forecasting mechanism. There are people who have interest in our decisions going wrong," warns Acharya.

So, while the government keeps making such mistakes, it keeps pinning its hopes on the rain gods. But Rai thinks India needs to be prepared for the vagaries of the monsoons and climatic changes. He adds that the country has witnessed 11 of its hottest years in last 12 years. Chadha's last words shouldn't be forgotten too; he says Indian agriculture "is still a gamble on the monsoons". □