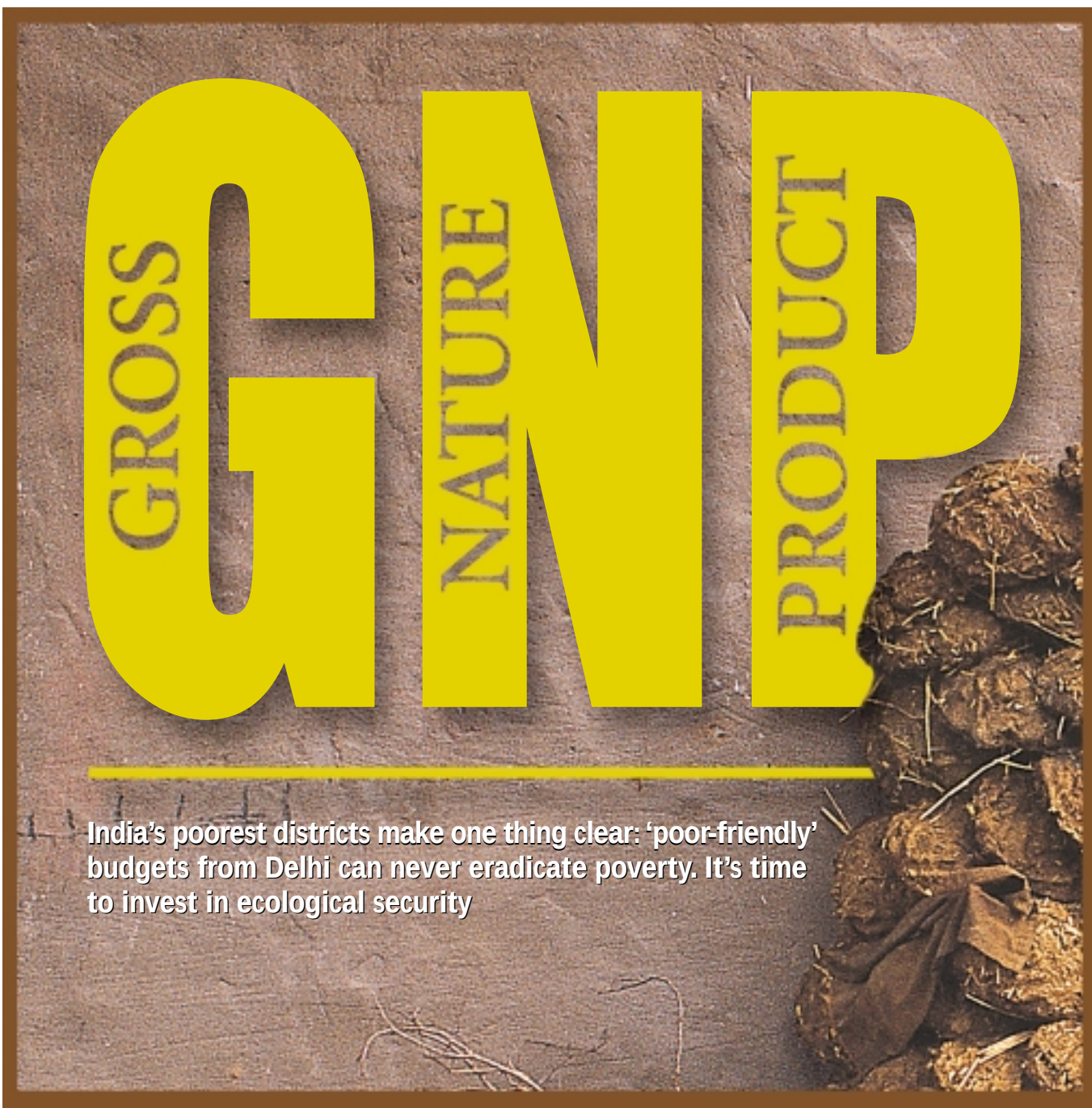


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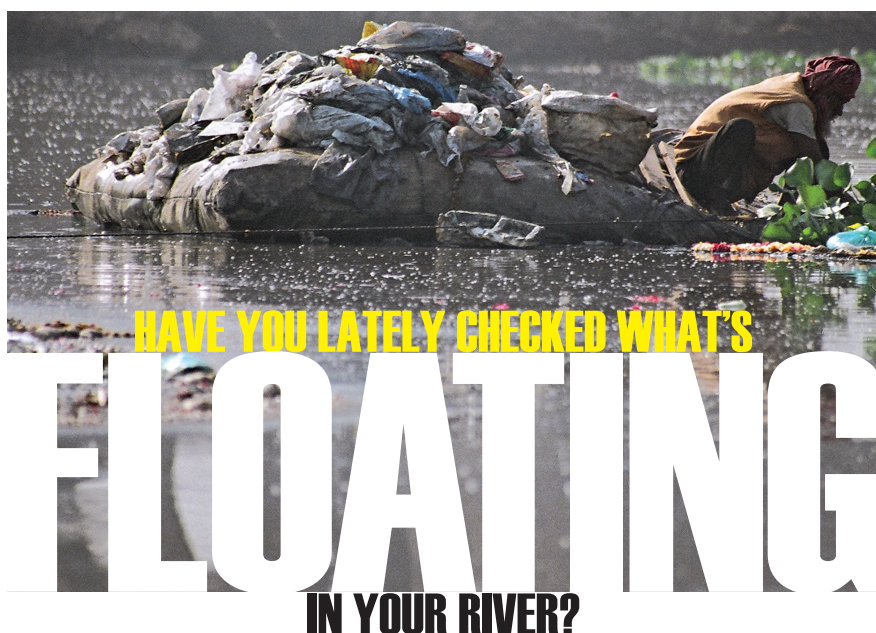


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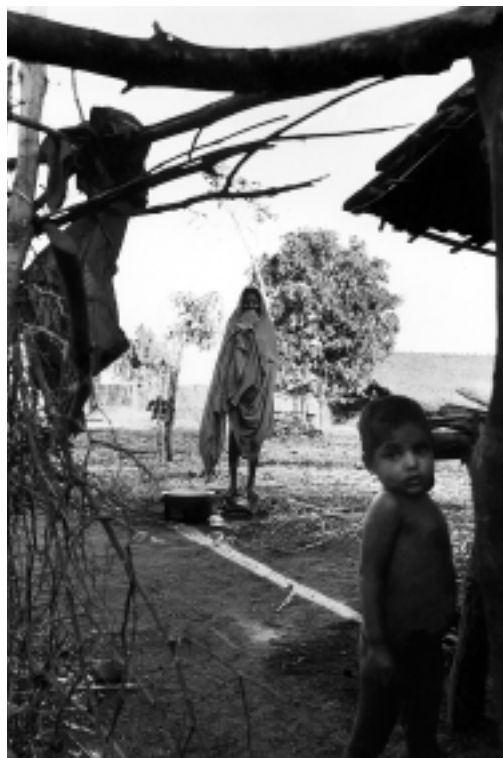
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COVER: PRADIP SAHA



AMIT SHANKER / CSE

In defence of plastics

We are gravely perturbed by the tone of the article 'Swamped' (*Down To Earth*, Vol 10, No 21, March 31), which portrays an incorrect picture of the plastics industry in India. It is true that the plastics industry is bound to double in the next five years or so. This augurs well for the plastics industry and the country's economy. The industry provides Rs 3,500 crore per annum to the government exchequer, and its export earning is over US \$800 million. It provides direct employment to over 500,000 people, and over 150,000 are indirectly engaged with the industry.

As correctly pointed out by the author, environmental pollution due to plastic waste is a serious problem if not tackled immediately. However, statistics prove that over 45–60 per cent of plastic waste is recovered and recycled. The remaining 50 per cent constitutes long life plastic products and containers, such as auto parts, computer components etc. When eventually discarded, they are collected and taken into the recycling process without delay. A crucial factor, which has not been conveyed to your readers, is that the primary post consumer waste from plastic items are thin carry-bags and mineral water bottles that actually constitute only one to two per cent of the total plastics consumed in India.

While supporting the need for avoidance of indiscriminate use of plastics and waste littering, the Indian Centre for Plastics in the Environment (ICPE) would like to point out that plastic has emerged as the most beneficial product in recent times, and it caters to almost every industry and consumer. It has emerged as the best wood substitute and conserver of

precious energy sources and water. Any legislation on manufacture of plastics and their use, therefore, needs careful evaluation. Essentially, what is needed is an integrated approach to solid waste management.

A N BHAT
Director General, ICPE
New Delhi

People protect

I fully endorse the views expressed in the editorial 'Better wild than never' (DTE, Vol 10, No 19, February 28), especially regarding involvement of local communities in wildlife conservation. However, I would like to add the following: Let us first accept that just as degradation of forests reduces the wildlife population, regeneration of forests improves wildlife. The experiment of joint forest management (JFM) has proved successful in the regeneration of degraded forests all over the country. I have visited several villages in Andhra Pradesh, which practice JFM, and almost everywhere, people talk of improvement in the wildlife population and control on poaching.

Why does the government not learn from these experiences that involvement of the people is a better option than relocation of families from protected areas (PAs)? Instead of forming eco-development committees, why not have JFM committees for the PAs as well? The relocation and rehabilitation of families from the PAs is not an easy task. An example of the difficulties inherent in such efforts is the Rajiv Gandhi Tiger project in Andhra Pradesh, where the relocated families returned to their village. Similarly, armed contingents can be of little help in forest areas infested with Naxalites. The safest course is to extend JFM to both forest and wildlife conservation.

SHIVDAS MUKHERJEE
sdmukherjee@hotmail.com

Tax the troublemaker

You have taken up many issues on pollution, but I have not seen anyone take up the issue of pollution by *paan*

masala pouches. These pouches are made of aluminium foil and plastic — neither of which is biodegradable — and literally swamp Indian roads. I am sure paper laminated packing can be used quite successfully to hold the flavour of the *paan* masala. It is even more worrying that a culture of such sachets seems to be catching on. One way of fighting this would be to have a punitive rate of excise duty for products with non-biodegradable packing!

SHARAD BHANDARI
peipl@sancharnet.in

Who needs roads?

The Indian and Uttar Pradesh governments had issued half-page advertisements in a number of leading English and Hindi language dailies congratulating the people of Uttar Pradesh on the strengthening of 478 kms of national highway two (NH2) and the Lucknow Bypass under the national highways development project. While this bodes well for transportation, it needs to be pointed out that such projects damage the environment beyond repair. In this project, it is estimated that over two lakh trees would be uprooted and destroyed. Besides, a very large area of agricultural land would be taken over by the road. It needs to be asked what good faster transportation and better roads will do in a land where commuters waste hours at the toll tax bridges on these roads.

S K SHARMA
New Delhi

NOTICE BOARD

VACANCY FOR COMMUNITY MOBILISER IN MADHYA PRADESH

Samrakshan Trust, a non-profit organisation working in MP's sheopur district is looking for a community mobiliser to join its field team. The job will involve:

- Building local capacity and leadership, with a special focus on community mobilisation around micro-credit, self-help groups, micro-enterprises, user groups for water and other resources;
- Evolving and implementing site-specific community-based conservation strategies with the local people and government departments.

We are looking for people concerned with issues of rural livelihoods and nature conservation; Masters degree holders in any discipline, preferably in Social Work. **Very good knowledge of Hindi is essential.**

Contact:

ASMITA KABRA

Samrakshan Trust, E-314, Anandlok Housing Society
Mayur Vihar Phase I, New Delhi-110091
Tel: 2795088, 3715385
Email: asmita@samrakshan.org

Down To Earth welcomes contributions from readers. You can send your contributions to Sunita Narain, Editor, *Down To Earth*, 41, Tughlakabad Institutional Area, New Delhi - 110 062. Email: sunita@cseindia.org

Breathe easy

'India exposed' (DTE, Vol 10, No 22, April 15) is a report on the sad state of urban air quality. When I was in Austria a few years ago, I was pleasantly surprised to read a public notice, which stated that the local magistrate had the right to shut down traffic when the ambient air quality is below a certain acceptable standard. In our country, the state pollution control boards have failed miserably to monitor the air quality in cities under their control. Moreover, they are mere paper tigers, with little power to act.

A few actions we can take to improve urban air quality are:

- Monitor air quality at peak hours at busy intersections. If it goes up dangerously, the traffic police should alert the authorities, who may decide to stop/divert traffic.
- All polluting vehicles should be banned from the roads. The fine for not complying with pollution limits should be enhanced to Rs 5,000 so that vehicle owners remember to have their vehicles checked/maintained properly.
- Slowly, but surely, the public transport in any city should run on CNG (compressed natural gas) or ultra low sulphur diesel.
- Electric autorickshaws and cars should receive a higher subsidy.

- Alternate non-polluting fuels such as gasohol, methanol and hydrogen need to be developed.
- As far as possible, vehicle-free pedestrian plazas should be created, so that people can walk and shop in peace.
- The onus of recycling/reconditioning vehicles older than 15 years should be with the manufacturers.
- The states and the Centre should draw up plans to enhance mass transport so that there is enough incentive for private vehicle owners to leave their vehicles at home.

D B N MURTHY
Bangalore

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Email: iphe@cal3.vsnl.net.in or

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**Prime Minister of India inaugurated
the 22nd WEDC Conference at
Vigyan Bhavan, New Delhi in 1996.**
IPHE organised the Conference.



WORLD WIDE FUND FOR NATURE – INDIA

WWF-India, the country's largest environmental conservation NGO, with four offices in Maharashtra, invites applications for the post of **STATE DIRECTOR, MAHARASHTRA STATE OFFICE** in Mumbai.

The position requires interaction with WWF-India programme staff, state government, education institutions, scientific entities, NGO's, corporations, and the media. The incumbent required should be a graduate/post graduate with 10 years experience in a managerial position including experience in team leadership, fundraising, administration, project management and working with NGO's. He/she will be responsible for all aspects of the State Office including generating project funds, education programs, product sales, staff leadership, financial budgeting and reporting, and all other administrative work. He/she should ideally have some background in NGO/Project Management, preferably in conservation/environmental work. He/she will be expected to follow the ideals and policies of WWF-India in all matters. The incumbent is expected to ensure that the Maharashtra State Office is performing conservation and education projects, raising funds, and is financially solvent. He/she will also function as the ex-officio Member-Secretary to the Maharashtra State Committee.

Salary is negotiable within WWF-India's salary structure, and will be commensurate with qualifications and skills. WWF-India does not provide housing, telephone, or vehicle facilities. Interested candidates with strong qualifications and leadership skills preferably above the age of 40 years may apply within 15 days of the issue of the advertisement giving full details with regard to compensation history in the previous and current employments, expected salary and three references of past employers with their telephone numbers to:

THE MANAGER (PERSONNEL), WWF-INDIA

172-B, Lodi Estate, New Delhi-110003

Phone: 4693744/4616532

Change is for the obdurate

I NEVER thought I would be writing an article about airports. But I am provoked to repeat what we know and to say what would not be said often in connection with the sorry state of our public spaces.

The *Indian Express* has published a series on — needless to say, deplorable — Indian airports. *Express* editor Shekhar Gupta has received an overwhelming response to his biting article on this subject, from readers across the country, annoyed, frustrated and indeed ashamed about the stink in toilets to the appalling lack of civic facilities.

I happened to be travelling and hoped to see some change. I did see change, but for the worse. This time, even getting through the doors of the airport — with a confirmed ticket — was a harrowing experience. Someone, possibly an exalted official in the bombastic government of India, had decided that for “security reasons” passengers could enter only through a “designated” door. It was, of course, a small matter that there are four doors and that all airlines that leave at the ridiculous witching hour had been designated only one door. The waiting time was one hour with everyone jostling and fighting just to enter the airport. As can be expected, touts were in service, escorting clients through the doors, for a price.

My first point is that government is getting more and more shameless. Some years ago, articles like those published in the *Indian Express* would have resulted in a few shocks, maybe a transfer and definitely an attempt at cover up. Not any more. Now criticism is like water off a duck's back. Government has become more, not less, complacent about the mess around us. The unflinching belief is that we are doing just fine, in spite of the horrendous problems of our huge population and all this cribbing is just nonsense from people who have no experience in “running” the country.

It is also a fact that administration has become so rigid, so entrenched and also at the same time so riddled with vested interests that what was possible to do earlier with a little pushing of the stroke of the pen, is virtually impossible now. It is for this reason, bringing about change — from cleaner toilets in airports to cleaner air and water in our cities — is a challenge even to the most obdurate.

A reflection of this shamelessness is that the reports prepared by the Comptroller and Auditor General (CAG) are treated with such disdain and contempt. I have seen at least a

dozen reports in which CAG has soundly criticised the working of the various environment and pollution control agencies of state governments. The verdict is unanimous that these agencies are failing to discharge their functions. Reports contain instances after instances of what you could call incompetence or corruption, which should make the most brazen cringe — from how industries are flouting every rule in the book under the watchful eyes of regulatory agencies to how equipment and funds remain unutilised year after year. The CAG even found that ambulances for accident victims had been converted with sofas to use as staff cars in Delhi. In most cases, CAG has not received a response from the department concerned and certainly no heads have rolled. Accountability is a game that we *do not* play in government.

My second point is what most readers of *Indian Express* seem to have missed. The reason why our public services are in this wretched state is because no public servant suffers these facilities. The finance minister was on the same flight as me but I can assure you that he did not wait in the hour-long queue to enter the airport. We can also safely bet that neither do his officials nor his officials' near and dear. It is only when they retire that they recognise, what all of us know as reality, but by then it is too late and they can only join the club of grumblers.

I remember we were so amazed, when a few years ago, the petroleum secretary quizzed us if there was indeed an air pollution problem in Delhi. But why should we have been surprised? Given his circumstances, it would be rare for him to roll down his car window to breathe the foul air out of his sylvan surroundings of Central Delhi — where his office and home are located. Their world is both seamless and efficient. Why then should they not be complacent?

On return, at the same “secure” airport, I found the usual visitors who had “permission” to cross the immigration barrier to receive relatives and friends. And it became clear to me that we really don't have a country any more. We have a huge brokerage agency. Before I end on this extremely pessimistic note, contrary to what I have said just now, change is still possible. But it requires more than just words or even kind-hearted action. It needs the cold anger, persistence and creativity of a Gandhi. We should all try it. The country needs our anger today. More than anything else. ■

— Sunita Narain



The country
needs our
anger today

Panchayat power

Consolidating grassroots democracy — a strident demand by the people



THE saga of *panchayati raj*, particularly from the time of introduction of Constitution 73rd Amendment, has been full of hope and despair. While the amendment has certainly propelled participatory process at the local level and provided avenues for social mobility of the weaker sections, the states have yet to devolve powers and functions on the panchayati raj institutions (PRIs).

What makes the *panchayati raj* even more toothless is the absence of any role of the *gram sabha* (village council). So much is the dominance of elected representatives that the *panchayati raj* is now termed as *sarpanch raj*. Without any effective power vested with the *gram sabha*, the PRIs face the threat of becoming extinct. For the simple reason that if the *gram sabha* is unable to take a decision and the elected representatives are not made accountable to it, people will soon lose interest in the PRIs.

Instances abound where the provision for convening a *gram sabha* has been hijacked and often fabricated and many a decision has thus been usurped. One of the main reasons why panchayat meetings are not getting enough participation

is that issues related to people's interest don't find any mention in it. But once the *gram sabha* is made the nodal body, democracy becomes participatory and people have a direct control over all the elected representatives. Experiences in Kerala, where the *gram sabha* has been made nodal and even in Madhya Pradesh, which has given right to recall power to the *gram sabha*, the level of the PRIs debating local issues is high.

In this context, the demand of the Panchayat heads at a conference in Delhi earlier this month (see 'Power to People' p22-24) for effective control over natural resources, water and minerals is an indication of the desire to establish participatory democracy. While the prime minister suggested direct fund flow from the centre to the village, he perhaps forgot about the mechanism to manage this money. If the *gram sabha* is made the nodal agency, this money can be effectively managed for specific local demands. Otherwise, as current experiences show, the PRIs just become another broker in this chain of sharing state largesse. The loot of the treasury needs strong institutions at the grassroots. Not a mirror of the representative democracy we have in our capitals. ■

A 13-year relapse

ICMR's malignant efforts show up in its cancer registry



THE Indian Council of Medical Research (ICMR) has recently released the National Cancer Registry, presumably under pressure from an article in *Down To Earth* (see 'Faceless figures'; Vol 10 No 15). Thank you, Sir. The report is evidently a rush job as it offers data only till 1996, while most of the registries have figures till 1998! So why has ICMR not published more recent data? But then, cancer does not seem to be a problem, if one reads the report carefully. Going by the report the growth rates are lower than most other countries and therefore there is no reason to fuss.

ICMR and the medical system are actually failing patients by presenting a tranquil picture while there is in reality, what could be called, a national emergency. Why then have specialised cancer hospitals sprung up in all metros and even small towns? ICMR's poor compliance with recommendations, failure to collect data, and failure to run adequate multidisciplinary teams is all too evident. Our findings clearly demonstrate that a

larger number of patients are today being admitted to cancer hospitals and that people are more sick than 10 years ago.

The report fails to make any predictions, depict trends or offer any regional analyses of cancer prevalence. Nor does it offer any value addition on the three critical aspects of cancer treatment: cancer care, critical care services, and pathology. Instead, like raw meat, data is served for us to interpret. The now-familiar findings of wide variation in hospital case loads and experience, inadequate staging by clinicians, insufficient reporting of stage by pathologists and poor compliance with diagnosis guidelines are reflected by lower survival in India more than elsewhere in the world! The ICMR promises to present its trends in a subsequent report. But a report on out-dated data several months or years from now will have little value.

Like we have said before, we need comprehensive, up to date epidemiological data, a control programme that identifies susceptible populations and devise strategies to check the spread of the killer. And importantly, an acceptance of the fact that cancer is a killer and is here to stay. ■

Controlling water

People in Andhra Pradesh now need official consent to sink new wells

NITIN SETHI

THE Andhra Pradesh (AP) Water, Land and Tree Act, 2002, meant to clamp down on over exploitation of groundwater, could lead to increased bureaucratisation, fear some experts.

To come into force on June 1, 2002,

existing wells and prevent sinking of wells except for drinking water purposes for a stretch of at least six months in such regions. While the act provides compensation for closure of wells, Purshottam Reddy, head of the department of political science at Osmania University, Hyderabad, says, "The

an area of 200 square meters only if the plan has appropriate rooftop or rainwater harvesting structures. The act also empowers the constituted authority to issue guidelines to local bodies for providing incentives for constructing such structures and for recycling and reuse of water by industrial and commercial users. But it is not yet clear whether these guidelines will be mandatory or not.

Besides, providing a legal framework for reducing water pollution, the act also aims to protect the tree cover in the state. This act repeals the earlier AP groundwater (regulation of drinking purposes) act, 1996.

Concentration of power

Under the act, district and *mandal* (block) level authorities can also be formed with powers of the state authority devolved to them. However, as the final decision for the creation of such bodies rests on the state authority experts fear that it might lead to centralisation of power. Says Ramaswamy Iyer, retired secretary of the Union ministry for water resources, "The act is well-intentioned. But whether it will lead to greater bureaucracy and centralisation of authority is as yet an open question."

According to P K Jha, additional secretary in the AP ministry for panchayati raj and rural development, though the present act devolves more power to local authorities formed under the act, it is as yet unclear whether local committees will remain recommendatory bodies with the designated (government) official taking the decisions.

Public participation in the authority is limited to a nominal representation in terms of five members. These five people are also to be state government nominees. "Community awareness does not seem to be a priority. The powers vested in the authority for giving directions and levying fines gives an impression that it is meant to be a 'green police' rather than a 'green manager'," says V R Sowmitri, programme manager for the AP Non-governmental Organisations Committee on community forest management. ■



JAMNIRA SINGH BISHT

Toiling together for a drop of water

the act is meant to promote water conservation and prevent over-exploitation of water sources in the state. A powerful authority constituted under the act will implement the rules and provide technical guidance. It will be headed by the AP minister for panchayati raj and will include three members of the legislative assembly, three government nominated technical experts besides various others.

A check on wells

The act requires all owners to register their wells (including those not fitted with power-driven pumps) and water bodies with the authority. It also bans sinking wells within 250 metres of a drinking water source except for irrigation and drinking purposes.

Also, on the advice of technical experts, the state authority can declare a particular groundwater basin as over exploited. It can ask for closure of

closure of wells can have grave implications on the fundamental right to livelihood."

On water harvesting

According to the act, local bodies, like municipalities can now approve the construction of buildings with not less than

Provisions of the Act

- Nodal authority to control groundwater usage
- All water bodies to be registered with the authority
- District and block level committees can also be formed
- Rainwater harvesting made mandatory for larger buildings
- Boring of wells close to drinking water sources curbed

Fire on mountain...

Forest blaze guts hundreds of trees in Jammu hills



JAMITRA SINGH BISHT

Forest fires in the hills — a recurrent sight

ISHFAQ-UL-HASSAN SRINAGAR

A MAJOR fire has destroyed a large tract of forest in the Shivalik Hills at Batandi in Jammu. This was the first fire in the region that engulfed the forest in late April. Although, the fire was soon doused, it is feared that high velocity winds may result in rekindling of the fire in some places.

The fire destroyed around 15 square kilometres of forest ranges in the Shivalik hills. There was no loss of life but more than a dozen sheds belonging to *gujjars* (nomads) were gutted.

According to R S Sodhi, joint director of Jammu and Kashmir Fire Service, the blaze was caused by the negligence of nomads and shepherds who keep their *choollaas* (earthen stoves) smouldering while grazing cattle.

Meteorological officials predict that major fires like this could lead to an increase in temperature and reduce rainfall. "Temperature has risen in areas where forest cover has depleted," informs Manmohan Singh, director, Meteorological Centre, Kashmir.

Fire officials are helpless in controlling big fires as they lack sophisticated equipment. "As there are no roads in the forest we have to carry our heavy conventional equipment manually. By the time we reach the spot, the fire spreads

to other areas," complains Sodhi.

Forest department officials have therefore requested the union government for a grant to build watchtowers.

As per official figures, the total forest cover in Jammu and Kashmir is 20,700 square kilometre, which is 9.31 per cent of the state's total land area. Kashmir province accounts for 8,128 square kilometres of forest cover. But, in the past 10 years nearly 1,30,400 trees were illegally felled in the state.

Meanwhile, forest department officials are in the process of assessing the loss caused by the fire. ■

Water wars

Thirst pangs lead to violence in various states

FIGHTS over water have begun, although summer is yet to peak. Hit by severe water scarcity, the states of Gujarat, Andhra Pradesh and Madhya Pradesh have reported incidents of violence and major protests over the past few weeks.

Women in Amreli, Manavadar and Rajkot, staged *dharnas* demanding more supply of water in the last week of

March. Protests have now spread to Dhoraji and Junagarh. For the third year in a row, these people of Saurashtra are suffering from a water crisis.

In Dhoraji, residents surrounded the municipality office demanding more water. Nearly two thousand women ransacked the office of the *mamlatdar* (municipal officer) in the first week of April. In Savarkundla too, people staged protests by taking out a 'lantern' procession against non-availability of water. Following the decrease in flow in the Kurnool-Cuddapah canal, people in Andhra Pradesh forcibly took away water tankers from the premises of the district administration.

In spite of an acute water crisis, the administration remains a mute spectator. Says, Shyamji Bhai Antala of Dhoraji in Gujarat, a pioneer in water harvesting in Gujarat, "There is no shortage of water, but only governmental mismanagement and apathy." ■

Wet vengeance

Move to revoke Indus treaty

To add fuel to the raging fire between India and Pakistan, our ruling pundits have now taken the shield of water. The point of ire here is the Indus Basin Water Treaty. Political parties are urging the union government to revoke this treaty in a desperate bid to 'punish' Pakistan for the December 13, 2001 Parliament attack.

Under this treaty, India has agreed to give up its claim over three rivers Jhelum, Chenab and Indus (all flowing from Jammu and Kashmir) to Pakistan, while retaining rights over others — Satluj, Beas and Ravi. Abrogation of the treaty is considered by many as the last option to "bring Islamabad to its knees". Communist Party of India (Marxist), state secretary and MLA, Mohammed Yousuf Tarigami recently demanded in the state legislative assembly for annulment of the treaty.

Regretting the move, Mubashir Hassan, former finance minister of Pakistan, fears that revoking the treaty will result in widespread starvation in the country.

More land for landless

Proposed change in land law may cause inter village disputes



AMIT SHANKER / CSE

Grazing blues: cattle in MP could face a fodder crisis

PRABHANJAN VERMA

MADHYA Pradesh (MP) government has proposed an amendment in land distribution laws, which will override the authority of *gram sabha* over common property land. This decision comes at a time, when panchayat institutions are clamouring for more power from the Union government.

The amendment calls for the redistribution of *nistar* land (common grazing land) among landless Scheduled Caste (sc) farmers. Accordingly, each family member of the farmers would be considered as independent beneficiaries of land. The prevalent law regards the entire family as one unit and allocates land to them as one.

But, many believe that the proposed

amendment will create more problems for villagers. "The plan would make a dent on the already limited grazing land for poor villagers and will eventually affect the livestock", says Ashish Mondal of Action for Social Advancement (ASA), a Dahod based non-governmental organisation working on land issues in Madhya Pradesh. With decrease in grazing land there is also the risk of 'shifting of livestock load' on nearby forests.

Another clause for concern: if there are no scs in a village, the grazing land would be given to those of other villages which can result in conflict between villagers. And with no *gram sabha* mandate to interfere, the problem can only aggravate. The amendment also poses the risk of bypassing its own *gram*

swaraj adhiniyam, which MP enacted ten years ago to delineate power to *gram sabhas* under the *panchayati raj*.

But, the government seems confident of the proposal. "With the new amendment, besides land for the landless, we will be able to come down on large scale encroachments on these common lands," explains R Gopala-krishnan, secretary to the chief minister.

Vir Singh Raghuvanshi, revenue minister of state too feels that the amendment will ensure that the landless acquire at least one hectare of land. ■

Ban lifted

Kerala government withdraws ban on use of endosulfan

THE Kerala government has lifted the ban on the use of endosulfan on crops and plantations following the recommendations of A Achuthan committee and the Kerala Agriculture University (KAU) report. However, the aerial spraying of endosulfan will continue to be prohibited for all crops.

The withdrawal order, which comes one year after declaration of the ban in August 2001, contains specific clauses. For example, the Peria division of Plantation Corporation of Kerala (PCK) covering Padre and Muliya villages of Kasaragod district will have no pesticides for the next five years. All spraying operations of PCK will be carried out after following certain directives under the supervision of KAU and PCK. Health safeguards for workers engaged in spraying and for nearby inhabitants too have to be strictly complied with.

Meanwhile, Padma S Vankar, in-charge, laboratory, Facility for Ecological and Analytical Testing (FEAT), Indian Institute of Technology (IIT) Kanpur, feels that the state government has overlooked the implications of the withdrawal. She alleges that the government is playing a dual game. "By merely lifting the ban on spraying endosulfan and retaining the aerial ban the government seems not ready to accept the health hazards caused by endosulfan," she says. She also questions the government about the regulatory authority to look into the adherence of spraying norms and about the monitoring. ■

Sorting e-waste

European Parliament to make producers responsible for e-waste

The European parliament has put forth the second reading of the draft European directive on Waste Electrical and Electronic Equipment (WEEE) demanding a compulsory target of six kilogrammes of electronic-scrap per person per year from private households by 2005. Parliament has also announced its determination to ban consumers from throwing electronic-scrap in the bin with unsorted waste. They plan to make individual producers finance the recycling or safe disposal of electronic-scrap.

Members of European Parliament are backing the proposed ban on binning electronic-waste with inspection and monitoring facilities. The menace of electro-scrap is growing at the rate of six million tonnes and is the fastest growing waste stream in the EU.

For a clean future

Washington DC Court approves USEPA's air quality standards

IN A landmark decision the Washington DC circuit court has upheld the US Environmental Protection Agency's (USEPA) ambient air quality standard for fine particulate matter (PM 2.5) at 15 microgramme per cubic metre ($\mu\text{g}/\text{cum}$) and ground level ozone standard at $157\mu\text{g}/\text{cum}$. The legal approval of the air quality standard comes after a five-year long battle by the USEPA to set the standards, which were initially set in 1997. Challenging the authenticity of EPA's standards was the industry sector alleging that the norms were arbitrary and not supported by any evidence.

The recent court order also rejected all the pleas of the industry sector that EPA acted arbitrarily in setting the national ambient air quality standards. In a unanimous decision the three-judge panel found that EPA "engaged in reasoned decision-making" in establishing levels that protect public health and the environment.

After the court's decision, EPA Administrator Christie Whitman said, "Today's unanimous decision is a significant victory in EPA's ongoing efforts to protect the health of millions of Americans from the dangers of air pollution."

According to the Clean Air Act, EPA has to review all its air standards every

five years to make sure they reflect the latest and the best scientific evidence. In 1997, based on thousands of new health studies EPA had toughened the standards for smog and, for the first time, set a standard specifically for fine particles equal to or smaller than 2.5 microns in diameter. ■

A spotless dream

Civil society groups to maintain roads in Mumbai

BRIHANMUMBAI Municipal Corporation (BMC) is all set to fulfill the dream of clean, hawker free roads in Mumbai. For which they have decided to hand over the upkeep of certain roads to individuals, non-governmental organisations (NGOs) and to the corporate sector.

"Any individual or organisation willing to maintain roads in their locality can come forward to join us in this new endeavour," informs Chandrashekhar Rokde, deputy municipal commissioner (special), BMC.

This move aimed at checking encroachments in non-hawking zones comes in the wake of a high court order dated May 3, 2001 for a hawker and non-hawker zone in Mumbai. There are around 40 major and 131 minor hawker free roads in Mumbai today.

"The response has been very good. We have already received more than 50 applications for sponsorship of certain

roads and have cleared 90 per cent of them," adds Rokde. The scheme calls for sponsors to maintain roads and keep them encroachment free at their own expense. They are also allowed to commercially exploit the space. Except for drainage clearance and traffic control, the sponsors will be completely responsible for the maintenance of the streets.



Mumbai: Hawkers spoil the clean look

"Municipality has limited utility services to prevent encroachments and here we can pitch in by keeping the roads free of hawkers and slum dwellers," says Madhu Sawant, chairperson, I Clean Mumbai (ICN), an NGO based in Mumbai, which has adopted B D Sawant street in Andheri. The Worli sea promenade too is being maintained by the Worli Seawoods Association. ■

Racing ahead

Pakistan has taken the lead in the CNG race from India

In the Compressed Natural Gas (CNG) race Pakistan seems to have left India behind. Figures show that Pakistan today boasts of more than 2,00,000 CNG vehicles and 200 filling stations.

Around two years ago Pakistan had less than 1,00,000 CNG vehicles, which have doubled today. The numbers are expected to increase in the next two years.

At present Pakistan is one of the world's largest CNG users, ranked only third after Italy and Argentina. They now have plans to share the technical expertise with Iran to help them convert to CNG. At a recent meeting with an Iranian delegation, Abdullah Yousuf, secretary, department

of petroleum and natural resources of Pakistan declared the government's decision to exempt CNG stations and vehicle conversions from import duty and sales tax for a period of five years.

The Hydrocarbon Development Institute of Pakistan (HDIP) had introduced CNG for vehicles in Pakistan as early as 1982. After the successful transfer of technology and demonstration of pilot stations by HDIP at Karachi and Islamabad, the government formulated CNG rules in 1992 in Pakistan and commercialised CNG as an alternative motor fuel. It was on June 22, 2000 that Pakistan launched the second phase of CNG with conversion of vehicles from diesel mode to CNG.

Deer under threat

Recent deer deaths reveal the vulnerability of animals even in their natural habitat

ISHFAQ-UL-HASSAN SRINAGAR AND
J SARAVANAN CHENNAI

TWO incidents of recent deer deaths have brought home the stark reality that so-called protected areas are no longer safe havens for these animals.

Official apathy is to be blamed in both the incidents, though they took place in two ends of the country. The first incident occurred in Jammu and Kashmir when twenty-four spotted deer died when they were shifted from the late Dharendra Brahmachari's Aparna Ashram in Mantalai to the newly built deer enclosure of the Udhampur district administration. In the other incident deer are under threat in the Guindy wildlife sanctuary, Chennai, particularly in the areas bordering the Indian Institute of Technology (IIT) campus. Home of various endangered species like blackbucks and spotted deer, this sanctuary has become increasingly dangerous for these animals with stray dogs and speeding vehicles posing a serious threat to their lives.

In the first incident, guidelines laid down by the wildlife department for shifting such animals were openly flouted without any impunity. The deer were shifted by officials of the Agriculture University and Wildlife department of

Jammu and Kashmir in cramped trucks without proper cushioning. Instead of the sheep husbandry department, private vehicles were hired to transport the animals. Result was that 24 animals were huddled in three trucks, of which 18 died en route and six at Udhampur.

Meanwhile, in the Guindy sanctuary an increase of stray dog population has resulted in them hunting deer in packs. To further worsen the situation recent construction of fences obstructs the mobility of deer when chased. Sources inform that a pregnant blackbuck doe and her unborn fawn were cornered into one of the fences and killed by a pack of dogs recently. A few chital deer have also lost their lives in similar attacks. Speeding vehicles are yet another threat to deer and other animals on the campus.

Callousness of the concerned authorities is clearly evident in both incidents. S D Swatantra, chief wildlife warden, Jammu and Kashmir wildlife department says that the decision to shift the animals was taken by the district administration. On the other hand, Deputy Commissioner, Udhampur, Shalender Kumar says, "It will not be feasible to comment on what went wrong. I have ordered a probe and let the investigations complete."

Spotted deer caught in a spot



While in the Guindy sanctuary, despite petitions by concerned individuals of IIT and reports by the Madras Naturalists' Society and the World Wildlife Fund for Nature, little action has been taken in terms of removal of fences, in curbing speeding, and reducing the stray dog menace. ■

Guards back with tigers

Court orders salaries for Valmiki Tiger Reserve staff

EXTREME measures do work! Like it did for the staff of Valmiki Tiger Reserve who had not been paid their salaries since October last year. As a culmination of their efforts, the Supreme Court has now ordered the Bihar government to pay salaries to its employees at the Valmiki Tiger Reserve.

In October 2001, the staff walked out of the reserve forest, leaving 43 tigers at the mercy of poachers. An abandoned reserve was also an open invitation to the international timber mafia.

These employees, who had not been paid their salaries for 14 months, then went on a hunger strike in front of the house of the field director. Ironically, the field director himself had not been paid his salary.

Even these measures did not work. Finally, following media reports, Ashok Kumar, trustee, Wildlife Trust of India (WTI), and member of the Project Tiger Steering Committee, filed a petition in the Supreme Court.

The SC noted that the management and administration of the forest was under the direct control of Bihar government with funds from the Union government. Notices were issued to the union government and Bihar government in January.

The state government subsequently paid the staff salaries and assured the court that it would make the project permanent. It also promised to rectify its administrative and fiscal system. ■

INDIA / BUDGET

Pedal power downplayed

A bicycle costs more, a scooter costs less. Thanks to the finance minister



Green vehicle: losing out due to bad policies

IT IS convoluted logic. While the world talks of lowering vehicular pollution and encouraging non-polluting vehicles, the Indian finance minister goes ahead and increases excise duty on CNG, the green fuel and yes, the humble bicycle, the most economical and non-polluting mode of travel.

Four major bicycle manufacturers, United Cycle and Parts Manufacturers Association, All India Cycle Manufacturers Association, and Indian Cycle and Rickshaw Tyre Manufacturers Association, have recently protested against this reckless hike and appealed to the Finance minister, Yashwant Sinha for its withdrawal. They are supported by around 1,700 small scale industrial units. Together they have demanded complete roll back of the excise hike. However, the finance ministry has conceded to only an extension to collection of duty up to June 15, 2002.

According to the bicycle association in Delhi, the current budget has hiked excise duty on bicycles and its components by four per cent, which is likely to substantially increase the selling price of this poor man's vehicle. The bicycle industry avers that cascading effect of

each component of the bicycle would make the bicycle manufacturing uneconomical and unaffordable to common people. Besides, it would also hit the small-scale units very hard.

Most bicycle components and bicycle spare parts in India are manufactured by the small scale industries (ssis), while the large scale units manufacture bicycle frames, chains and rims. Further, the duty hike may ultimately lead to a total excise incidence of over 25 per cent on a bicycle as parts and accessories are sourced from over 156 component manufacturers. According to Akhil Mathur general manager of Avon cycles, the hike in duty levied on bicycle components will make bicycles costlier by about Rs 125-150.

Government policies instead of encouraging use of bicycles have given preferential treatment to the use of polluting motorised vehicles. For instance, the Union budget over the past two years has been bringing down the prices of private vehicles. In the current budget the duty on two-wheelers and cars has been reduced to 16 per cent and 32 per cent respectively. "The government is making two wheelers and cars cheaper

and discouraging common people to buy bicycles by imposing excise duty on it," says Harish Kapoor, executive secretary, All India Cycle Manufacturers Association.

Contrarily, there are no separate lanes for the cyclists and the cycle remains the vehicle of the small income groups in Indian cities. No one seems to think that non motorised transport like bicycle could be an important alternative to relying on private vehicles. Bicycles can travel up to 1,500 pollution-free miles on the food energy equivalent of one gallon of petrol. They also increase the person-carrying capacity of a roadway by something like 600 to 800 per cent because they take so much less space.

Moreover, for up to five kilometre journey, you can reach your destination by a bicycle at the same time as on a public transport. In Delhi, it is estimated that bicycles meet over 40 per cent of travel demand in journeys of a distance less than 2.5 kilometre and more than 57 per cent in less than five kilometre long trips. However, all India figures indicate that the bicycle is not quite a popular vehicle. Estimates by Transportation Research and Injury Prevention Programme (TRIIPP) of Indian Institute Technology, Delhi show that in 1957 the bicycle transport in Delhi met 36 per cent of travel demand. By 1981, this had declined to 17 per cent and then drastically came down to just 6.61 per cent in 1994. On the other hand, scooters met only one per cent of the travel demand in 1957 but increased to 17.6 per cent in 1994.

The bicycle industry agrees that government policies have given a short shrift to the humble bicycle. It is no wonder that Indian bicycles are becoming uncompetitive. If the current trend prevails, the industry may succumb to the threat of invasion of Chinese bicycles.

According to D S Chawla, president United Bicycle and Bicycle Parts Manufacturers Association, "The bicycle industry is the only industry, which is giving the Chinese firms a tough fight in the market and this will be severely affected after the present budget proposals. With lower import duties, and higher excise Indian, Indian bicycle will be costlier than its Chinese counterpart." ■

THE SOUTH

ASIA & THE PACIFIC

THAILAND: Beast Threat

Many animals, under threat from humans, have gone locally extinct.

A recent report of the Wildlife Conservation Society (WCS) states that Asia's wildlife is in trouble due to indiscriminate hunting and illegal trade in animal parts.

Tigers across Indo-China have disappeared. They were hunted down as trophy and

in a single Jakarta market each year. At Bangkok's weekend market, trade has been pushed underground. In the late 1990s investigators documented the sale of 72,000 birds from 276 species in just 25 visits to the market.

CHINA: Biotech Sense

China is heeding biotech warnings. It plans to introduce a law to regulate the use of biotechnology in agricultural production. This

which are bio-engineered, were badly hit by this rule.

INDONESIA: Sale Logged

Indonesia plans to impose a permanent ban on export of logs to save its forests. Over-logging has nearly destroyed the country's rain forests.

Realising this, it had imposed a ban on log exports in 1980 but later replaced it with a 200 per cent export tax to protect local industry and encourage exports of higher-value wood products.

By 2000, this tax was reduced to 10 per cent in a pact with the International Monetary Fund (IMF).

This time, however, cash strapped Indonesia may receive support from IMF, with which it has a US \$5 billion loan programme. Periodic disbursements are contingent on a batch of economic reforms being implemented across all sectors.

Environmentalists aver that illegal logging became more rampant after the



Driven to extinction

for use in the traditional medicine trade. In Vietnam, large mammals and birds, like the Sumatran rhino, Siamese crocodile and Eld's deer, have gone locally extinct since the end of the Indo-China war. This was revealed in a recent workshop of the WCS, held at the Khao Yai National Park in Thailand.

According to a survey of the WCS, hunting has put half of Asia's turtles on the endangered species list, with at least one million turtles exported from Indonesia alone each year.

Over a million kilograms of snakes are imported to Shanghai each year serving as a luxury food item. More than 350,000 birds are sold

proposed law is intended to protect people's health and environment. It would ensure regular inspection of biotechnology methods to reduce harm on the ecosystem. The administration is working with several ministries on the proposed law and shall soon be tabled in the parliament for ratification.

Incidentally, Chinese biotech rules have strained its trade relations with the US. China had required genetically modified organism (GMO) product exporters to apply for certificates stating that their goods were harmless to humans, animals and the environment. New orders of the US cargoes of soybeans, 70 per cent of

SOUTH ASIA

CLEARING THE TRASH: Mount Everest is the world's tallest mountain and the world's highest garbage dump. A four-nation Asian team will clear the 8,850-metre high peak of mounds of oxygen cylinders, plastic, food cans, ropes and tents left behind by other climbers. The team will have 29 members belonging to Georgia, Japan, Korea and Nepal. They will try to clear up to 1.5 tonnes of garbage between Camp Two at about 6,400 metres and South Col at 7,900 metres. The collected garbage will be transported to Korea and Japan where it will be publicly displayed to build awareness about the trash on Everest.



ENCASHING A CRISIS: Water tankers are cashing in on water shortage in Karachi. Residents of the water-starved localities have complained that private water tankers are charging between Rs 450 and Rs 500 per tanker. The Karachi water department has failed to ensure supply of water to many colonies in the city. People who cannot afford to pay the tankers are consuming sub-soil unhygienic water at the cost of their health.



SNAIL STENCH: Thousands of sea snails are dying along a beach in Bangladesh. This has caused a stomach-churning stench, that is repelling tourists. Tourism officials said snails were washing up along a wide stretch of Cox's Bazar beach on the Bay of Bengal. Cox's Bazar, southeast of Dhaka, is the country's main tourist resort.

"One out of more than 300 species of sea snails are dying," said Mohammad Zaher, a scientist with Cox's Bazar Sea Fish Research Institute. An investigation is underway and the cause of the deaths is not yet known.

government reduced its hefty export taxes under the IMF agreement. They said illegal logging in Indonesia destroys some 60 million cubic meters of forest each year.

AFRICA

NAMIBIA: Insect Discovery

An insect never heard before, has been seen.

Researchers have identified a new order of insects in Namibia. With this discovery the total number of insect orders have come to 31.

Scientists have named this predatory insect Mantophasmatodea, an animal originally found in a 45-million year old piece of Baltic amber.

Subsequently, the existence of a living population of these insects was discovered on the Brandberg Mountain in western Namibia by a team of scientists from the National Museum of Namibia in Windhoek.

These insects are some of the last witnesses of the time when Africa and America were part of the same land-mass. Scientists say the discovery indicates that there are places on Earth that act as protective pockets, preserving tiny glimpses of what life was like millions of years ago.

SOUTH AFRICA: Mystery Fish

A tiny submarine craft will track the elusive coelacanth, a curious looking fish that

A fish 400 million years old!



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UNITED NATIONS



The world is getting warmer. This can cause glaciers to melt and within the next 10 years, water from Himalayan lakes can come hurtling down in torrents, and result in floods which could threaten thousands of lives.

According to a recent report of the United Nations Environment Programme (UNEP), global warming is not only changing the ecology of the Himalaya but also putting human lives to risks. It states that nearly 50 high Himalayan lakes could flood their banks in the next five to 10 years, sending the water crashing down the mountains.

There has been a rise of one degree Celsius in temperature since the mid 1970s causing snowfields and glaciers to melt and fill the Himalayan lakes. The UNEP has warned that if nothing is done, people and animals could be killed and bridges and farmlands destroyed. The report also points out that lake floods are not new. These

have become more frequent in the last three decades. A lake in Nepal destroyed 14 bridges and caused US \$1.5 million damage to a power plant in 1985.

UNEP scientists, working with the International Centre for Integrated Mountain Development in Kathmandu, Nepal, found at least 44 lakes in Nepal and Bhutan that were filling up so rapidly that they were in danger of bursting their banks.

Klaus Toepfer, UNEP executive director, said these findings were "another compelling reason" to act to reduce emissions of carbon dioxide and greenhouse gases.

UNEP said money was also desperately needed to fund projects to draw water from the lakes before they can flood. The water can then be used for power generation or irrigation.

Programmes have already been started at three lakes, but it is estimated it would cost nearly US \$3 million per lake. UNEP is also helping governments of Nepal and Bhutan to put in place "early warning" systems that will help them warn communities about impending floods.

has been swimming the seas for an astonishing 400 million years.

Believed to be extinct for 70 million years, a coelacanth was trapped by a trawler in 1938 off the South African coast. Later, coelacanths were also discovered near the Comoro Islands and Indonesia. Recently deepwater scuba divers accidentally came across these fish in Saldana Bay off the country's northeast coast.

The mini submarine craft, which can fit only two people and probe to depths

of 397 meters is expected to shed new light on this fish and living fossils.

LATIN AMERICA & THE CARIBBEAN

CHILE: Big No To Chips

Greens are protesting against the use of native tree species to make wood chips. Recently, Greenpeace activists chained themselves to a Japanese ship docked in Chile to express their resentment.

The protesters aimed to prevent the ship from loading 42,000 cubic metres of wood chips made from prized tree species found in temperate, old-growth rainforests in southern Chile.

The environmentalists charged Chilean timber firms of destructive harvesting of native forests that goes unpunished by the government. It is inconceivable that the government allows rich native forest to be destroyed, degraded and

threatened when its biological and ecological importance has been recognised worldwide.

COSTA RICA: Green Coffee

Costa Rican coffee already known for its rich flavour is going green. The government of Costa Rica has launched a unique 'sustainable' coffee seal to be given to growers. The message is clear. Adopt eco-friendly methods and get an award.

Those growers become eligible to receive the seal who protect plantation ecosystems, save energy, clean up waste-disposal, improve pest and disease control, provide healthy working conditions for pickers and reduce the use of chemicals.

The seal aims to raise rural living standards, strengthen the global reputation of Costa Rican coffee and add value to certified growers' beans. The Costa Rican Coffee Institute said it will monitor farms to ensure compliance.

NEW ZEALAND / AMPHIBIAN

Frog fungus

NEW Zealand's four unique frog species are under threat. A notorious toxic fungus called chytrid, blamed for decimating amphibian populations around the world has been found in the country.

The four native frog species are living fossil frogs, believed to be more than 200 million years old, morphologically

older than the dinosaurs. The chytrid fungus, identified in Australia and central America in 1998, was discovered in New Zealand in 1999. Six months ago the native Archey's frog population was found infected with this fungus. These are matchbox sized frogs, that do not have ears and do not croak.

Another native frog, the Hochstetter's frog, was also on the decline and research is underway to discover if the fungus is responsible. ■

EUROPEAN UNION / TRANSPORT

Shrink in rail network

THE European Union's (EU) efforts to boost passenger and goods transport on railways have not quite succeeded.

The Eurostat report on transport infrastructure reveals that railway network is lagging behind motorway network. According to Eurostat, the statistics agency of the EU in Brussels, motorways grew by one quarter while the railway network actually shrank by four per cent.

In 1999, EU countries had almost 50,000 kilometres of motorway with the biggest increases in Spain and France. Its rail network plummeted to around 154,000 kilometres. This indicates that EU has not been successful in reducing congestion and pollution on roads. ■

US / SOLID WASTE

Costly garbage

PEOPLE will soon have to pay more for solid waste. Trash facility operators in Virginia will be charged a higher fee of us \$5 per tonne of solid waste.

Virginia governor Mark Warner announced this recently. To implement this, he would soon move to amend a state Senate solid waste bill, which is expected to add us \$76 million to state coffers.

The money thus collected would be used for open space preservation, water quality improvement, recycling, solid waste management and clean up of abandoned sites. Taking a leaf from Virginia, the Pennsylvania is also considering a hike in its solid waste fee from us \$3.25 per tonne to us \$5 per tonne. ■

CANADA / RIVER POLLUTION

Foul water

RIVER pollution has threatened beluga whale populations and made fish eating a health risk in Montreal.

St Lawrence river is reeling under excessive industrial pollution. Montreal's Technoparc Saint-Laurent, an industrial house, near Dorval Airport site is discharging toxic chemicals into the river.

The chemicals include polychlorinated biphenyls (PCB) in concentrations that exceed government guidelines by more than 8.5 million times.

These findings have been brought to the fore by the Environmental Bureau of Investigation (EBI), a nonprofit investigative agency and presented to members of Environment Canada's police force.

Leachate from the industrial site is one of the most significant sources of PCBs and other toxic chemicals such as polycyclic aromatic hydrocarbons (PAHs) in the river. Federal laws such as the Canada Fisheries Act prohibit the discharge of toxic levels of PCBs and PAHs into waterways.

Biologist David Dillenbeck says that remedial measures must be taken to protect and upgrade the water quality of St Lawrence. ■

US / INFECTION

Deer disease

HUNDREDS of deer were shot down in Colorado to stop the spread of the chronic wasting disease similar to the mad cow.

Many of these deer were found to have contracted a brain-rotting ailment. Earlier, Colorado officials had announced that the disease had crossed the Continental Divide for the first time, endangering the state's multimillion-dollar big game hunting industry. Nobody knows how the disease occurred. But it caused deer and elk to become emaciated and die. Only one per cent of the wild deer herd was found infected with the disease.

However, fearing its spread, state wildlife agents with the help of volunteers are stalking and killing the deer and elk wandering within a five-mile radius of where the diseased animals roamed. ■

AUSTRALIA / NATIVE ANIMALS

A clean retreat

COMMUNITY concern for animals and clean waterways have helped to make Sydney a haven for native animals like koalas and sharks.

Koalas have made their home in a

Koala bears thrive in Sydney

forest in suburban Sydney. Other colonies of koalas have also been found on the outskirts of this sprawling city of late. Recently, a 200 kilogramme, three-metre bull shark was caught in Rushcutters Bay, a popular area in the heart of the city.

Earlier, a bull shark was caught further down the harbour off Balmoral, one of Sydney's most exclusive suburbs.

The explosion of marine life in the harbour can be attributed to decades of community concern and government legislation to clean up waterways. With the water cleaner, smaller fish have returned and have attracted the bigger predators that feed on them. ■

INDIA / BIRD POACHING

Falling prey

VISITOR birds coming to India every season are facing, not hospitality but hostility. They may just decide to give India a skip.

Poachers are targeting these migrant birds, as well as the indigenous ones, which flock paddy fields and wetlands in Thiruvananthapuram in Kerala. These birds include species of herons from North India and wild ducks from North and South Asian countries.

Poachers kill these birds with air guns. Some birds get trapped in nets strategically placed in the paddy fields. At times, arrows shaped from wood are thrown to kill the birds. Poachers are also known to target the eggs of pigeons, wild ducks, pheasants, quails, thrushes, starlings, woodpeckers and teals.

The Forest department is aware of their activities but it never receives the tip off on time, thus giving the poachers a field day. Poachers usually operate in the early morning hours when there are no workers in the paddy fields.

Officials insist that if the poaching continues at the current rate, the migrant birds might skip the location, which would affect the biodiversity of the area. ■

INDIA / CHILKA LAKE

Fund scam?

FUNDS meant for Chilka lake, Asia's largest water lagoon, have been diverted by the Chilka Development Authority (CDA).

The recent report of the Comptroller and Auditor General (CAG) reveals that the 10th Finance Commission had granted Rs 27 crore for the preservation of the Chilka lake. But only Rs 30 lakh were earmarked in the approved consolidated plan of action for Chilka. This amount, which was to

be used for the improvement of road networking in the area, was hiked to Rs 4.70 crore without the requisite approvals. The governing body of CDA, that increased the amount, neither sought nor received any approval for doing this from the interministerial committee. The CAG report further points out that Rs 0.85 crore out of this 4.70 crore was lying unspent in the public works deposit account of Khurda roads and buildings division, which had been allotted Rs 2 crore for the road work. Due to irregularities, the CAG commented that the objective of the fund was being defeated. ■

Still waters run deep

KANITA DUTTA / CSE

I N D I A

TRESPASSERS MOVED: The glory of Dal lake is being revived. Thirteen hotels situated in the lake area are being shifted to Humhama near the Srinagar airport. The land to be allotted to hotel owners has been identified.

TREE SLAUGHTER: Over 850 huge and old trees along the 8-kilometer long stretch of Mandrem-Chopde road, in Pednem taluka, in Goa were felled in the last two months by contractors employed by the PWD in one of the largest slaughters of trees in the state.

NO WATER FOR LAWNS AND CARS: The Haryana Municipal Corporation has banned the watering of lawns and washing cars during the morning sup-

ply hours. A special task force has been constituted to check misuse of water.

BT COTTON UNDER TRIAL: The government has finalised eight locations in the north that would conduct trials of Bt cotton from the Maharashtra Hybrid Seeds Company Ltd (Mahyco). In the current Kharif season, Indian Council of Agricultural Research will carry out detailed open field evaluation trials under the All-India Coordinated Cotton Improvement Project (AICCIP).

CALL FOR GARBAGE: Panjim residents do not have to worry about trash now. They simply have to call 9822388889 for removal of any dump and the Panjim Municipal Corporation (PMC) will attend to the complaint with the help of the quick response

vehicle which is meant to move around the city and collect garbage from overflowing bins.

FISH GET BREEDING SPACE: To conserve marine resources, the state governments of Tamil Nadu and Andhra Pradesh have banned offshore fishing for 45 days from April 15, 2002.

This is meant to prevent sea vessels from disturbing the breeding season of prawn and fish.

BATTERY BUSES: The Bharat Heavy Electricals Ltd (BHEL) has been mandated by UNDP to take up research on fuel cell-powered buses for Delhi at a cost of around US \$28 million.

POACHING RING BUSTED: Recently, the Chamoli police in Uttaranchal seized 17 musk pods and five bear gall bladders from a Tibetan refugee.

IN COURT

COAL MINING GROUNDED: Houses and roads near a coal mine can collapse without warning. A landmark decision of the US district court in Columbia has therefore prohibited coal mining companies from collapsing the surface of land over their mines.

The SC noted that underground mines can cause the land surface to sink which can damage homes, parklands and even cause water pollution. In a previous case relating to the potential effects of underground mining, the SC ruled that "damage can occur to buildings, roads, pipelines, cables, streams, water impoundments, wells and aquifers. Buildings can crack or tilt, roads may be lowered or cracked, streams and aquifers can all be drained into the underground excavations".

RESTORING LAKES: The Gujarat high court has directed Ahmedabad Urban Development Authority (AUDA) to set up an expert committee to look into ways of recharging water bodies. The court has also directed AUDA to give details about permissions granted for development around the lakes in the city. While suggesting the names of experts to be included in the committee, the court stated that the main task of this body will be to suggest methods of rain water harvesting and ways through which lakes and ponds can be recharged. The committee shall also examine whether buildings are illegally erected on lakes or ponds and file a report.

ENSURING DRINKING WATER: The farmers of the Bheema basin near Bijapur in Karnataka are in a jubilant mood. They have reasons to be happy. The Supreme Court recently admitted a public interest litigation (PIL), seeking to ensure supply of drinking water around the year. The court issued notices to the state government, Union government and the central water commission.

INDIA / WATER CRISIS

Alarming dip

PEOPLE in Madhya Pradesh (MP) are preparing to face a water crisis. Alarmed at the decreasing ground water level in many cities in the state, the MP government is working out a plan to rationalise potable water per person in the cities of Bhopal, Jabalpur, Malwa region, Ujjain and other towns.

Under the plan, a ban will be imposed on installation of hand pumps, digging of tubewells and wells. According to officials of the Central Water Resource Department, water conservation will also be taken up.

Reports from various regions in the state indicate that the water crisis has assumed monstrous proportions. Drinking water sources in 100 villages in the hilly areas of the state have dried up.

Water scarcity is at its zenith in places such as Mandsaur, Neemuch, Ratlam, Dewas, Dhar, Khargone, Khandwa, Badwani, Ujjain and Shajapur. The level of ground water has plummeted in around 500 villages of Bhopal district. ■

INDIA / ELEPHANT CONSERVATION

Project marred

THERE is no money to conduct an elephant census in Meghalaya. Faced with frequent human-pachyderm conflicts, the state forest department had planned an elephant census last month as part of its elephant conservation programme. However, the project has failed to take off due to paucity of finance.

Several conservation schemes are

Natural habitat can save elephant populations

AMIT SHANKER / CSE

INDIA / AIDS

Cure in sight

AIDS may soon become curable. Scientists will put on trial in India, a potential AIDS vaccine made from a modified Vaccinia Ankara formulation. Incidentally, Vaccinia Ankara is a harmless version of a pox virus that was the basis for smallpox vaccines. When modified, it would act as the vector, or transport mechanism for the HIV DNA. The vaccine, being refined at the National AIDS Research Institute, Pune, is expected to combat the most prevalent HIV-c strain found in India.

For developing the vaccine, the Union health ministry has signed a memorandum of understanding with the Indian Council of Medical Research and the New York-based International AIDS Vaccine Initiative. Trials on actual AIDS patients are expected to start shortly.

To ensure that their consent is informed and voluntary, and there is transparency in the process of conducting trials, the government has formed an advisory board. ■

awaiting funds sanction from the state government. According to the status paper on the census project, the rise in human-pachyderm conflict is mainly attributed to the practice of Jhum cultivation, which destroys animal habitat, forcing them to invade crop fields.

The report states that most cases of depredation occurred between June and December, which coincides with ripening of paddy and availability of cotton flower buds.

Till 2001, 22 villagers were killed and 17 injured in elephant attacks. However, only 28 per cent of the villagers wanted these animals to be completely wiped out. It also brought to the fore the fact that about six per cent of jumbo deaths were due to poaching in the area.

Conservationists strongly believe that elephant movement corridors can go a long way in saving the elephants. ■

INDIA / TREE FELLING

Green lungs to go

THE National Highway authority of India (NHAI) is all set to destroy the green canopy of trees along the Rao Tula Ram Marg near the airport in Delhi. This stretch is lined with neem, eucalyptus, seesam, peepal and badh trees.

The forest department has advised the NHAI to desist from felling the long line of trees along the Delhi-Gurgaon highway. But NHAI is buckling under pressure from various ministries to widen the road for easy flow of traffic

on the highway. This Rs 500-crore project for widening the highway has already been given to a private party on a build-operate-transfer basis for 20 years.

NHAI officials contend that there are plans to replace the cut trees with twice the number and land in the cantonment area has been sought for this purpose. The station commander has even given written consent for a 47-hectare land where trees will be planted and looked after by the army. With the heavy rush of motorised vehicles, the road serves as a green lung to the people living in its vicinity. ■

INDIA / EIA

Assessing marine threat

THE Union Ministry of Shipping has asked the Nagpur-based National Engineering Environment Research Institute (NEERI) to conduct a detailed Environmental Impact Assessment (EIA) of the Sethusamudran ship canal project in Tamil Nadu.

The EIA would be done at a cost of Rs 1 crore and is to be conducted within six months. The canal project involves the widening of the Pamban channel to facilitate the movement of coastal ships of the size of 3,000 tonnes. The project runs through the Gulf of Mannar National Park and there has been opposition to the project that it will adversely impact the marine environment of the region. ■

COMMENT



FOLLOW UP

The data is so old it is almost obsolete. The Indian Council of Medical Research (ICMR) has brought out its report on the incidence of cancer five years too late.

For all that it is worth, the "Consolidated Report of the Population Based Cancer Registries" provides information on the incidence of cancer in five urban areas and one rural centre over seven years between 1990-1996. It was meant to cover the period 1992-2002 (See *Down To Earth*, Vol 10, No 15, Faceless figures, December 31 2001).

Even though the report is replete with statistics, the ICMR has made no effort at data analysis. It plans to publish the analysis, some time in the future, probably when the data becomes totally outdated.

Although backdated, the results are somewhat surprising. For instance, if you live in India, you have less chance of contracting cancer than someone in Europe or US. There is good news for those living in Bangalore, Bhopal and Chennai as the incidence of cancer in these cities has gone down since 1989. It also seems that men are luckier than women. Men in the city of Mumbai and Vashi town are less likely to get affected by this scourge than women.

The data indicates no change in the incidence of cancer during the seven-year period. However, the report notes changes in individual cities. Out of the 20 different types of cancers described, there is an increase in ten. Incidence of blood cancer, especially lymphoid leukaemia and myeloid leukaemia has risen in all the six test areas. Delhi shows an increase in cancer of the rectum, gall bladder, ovary, prostate and brain. Mumbai shows a rise in lung, breast, ovary, prostate, and brain cancer. Bhopal shows an increase in lung cancer while Chennai has more cases of breast cancer, prostate and brain cancer. Bangalore has higher incidence of breast and ovarian cancer.

SPECIAL REPORT

When noise levels rise over 55 decibels, sound becomes unsound. Isolated pleas against the racket of revelry have fallen on deaf ears.

But a clutch of conscientious citizens across India have collectively clamoured and crusaded against the decibel din.

Their struggle has been strenuous in the face of official apathy and lax law enforcement. But it has made the judiciary sit up to these unsound practices



PREETI SINGH / CSE

SENTINELS OF SOUND

VIBHA VARSHNEY

THE persistent honking of a car stuck in a traffic jam. The blaring music playing at a wedding in the nearby community hall. The mind-numbing splutter of gen-sets every time power breaks down in the neighbourhood, or the noisome grating of gravel at a construction site next to your house. It gets to you, makes you want to plug your ears, mouth profanities or helplessly scream in sheer exasperation. But that's about as far as most go.

A handful of citizens have, however, transcended the 'bystander syndrome' and stepped into the spotlight to

crusade against the menace of noise pollution and clash against an obdurate system that does nothing about it.

Unfortunately, the 'noisemakers' lobby, including politicians, police and the elite, is strong. Consequently, activists who have approached the court and received positive judgements, have had to fight further for the implementation of the legal order by the local authorities. Several cases against noise pollution are pending in various courts of the country.

Law: A paper tiger

The Noise Pollution (Regulation and Control) Rules, which came into being in February 2000, stipulate that loud-

speakers cannot be used at night between 10 pm and 6 am. But noise often continues much beyond the curfew hour. Probably because the noisemakers are also the law keepers or backed by them.

For instance, the Mumbai police used blaring loudspeakers much beyond 10.00 pm while celebrating a function on communal harmony in January this year.

Not further away, Goa Chief Minister Manohar Parrikar also conveniently toned down the rules by declaring that as long as the noise did not become a 'nuisance', merriment could continue well past midnight during Christmas.

Festival time in Mumbai

Noise levels during religious festivals

Festival	Noise levels in decibels, Year 2000	Noise levels in decibels, Year 2001
Ganesh Utsav	Avg. 85 -105 Db In places where there were firecrackers, avg. was 115 - 120 dB	Avg. 85 - 90 dB Firecrackers banned No loudspeakers after 10 pm
Navratri	Avg. 80 - 105 dB	Avg. 90 -110 dB

Source: Pratibha Belwalker, Mumbai Grahak Panchayat

In Mumbai, when Pandit Jasraj was asked to stop his concert midway, one evening in January this year, he demanded that rules imposing noise curfews must be scrapped.

Such misdemeanours probably continue, as the ink framing the law, is still wet. Before these rules came into being, the Environment Protection Act (EPA) of 1986 made a passing reference to noise pollution. Fourteen years later, in February 2000, the Union Ministry of Environment and Forests (MEF) woke up to the dire need for regulation and formulated the Noise Pollution (Regulation and Control) Rules. Although used by the court, these are still mere words on sheets of paper. The rules state that:

- the state government, as the implementing authority, should initiate the process of controlling noise pollution by classifying areas as industrial, commercial, residential or silence zones.
- It should ensure that noise does not exceed the prescribed limits.
- It should also consider noise pollution and its effect on people while carrying out developmental projects.
- It should ensure that loudspeakers and public address systems are not used

without written permission from the 'authority' and at night (between 10.00 pm and 6.00am).

The designated authority is either the district magistrate, the police commissioner or any other officer given the mandate to implement these rules.

Noise pollution is treated as part of air pollution and the Central Pollution Control Board (CPCB), is the monitoring agency. However, CPCB does not even have a special officer to deal with the problem.

Moreover, noise pollution levels are generally monitored only during festival time and that too, in a few specific areas (see charts: *Festival time in Mumbai, Mahakumbh mela in Allahabad*). But then, authorities consider it politically incorrect to meddle with religion and cultural celebrations during this time.

For the major part of the year therefore, expensive noise measuring equipment simply gathers dust. With no documented proof of noise levels exceeding prescribed limits, it becomes all the more difficult to nail the culprits.

Official apathy aggravates the trouble further. For instance, the Tamil Nadu Pollution Control Board (TNPCB) outright refused to measure noise levels

MUMBAI

The noise level around the Brihanmumbai Municipal Corporation's (BMC) head office often goes up to a high of 79 dB. Near King Edward Memorial Hospital (KEM), it touches 68 dB. The prescribed daytime norm is not more than 65 dB for a commercial area like the BMC, and 50 dB for a silent zone like a hospital.

In 1985, the Anti Noise Pollution Committee (ANPC), an association of medical consultants and other organizations concerned about noise pollution, filed a writ petition in the Bombay High Court.

An extensive study was subsequently carried out on the extent of noise pollution in Mumbai city. The study conclusively revealed that noise levels clearly surpassed the standards set by the World Health Organisation (WHO). But even this failed to prod authorities into taking remedial action.

Instead, more shockingly, "in 1994, the government of Maharashtra actually went ahead and upped the limit for use of loud speakers from 11.00 to 11.30 pm," laments Y T Oke, secretary, ANPC. "It even gave discretionary powers to police commissioners to extend the limit beyond 11.30 pm," he adds.

The coalition once again filed a case in the high court in 1995, this time contending that the rules prepared by the Maharashtra government were contradictory to those prepared under the EPA of 1986. The high court directed the state government to bring all rules in conformity with the EPA.

However, authorities blatantly extended the time limit for use of loudspeakers for dandia, (a Gujarati dance during Navratra, or the nine nights before Dasera) to 1.00 am in 1996. The ANPC contempt petition is still pending in court.

Incidentally, "the average age of deafness has gone down from 70 years to 50 years," says Pratibha Belwalker of the Mumbai Grahak Panchayat, a voluntary agency working for noise regulation in the city.

KOLKATA

The high-decibel revelry during festivals like Durga Puja and Diwali prompted the State Pollution Control Board and experts from the Kalyani University in 1993 to probe deeper into the harmful impact of noise.

A year later, a religious organisation went to court with an appeal against the police directive of not allowing them to play bhajans using microphones, contending that it amounted to infringement of their fundamental rights. Contrary to their expectations, however, Justice Bhagabati Prasad Banerjee ruled in 1996 that nobody could be made a 'captive' listener and therefore permission would be needed to use loudspeakers. Even then the sound level should not reach unsound proportions and must remain below 65 decibels.

By Diwali 2001, noise levels became deafening in spite of at least 20 monitoring teams, with high-tech equipment, spread all over the state. Gitanath Ganguly, the special officer appointed by the high court, was flooded with complaints. According to environmentalists, the judiciary has virtually left the decibel drive to the administration and this hasn't helped matters.

KODAIKANAL

During the mid-80s, the sleepy town of Kodaikanal woke up to commercialisation and well, noise. Worried, locals, school principals and doctors of the Indian Medical Association (IMA), Kodaikanal branch, approached the police against the increasing noise levels. Disappointed with inaction, they complained to the Consumer Protection Association of Kodaikanal (CPAK), recently formed in 1993, to cater to public grievances.

However, CPAK lost this case in the Madras High Court in 1998, when the inspector of police proved in court that the area was noise free.

Fortunately, around this time, CPAK received a favourable order from the Madras High Court. This was its second case filed by its individual member, Minoo Avari.

The interim order forced the inspector of police to

control noise levels in the city. The authorities disallowed the use of cone speakers during local elections.

Another serious source of cacophony are religious performances in churches, mosques and temples. Ramraj Kumar, a doctor at the Van Allen Hospital, filed a petition in the Madras High Court against the illegal and unabated use of loudspeakers in religious places nearby, on the plea that the cacophony has an adverse effect on the performance of doctors and delays patients' recuperation. Another petition filed by V Rajeswari, registrar-in-charge of Mother Theresa Womens University pleads that the religious racket does not allow students to study and affects the performance of the teaching faculty.

However, religion and noise have become intimately intertwined. This mindset needs to be changed.

ALAPPUZHA

In this small district of Kerala, P P Sumanan, a retired arts teacher, tormented day and night by loud noise emanating from religious institutions in his Kalarcode neighbourhood, approached the Principal Municipal Court of Kerala in 1981.

Though the verdict went in his favour, local authorities refused to implement the court's directives. Sumanan again went to court. When the High Court of Kerala at Ernakulam directed the authorities to implement noise pollution rules, it came to light that the town had not even been divided into sound zones as per the CPCB standards. Exasperated, the court directed the authorities to classify the areas and only then move on to seek permission for use of loudspeakers.

This raised the hackles of the Kerala Sound Services Association, that provided loudspeakers for public functions. It protested against the court order.

Later, Sumanan had to seek police protection on receiving threats from religious groups and loudspeaker associations.

On the positive side, the Devaswom Board, sent notices to all the temples it controlled in the area asking them to stick to the court order on the use of microphones. The archbishop of Alappuzha also sent a similar directive to all the churches in the area.

in Kodaikanal, when asked to do so by the Consumer Protection Association of Kodaikanal on the pretext that the area was not under its jurisdiction.

The crusaders campaign

Since 1960, only stray voices of decibel activists kept gunning for noise pollution. However, after the inclusion of noise as a pollutant in the Environment Protection Act in 1986, this movement strengthened and received active support from various high courts and the Supreme Court (see box: *Mumbai, Kodaikanal, Alappuzha and Kolkata*).

The Solution: Still elusive

Although legislation, active implementation and awareness are the keys to fight noise pollution, it has to become a peoples programme.

There is a dire need to educate law enforcers about the hazardous nature of noise.

It is also suggested that a separate cell should be set up to receive and

Mahakumbh in Allahabad

Noise levels on major bathing dates

Occasion	Main bathing dates	Average sound level in decibels
Patish purnima	9.1.2001	112
Makar sankranti	14.1.2001	118
Manui amavasya	24.1.2001	128
Basant panchami	29.1.2001	120
Magh purnima	8.2.2001	115
Maha shivratri	21.2.2001	116

Source: Ecological and Environmental Research Laboratory, Department of Botany, University of Allahabad, poster presentation at Second International Conference on Plants and Environmental Pollution, February 2002, Lucknow

Prescribed noise levels

Maximum sound permissible

	dB(A)Leq	
	Day	Night
A – residential area	55	45
B – commercial area	65	55
C – industrial area	75	70
D – silent zone (hospital area, educational institutions and other relevant areas)	50	40

Note: dB(A)Leq – denotes the time weighted average of the level of sound in decibels on scale A which is relatable to human hearing.

Source: Noise Pollution (Regulation and Control) Rules, Ministry of Environment

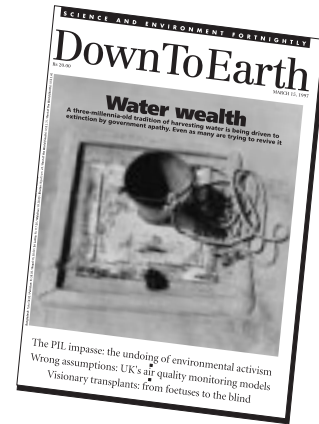
tackle noise pollution related complaints. Each complaint should be given a docket number, and the officer who takes down the complaint should write down his name alongside the grievance. In keeping with this suggestion, a special panel to monitor noise has been formed in the state of Maharashtra.

However, noise pollution cannot remain an issue just for politicians and the ruling party. "People must start making noise about noise pollution," says Sumanan, a crusader from Kerala.

P N Rao, chairman of the Anti Noise Pollution Committee, goes one step further to suggest banning of "all noise-generating instruments, unless it can be proved that they are not violating any rule (see chart: *Prescribed noise levels*)".

What can you do? At an individual level, all you need to do is make a little less noise today. The rippling effect of this one step will be a giant leap towards a better tomorrow. ■

With inputs from Jayanta Basu, Kolkata



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PHOTOGRAPHS: AMIT SHANKER / CSE

POWER TO THE PEOPLE

It was a unique event. Heads of panchayats, representing Village India, arrived in the Capital to demand the power to effectively run this traditional self-government. They set the Union and state governments a deadline for constitutional amendment before December 31, 2002



Heads of panchayati raj institutions have aggressively set the government a deadline to amend the Indian constitution and implement changes that would forcibly impact and empower Village India.

It would give villages control over natural resources like water, minor forest produce and minerals, which at present lies with the state government. The deadline expires on December 31, 2002.

On April 5-6, an all India conference of heads of Panchayats was held in Delhi. The prime minister, the leader of the Opposition, the rural development minister besides the deputy chairperson of the Planning Commission and half a dozen other key Union ministers

trooped down to Talkatora Stadium in Delhi to listen to the panchayat heads.

These representatives of Village India demanded from the Union and state governments, complete devolution of administrative and financial power to them as entitled by the 73rd and 74th amendments to the constitution in 1992.

The government had amended the Indian constitution, ten years ago, to confer power and authority on the Panchayati Raj institutions (PRIs) at the village, block and district levels.

But these have not worked because the state government still holds the keys. The panchayats do not have the financial resources to function effectively. The power to collect revenue lies with the

state government.

To rectify this, heads of panchayati raj institutions throughout the country have demanded a constitutional amendment. Today this lowest rung of democracy is at the gates of change, pushing for second-generation reforms.

The prime minister Atal Bihari Vajpayee and his colleagues in a rare show of consensus admitted that the panchayats, the last in the hierarchy of democracy, had been ignored and failed to carry forward their constitutional mandate. "After 10 years of the Panchayati Raj we need to retrospect," Vajpayee said.

The prime minister initiated the move to amend the constitution for effective and speedy devolution of financial power and administrative control to PRIs.

The proposed constitutional amendments may make possible a direct flow of funds from the Centre to the PRIs. It may make it mandatory for the state governments to devolve certain powers to the PRIs.

A set of demands termed as 'national declaration' has been given to the Union and state governments to be met by December 31, 2002 (see box: *D-list*).

The declaration demands PRI control over natural resources and constitutional amendments to ensure speedy and effective devolution of power.

Panchayat Autonomy

This conference brought into focus two major issues that have been nagging the PRI in the country: devolution of power

from the state to the PRI and internal resource mobilisation capability of the PRI for functional autonomy.

Surprised at the disparity between PRI lofty goals but low financial strength, Vajpayee stated, "*Zimmedari hai, jeb khali hai.*" He averred that "panchayats should be given a monetary uptake for development projects, just like local development funds, given to members of Parliament (MPs) and members of the Legislative Assembly (MLAs).

Agreed M Abdulahkutti, panchayat head from Malapuram, Kerala. "MP and MLA local area development funds should be transferred to the panchayat. Why should they be allowed to spend such a huge amount arbitrarily?" he asked.

A recent survey has also revealed the meagre amounts earned by the PRI. The study found that between 1992-98, each Gram Panchayat earned Rs 30,000 per annum, a block Panchayat earned Rs 60,000 and the district Panchayat earned Rs 12 lakh annually. "How can their responsibilities be carried out with this pittance?" Vajpayee asked.

M Venkaiah Naidu, the Union rural development minister, admitted that PRI had not got the attention they deserved. However, he mentioned that PRI, as the carrier of development programmes, would get priority in the 10th plan.

It is indeed true that PRI have been ignored for a long time. A study of Panchayats in 19 states, carried out by the National Institute of Rural Development (NIRD), Hyderabad, shows that cutting across party lines, there is a

D-list

Demands made by the All India Conference of Heads of Panchayats for the state and Union governments to implement within December 31, 2002.

- Hold elections to Panchayats;
- State governments must devolve funds, functions and functionaries to the PRIs;
- All parallel bodies like users groups should be put under the PRIs;
- State governments must give adequate control over land, water, minor forest produce and minerals to PRIs by making all legal provisions including amendments to existing legislations;
- All District Planning Committees, the district-level body that coordinates planning, must be made functional.

lack of political will to devolve power to the PRI. This has affected their effectiveness (see box: *Panchayati raj: Responsibility sans power*).

The state governments have the power to make laws regarding the devolution of power upon panchayats. This role of states in granting power to PRI came under heavy criticism during the two-day conference.

Financial powers

While the constitution gives legislative support to the PRI, the real transfer of

Panchayati Raj: Responsibility sans power

Survey shows no political will to empower panchayats

The National Institute of Rural Development (NIRD), Hyderabad, an autonomous institution under the Union Rural Development Ministry, conducted a survey of Panchayati Raj institutions in 19 states to ascertain their effectiveness.

Findings indicate that a lack of political will to devolve power has made these institutions toothless. Some of these findings include:

- Absence of a national consensus across party lines on what should be the status of the PRIs. There has been no political initiative to empower the Gram Sabha (village council consisting of all voters) and to get the PRIs back on track for speedy rural development;
- High-level political authorities are unwilling to give up control over finance and development schemes;

- The stronghold of the bureaucracy over PRIs continues;
- Functional and financial autonomy not granted to the PRIs;
- PRIs are perceived as lower-level agencies of the government, diluting their conception as units of self-government;
- There is a tendency to execute only schemes sponsored by the state or Union government. There are hardly any programmes carried out of PRIs own resources. PRI involvement continues to be minimal;
- Most states have failed to give Gram Sabhas a mandate by clearly defining its functions and authority. This renders the gram sabha ineffective;
- There has been no transfer of general or technical staff by the state governments to the PRIs.

D E B A T E

Is the PM listening?*Panchayat leaders react to Prime Minister's address*

"In the current process of allocation, population is taken as the standard criterion. But we strongly feel that the criteria should be based on parameters like geographical area."

G N HEGDE*Muregar, Uttar Kannada, Karnataka*

"There should be an increase in *maangdey* (honorarium) for the panchayat leaders. We are paid Rs 1800 in a year. In my gram panchayat there are villages 40 km away from the block office. It is not sufficient for attending all the meetings of block panchayat even."

**ALLALI RAM YADAV***Laloo Tola, Rajanandgaon, Chhattisgarh*

"We should be given powers to decide how to spend money. It is already decided before coming to us, same way as World Bank gives money to our government."

RAMA KANT TRIPATHI*Shivrajpur, Fatehpur, UP*

"Though elections were held after 22 years, there is not much change. It cannot happen until the development funds are given directly to the Gram Sabhas."

**SADHU PASWAN***Jamu, Jehanabad, Bihar*

"If a gram panchayat or zilla parishad makes projects, it usually does not get the funds it demands. How are they expected to give results then?"

RABI NARAYAN JENA*Birdi, Jagatsinghpur, Orissa*

power has been left to state legislatures according to area-specific needs. The 73rd and 74th constitutional amendments gave PRIS authority to independently manage 29 social sectors including public health, education, water, fisheries etc., but did not define the degree of power to be transferred.

This allows state governments to block transfer of substantial power to the PRIS. For example, Ram Karan Bhanwar, district panchayat head from Indore, Madhya Pradesh, states, "The Zilla Parishad is a toothless body. For instance, we keep records of teachers' absenteeism from the class but have no powers to transfer the erring teachers."

K C Pant, deputy chairperson of the Planning Commission admits, "Effective power devolution has not taken place as a mandate. It is dependent more on political will. In case of a good chief minister, PRIS are comparatively better empowered."

Most states therefore have the basic legal framework that has established PRIS and transferred various departments to them. But states have not supported this devolution by formulating relevant rules or guidelines enabling the PRIS to

The conference in its national declaration demanded non-budgetary resources in the form of loans with long maturities to PRIS, specifically to be used for developmental projects planned and executed by PRIS themselves.

Interestingly, the Panchayati heads also demanded control over land, water, minor forest produce (MFP) and minerals. Though these sectors should be constitutionally controlled by the PRIS, these remain under the control of the state government, probably because these are major sources of state revenue.

Only limited access or control has been granted to the PRIS. For example, in Orissa, the right to all money fetching minor forest produce remains with the state government even though it has transferred 65 MFP rights to panchayats.

In addition, a number of village level users' groups have been formed under different development programmes of the state government. For example, watershed development committees, water users' groups, women self-help groups, the forest protection committees, all of which function independent of the PRIS but share the same subjects.

No effort has been made to link

Villages must control land, water and forest produce

manage it.

For instance, PRIS do not have the necessary funds to run these departments as the state government has transferred the responsibility but not backed it up with transfer of funds or even a modicum of financial control.

For instance, Rabi Narayan Jena, panchayat head from Birdi, Jagatsinghpur, Orissa states, "when a gram panchayat or zilla parishad makes projects, it does not get the funds it demands."

Under article 243-H of the constitution, state legislatures have been given the mandate to enact laws that would allow PRIS to levy taxes, duties, toll and fees. This would make PRIS less financially dependent on the state and minimise control from the state government.

This has, however, not been done. On the contrary, various laws give the government control over almost all functions of PRIS. It even allows any whimsical state government to dissolve PRIS. Thus PRIS function at the mercy of state governments.

them to the panchayats despite being implemented by different government programmes. As a result, panchayats have been marginalised. The panchayat heads demanded bringing all these parallel bodies under their control. Sonia Gandhi, the Opposition leader also supported this demand.

"We need to direct attention to the issue of financial decentralisation," said Naidu while the Union law minister Arun Jaitley dropped sufficient hints about such a move being contemplated. He said, "The proposed constitutional amendments will deal with this."

The National Commission to Review the Working of the Constitution also favours power for the panchayats. The prime minister's proposal of directly dealing with the PRIS and bypassing the states to reach panchayats indicates a major change in the financial and administrative profile of the local bodies. ■

Richard Mahapatra with inputs from Prabhajan Verma, Amit Gupta and Ramakant Patra

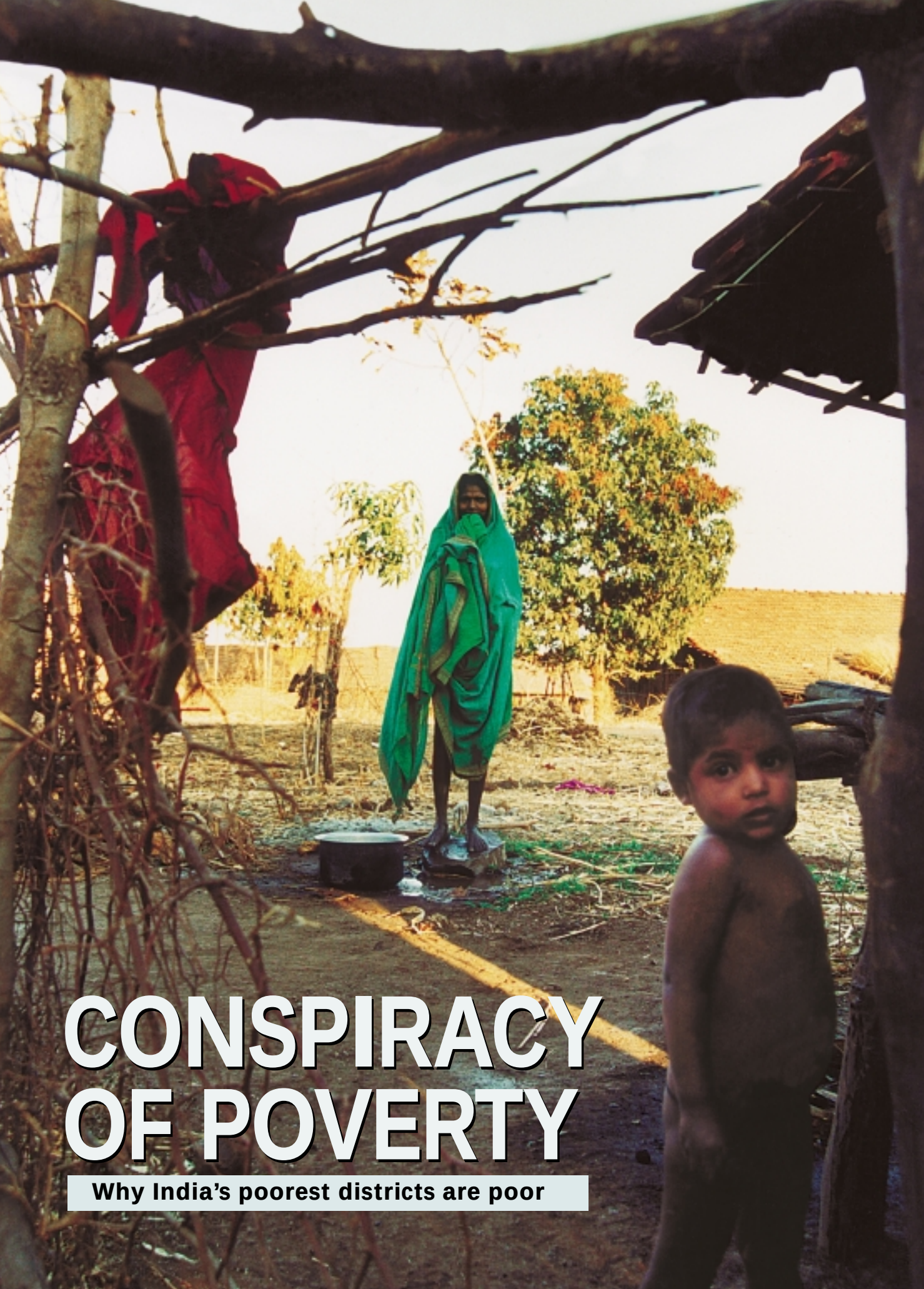


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CONSPIRACY OF POVERTY

Why India's poorest districts are poor

RICHARD MAHAPATRA

WITH PRABHANJAN VERMA AND KAZIMUDDIN AHMED

TO SURVIVE in Barigaon, a village in Orissa's Koraput district, a sufficient stock of *mahua* is vital. It's a currency that buys everything — from salt to tobacco. And sometimes a bride too. Every January, residents go to the nearby forests to check out the flowering of *mahua* (*Madhuca indica*). The more the flowering, the more comfortable life is. By February, residents finalise their budget depending on *mahua* turnover. *Mahua* decides the village's annual economy.

This is also the time when the Union government takes stock of the country's economy. This year, even before finance minister Yashwant Sinha could present his budget, Barigaon's residents knew their fate: *mahua* flowering was not good. Interestingly, this time the finance minister targeted villages like Barigaon to boost the economy. "I have to create demands from the rural areas where our economy lies. I have stopped depending on the urban areas," defended Sinha in his otherwise lacklustre budget.

But residents of Barigaon will tell you that Sinha's best efforts will not stop people from dying of hunger. Alia Majhi, an elderly resident of the village, says, "Life breathes out of a forest." A modest agricultural land and even less *mahua* from the forest may not ensure her food for the rest of the year. Sinha's budget could have fuelled economic prosperity by making *mahua* available in Barigaon — the village has a few hundred hectares of *mahua* forests. But the government controls it. "Our source of livelihood is right in our backyard but death stares us in our faces," says Alia. Sinha's calculated growth of gross national product (GNP) remains stunted as it fails to take into account Alia's GNP — her gross nature product.

Alia's predicament is akin to most of residents in India's half a million villages. Where poverty is secular and shows no sign of receding. Like Barigaon, most of India's villages are entirely

sustained by natural resources like land and forest. With 70 per cent of population depending on agriculture and around 400 million people on forests, *environment controls the rural economy*. It is the survival base on which life depends. And the relation between ecology and economy is so strong, and yet fragile, that even a small disturbance will lead to a human catastrophe like the impending starvation in Barigaon this year.

More than five decades of official fight against poverty has not alleviated Alia's uncertainty for livelihood. This, amid overflowing national granaries and a so-called declining poverty line. As state governments get busy counting its poor (as directed by the Supreme Court to distribute surplus food-grain worth Rs 50,000 crore) poverty was never misunderstood as now. So is the approach to eradicate it. Says Alia, "Just ensure *mahua*, life will be back to normal." Sinha's budget as a metaphor for the government's approach to rural poverty has lost its link with the Barigaons.

The poverty line is healthy

Irony cannot get any more ironic. Officially, the poverty line is dipping — the indicator which decides the number of poor (see box: *Do they count?* on p32). But in the village, poverty remains more acute than ever. The poverty line came down from 55 per cent in 1973-74 to 36 per cent in 1993-94 and 26 per cent in 1999-2000. However, the number of poor people remained stable: around 320 million for a fairly long period (1973-1993) and now at 260 million. The Food Insecurity Atlas of Rural India, published by the M S Swaminathan Foundation, Chennai, says that 13 states are environmentally unsustainable, while five states are sustainable based on key natural resources like forest, land and water. The environmentally unsustainable states like Madhya Pradesh and Bihar are not only the poorest but also resource-rich.

A typical Indian village economy is built around gross nature product. The entire ecology shares an intricate relationship between the private and common resources (see box: *Limits of growth*). For example, private agricultural lands get manure from common grazing land, which are a part of a government-owned pool of resources called the common property resources (CPRS). People depend on CPRs for survival. But these crucial commons are fast depleting as the focus of poverty alleviation is on the private assets. In 1900, CPRs

LIMITS OF GROWTH

A typical Indian village shares a complex, yet fragile ecological equation with both private and common resources. Even a small disturbance can lead to poverty

AGRICULTURE

DEPENDENCE: In India, 70 per cent people depend on agriculture directly or indirectly.

THREATS: Around 130 million hectares (ha) of land is affected by serious soil erosion. Drought-prone areas have gone up from 55.3 million ha in 1974 to 74.6 million ha in 1995, according to the Planning Commission.

RESULTS: Agricultural yield is going down: the rate of growth of rural employment has come down from 2 per cent in 1992 to 0.58 in 2000.

FOREST

DEPENDENCE: Non forest timber produce provide up to 50 per cent of the income to about 30 per cent of rural people, according to the Union ministry of environment and forests.

THREATS: Expanding government control and deforestation.

RESULTS: Nearly 400 million people are losing primary sources of livelihood. Food insecurity. Forest dwellers now becoming daily wage labourers in poverty alleviation programmes.

COMMON PROPERTY RESOURCES

DEPENDENCE: 15 per cent of rural households rely on this pool of common resources, according to the NSSO. It contributes 3 per cent of the average consumption expenditure of a rural household.

THREATS: Declining both quantity and productivity-wise — by 19 ha per 1,000 ha or by 1.9 per cent every year.

RESULTS: Bring half of the rural households in the country close to starvation as it works as insurance against food insecurity.

***Down To Earth* sourced the districts from a list of 100 poorest districts in India prepared by the Planning Commission. A host of poverty-environment indicators were taken to shortlist the 10 poorest districts of India**



PHOTOGRAPHS: PREETI SINGH / CSE

Time spent by women in rural India to fetch water is a major indicator of poverty

comprised 44.38 per cent of India's total geographical area. Today it is just 15 per cent.

About half of India's land is affected by soil erosion. In just two decades drought-prone areas (any area losing its moisture content thus becoming unsuitable for use) have gone up: from 55.3 million hectares (ha) in 1974 to 74.6 million ha in 1995. This means 29 per cent of India's land, which is used for biomass production, is degraded. Similarly, deforestation is taking a toll on 400-million people who depend on non-timber forest produce (NTFPs), a major survival kit in rural India. Deforestation is also drying up water sources. According to the collector of Andhra Pradesh's Anantapur district, the drying up of 100 perennial water streams reduced irrigated land from 42 per cent in the late 1940s to just eight per cent now, one of India's lowest. Moreover, the last crutch for survival in the village, the commons, are dwindling. After ensuring poverty, governments are now sponsoring it. With a new industry called poverty alleviation programmes.

could cross the revised poverty line of Rs 6,400 per annum in 1992. The reason: the programme failed to understand the environment-poverty link in a village. This created daily-wage employment, but failed to create ecological assets that would have otherwise restored the village economy.

These programmes have their own inherent limitations, says the *India Rural Development Report* of National Institute of Rural Development, Hyderabad. The poor are now the government's bonded labourers — they are totally dependent on such programmes for survival. With traditional livelihood sources like agriculture and forests gone, these programmes ensure that the poorest spend the most on food: while the average rural Indian spends 63 per cent of total expenditure on food, the poorest spends 70 per cent. The spiral of poverty widens.

Down To Earth reporters profile some of India's poorest districts spanning over different ecosystems. And find out the environmental meaning of poverty in India. The following profiles may seem repetitive. But this is only because poverty is repetitive. And competitive too.

Poverty is secular in India's villages and shows no signs rec

STEP I: Based on the National Sample Survey Organisation's (NSSO) ranking, India's 10 poorest states were shortlisted. This list was then compared with the Planning Commission's list of 100 poorest districts.

STEP II: Experts and state planning boards were consulted to check every district for their poverty ratio as also their ecological wealth. The Centre for Monitoring Indian Economy's districts profile was checked for every district's natural resource base.

STEP III: Forest Survey of India's *State of Forest Report* and

NSSO's survey of common property resources done in 1998 were used to assess the state of environmental degradation. The Food Insecurity Atlas of India was used to assess the food security scenario and their environmental sustainability.

STEP IV: A list of 13 districts from nine states was prepared. Centre for Science and Environment's indicators for poverty-environment were applied to these districts. Ten of the 13 districts were chosen for reporting, of which six have been profiled in this article.

(For detailed methodology visit: www.cseindia.org)

ANANTAPUR

Nut case

Largest groundnut cultivation

5,000 traditional water tanks

104 farmer suicides during 2000-02



DEATH is a seasonal visitor to Anantapur, Andhra Pradesh's largest district and wasteland. It comes just before sowing and after the harvest of groundnut, a cash crop that occupies 91 per cent of land in the district. More than 100 groundnut farmers have committed suicide since the last two years after getting caught in a debt trap. Totally dependent on rain fed agriculture, Anantapur's farmers are paying for the ecological devastation brought over decades, mostly by government policies. The district today howls for water.

But water was never so scarce as it is now. With an average rainfall of 520 mm, its history is replete with one of India's finest water harvesting traditions. Some 5,000 tanks harvested enough water till the 1960s that sustained traditional agriculture. Till the 1970s, these tanks ensured prosperity. Legend has it that in the 15th-18th century, its local markets used to sell pearls

and diamonds along with groundnuts and vegetables. From *Ratnalasima* (land of jewels) to *Rallasima* (land of rocks), Anantapur's poverty is government sponsored.

The death of tanks began when the government wrested control over the tanks from the villagers in the 1970s. With hardly any rainwater stored or recharged, groundwater levels went down from 33 metres in 1984 to 91 metres in 2000. The district loses a mind-boggling 1.9 tonnes of soil per hectare (ha) every year, according to a survey by the N G Ranga Agriculture University in Anantapur. Satellite images show that 54 per cent of the district's areas have lost soil cover. One million ha of land has lost its productivity, mostly agricultural lands.

The 1980s witnessed large-scale migration. The government stepped in with a range of poverty alleviation programmes. One of which was the 'Rs 2 per kg rice' policy of the then

chief minister, N T Rama Rao. "As food was procured at a very low price, the mixed crops agriculture was abandoned," says Imam, a senior journalist. Then in 1989, the district was brought under the Desert Development Programme. Forty of last 50 years have been drought years. For a district whose 90 per cent people depend on agriculture, it led to the burial of the district's fragile ecology-based economy. "The district has nearly exhausted all of its resources," says Y Ramesh of Myrada, a non-governmental organisation (NGO) based in Kairidi block.

During this time, the Technology Mission of the government of India was aggressively promoting oil seed production in the country. Anantapur featured prominently in the state government's programme as it had about 300,000 ha of land under groundnut cultivation. Propelled by huge subsidies, the district doubled its groundnut areas in just five years. "For five years it seemed as if the district was becoming another Punjab

From Ratnalasima (land of jewels) to Rallasima (land of rocks), Anantapur's poverty is government sponsored



RICHARD MAHAPATRA / CSE

with its farmers flush with money,” says Biseswar Rao, who is writing a book on the impact of globalisation on groundnut farmers in the district. The district had made a historical switch over: the traditional crops were abandoned for a subsidised cash crop with a protected market. By 1990, about 700,000 ha land was brought under groundnut cultivation. By 2002, it had reached 1.8 million ha.

But the groundnut revolution didn't last long. “The fall came in 1990 when the oil market was deregulated and palm oil was allowed to be imported,” says Imam. Meanwhile, the state government had also discontinued its populist rice scheme due to the mount-

ing burden to the state exchequer. And all of a sudden, the farmers were left high and dry.

Moreover, groundnut cultivation was becoming expensive due to inputs in the form of pesticides and fertilisers. Gradually, the yields began to drop: yield from one hectare came down from 2,000 kg in the mid 1980s to 200 kg in 2002. Earnings from groundnuts also crashed to Rs 300-500 in 1997-98, one-tenth the price just a few years ago. Still, farmers persist with groundnut cultivation. It is the only means of survival. And the reason for their deaths too: during 1995-96, around 65 farmers committed suicide. The dance of death continues in Anantapur.

PHULBANI

Access to poverty

Sal forest worth: Rs 30,000 crore

85% population dependent on forest

65% people below poverty line



The eco currency: a villager in Phulbani collecting mahua



RICHARD MAHAPATRA / CSE

RABINDRA Nath Mishra, an additional block development officer, is a bit worried. He thought calculating Phulbani's poor, as directed by the Supreme Court, would be easy. The expenditure limit of Rs 250 per month (as the decisive line between poverty and prosperity) seemed a ridiculous amount. But when the final count came, he was shocked: 65 per cent of the district's population was below the poverty line. “I can't explain why there is so much poverty,” he asks.

The answer to Mishra's question waits outside his office. Meet Biswambar Kanwar, a resident of Gochapada village. He sells fuelwood. “The more the distance of forest from my village, the less prosperous I become,” says Kanwar. His village survived on forests — fruits for food and fuelwood to sell made up for the lean four monsoon months. Two years ago, the government declared it a reserve forest and banned their entry. “We lost our food supply and were forced to pay an illegal tax on fuelwood.” The forest has shrunk to a thin patch of greenery. Now residents travel to forests some 18 km away. It takes them three days to earn Rs 30 from selling fuelwood. Kanwar has just slipped below the poverty line.

But there is no reason why Phulbani should be classified as one of the poorest districts in India. Rich forests cover 60 per cent of the district area. The govern-

Poverty alleviation programmes

ment controls 85 per cent of the district's areas and most of its resources. According to the working plan of the forest department, harvesting even a small part of its *sal* forest could fetch close to Rs 30,000 crore. And the non-timber forest produce is valued to fetch Rs 100 crore each year. But the forest department does not allow people access to even *sal* leaves. Violent clashes over access to resources have led to the killing of 15 people in the past two years.

It was not always like this. Till 1956, tribal residents had occupational and management rights over forests. Over the years, forestlands have been brought under government control. And local people have been classified as illegal occupants. Sixty per cent people in the district are illegal settlers, says the government. Going by the recent amendments to the Orissa Forest Act, they would have to be evicted.

The bureaucratisation of forests extends even to minor forest produce (MFP). For example, the government is not only the sole buyer of *sal* seeds, but also decides its support price. Delays in procurement wastes people's collection of *sal* seeds leading to distress sale. Residents sometimes spend more than a month to collect seeds but manage to earn just Rs 500. One estimate by Nipidit, an NGO, shows that just plucking *sal* leaves (for making leaf plates) can fetch enough money for sustenance. "One or two *sal* trees can sustain a family for the whole year," says Trilochan Kaunar of the Kui Samaj Sewa Samiti. But the forest department says plucking will kill the trees.

On the contrary, it is the forest department that is responsible for large-scale logging. A nexus with timber traders saw the district losing around 40 per cent of its dense forest within three decades. "Forest loss has affected the yield of MFP," says Kumuda Chander Mallik, a tribal activist. The impact of dwindling MFP is so severe that local people call the four monsoon months *Saki Danju* (starvation months). During these months, mango or jackfruit are the two major survival fruits. This year its flowering has been very poor. Warns Ramchandra Das, director, Nipidit, "Starvation deaths are imminent."

Grazed out: Dungarpur's poverty is due to the degradation of grazing lands



PRABHANJAN VERMA / CSE

DUNGARPUR

A 'common' death

Once rich in forest and grazing land

Now known as 20th century desert

68% population 'marginal and unemployed'



WHEN Bhuna Bhil of Pathara village in Dungarpur ran away from the communal carnage in Gujarat, he faced a dilemma: what would he do back in his village? It

had already exhausted all his sources of livelihood.

Known as the 20th century desert, Dungarpur's 68 per cent population has been classified as marginal and unemployed by the *District Statistical Profile 2000* of the state government. Every traditional source of livelihood in the village has either degraded or is kept out of people's reach. For example, forests that used to form 60 per cent of the district in 1943 has been reduced to just 12.5 per cent in 1999, according to the *State of Forest Report*. Local people say this is due to a nexus between timber traders and forest officials. In the early 1990s, a massive tribal uprising against large-scale deforestation forced the government to check commercial felling. With forests unable to sustain livelihoods, villagers began depending more on agriculture and livestock to supplement their income using the common property grazing lands.

The story of Bhuna illustrates the district's swirl of poverty caused by the wind of ecological change. Villagers have been migrating to Gujarat for the last five years as their own land is unsuitable for a second crop. Their

have created a new generation of bonded labourers

DO THEY COUNT?

The poor. And how they are counted in India

It takes some of the most complex calculations to decide the poverty line. In 1962, a group of eminent economist and social thinkers suggested a method: a national minimum consumption expenditure of Rs 20 per capita per month in rural areas and Rs 25 per capita per month in urban areas would be calculated at 1960-61 prices to define the poverty line.

The Planning Commission has been counting the poor since 1979 using this definition. These estimates are revised as per the methodology recommended by the Commission's Expert Group on Estimation of poverty. In 1993, an expert group set up by the Planning Commission recommended a poverty line based on calories intake: 2,400 calories per capita per day for rural areas and 2,100 calories per capita per day for urban areas. The expenditure required to get this at the 1973-74 prices would decide the poverty line.

The poverty line is updated by taking care of the prevalent cost of the required calories. But this process ignores any changes in consumption pattern thus putting a question mark over its authenticity. The Expert Group, however, evolved an alternative methodology for estimation of poverty ratios using the consumer expenditure survey data of the National Sample Survey Organisation (NSSO) and state-specific poverty lines.

The NSSO survey adopts two methods to ascertain the expenditure amount thus resulting two separate estimates of poor. The consumer expenditure data of the 55th round on a 30 day recall basis yields the poverty ratio for 1999-2000 of 27.09 per cent in rural areas and 26.1 per cent for the entire country. The corresponding figures from the seven-day recall period are 24.02 per cent rural areas and 23.33 per cent for the entire country.

A village economy is based on gross nature product,

second line of defence, livestock, has also fallen prey to the government. There is just not enough grazing land to feed the animals.

Till a few years ago, vast grasslands in the village supported the livestock of this village. The village had clearly defined rules about the use of this common resources. With a rainfed *nala* flowing nearby, the village was 'reasonably prosperous'. But with the construction of a canal, for which the government took over the commons, the equations changed. The government restricted grazing. "This broke the ecological and socio-economic dynamics of the area," says Devilal Vyas, director of the Mada-based Peoples Education and

Alienation of tribals from forests and indiscriminate cutting of trees by the Vyapar Mandal, formed by the government to 'sustainably' exploit forests, have reduced the total forest cover area to a thin strip of 35 km in south Dungarpur. This is all Dungarpur has today in the name of natural forests.

With poor irrigation facility and an average rainfall of around 700 mm, villagers in Dungarpur now hardly manage a crop a year. This is in stark contrast to the situation more than a century ago when irrigation through traditional methods was practiced on a large-scale. The primary source of irrigation has always been wells (*Chahi*), though tanks (*talabi*) have also been a



P. S. THAKUR

Fuelling the village economy: 400 million people depend on forests in India

Development Organisation, a non-governmental organisation working in this area since 1979.

Traditionally, Rajasthan has a large livestock support system: 84 per cent of households in Rajasthan have livestock. And up to 52 per cent depend on the common grazing land. Comparatively, the grazing land available in district is only nine per cent. "This provides the only resource base for animal husbandry holdings which has traditionally characterised the region," says Vyas. Deforestation and loss of common property resources are responsible for Dungarpur's slip into the perpetual cycle of poverty.

vital component in the system. These water systems still support irrigation albeit in a small way.

During 1995-96, two thirds of the 21.65 per cent of irrigated area were from wells and tanks. The district gazetteer notes the district's rich watershed practices of the past. *Talabi* or tank had an important role to play in the tribal settings. During the monsoon, the tank would serve to recharge the wells and in bad years, the tank beds would be cultivated (called the *Rohan* cultivation in Dungarpur). The takeover of these tanks combined with erratic rainfall proved to be the last nail in the coffin of the village economy.

not on the gross domestic product

SARGUJA

Losing battle

First district for tribal development

Rampant deforestation

Malnutrition and starvation deaths



POVERTY in Sarguja district has taken epic proportions. Unlike in the Mahabharat, the descendants of Pandavas and Kauravas have come together to fight a common enemy in Sarguja: poverty. And their fight is as heroic as the Mahabharat. Pandos, the local tribals and descendants of the Pandavas, are fighting for survival. For the descendant of the Kauravas, Korwas,

it is a losing battle for water. Their adversary is the forest department.

Sarguja was thickly forested till the 1960s — 60 per cent forest cover, says the Forest Survey of India. The district has also witnessed many tribal uprising over rights on forest and its produce. Till now the victors have been the forest department.

Ironically, India's first President, Rajendra Prasad, adopted the district for tribal development. Pando colonies were set up in the district, but without any legal rights. Now, the forest department calls them encroachers and their access to forests is at the mercy of the officials.

"The land given to us is *burra* (uncultivable)," says Guduku, a resident. Agriculture is dependent on rain. There are no other irrigation facilities. As a result, the Pando population switched to forest produce. *Tendu* leaf was the primary source of survival. *Mahua*, *Harra*, *Gond* were other sources. With large-scale deforestation, the Pandos are threatened once again.

The situation of Korwas is no better. Of the few thousands Korwas in the country, the largest population is in Sarguja. Budhram Korwa of Amadarha village owns two hectares of land, which

hardly gives him 300 kg of rice every year. Pointing to the nearby *nala*, his wife Nanbai says, "We depend on the *nala* for all our irrigation purposes. But during summers, it dries up." In the scorching summer, women walk close to 20 kilometres to fetch just two buckets of water leaving less time for collection of forest produce.

Water scarcity is also hitting agriculture. Though Sarguja is blessed with high rainfall (1,500-1,600 mm annually), it is also the bane for tribal farmers. With its hilly topography, most agricultural lands are on or near the slopes. Heavy rain washes off the top soil. "Our agricultural produce has gone down drastically over the years," says the Korwa. As a survival strategy, residents now sell firewood from the government forest to supplement their earning.

The huge spending on poverty alleviation has rather become a stark joke. Ram Kishore Shukla, a retired government official, has a simple imagery to audit the development expenditure in Sarguja district. "Convert the amount into coins and spread it, this huge district will fall short of land. Or deposit the money and the interest money will take care of Korwas forever."

Despite abundant rainfall, women in Sarguja walk for 20 km to fetch water



Fragmented reality

The Independence movement took shape in this district. Today it fights for ecological independence



April 16, 1917. Chandrahian village, east Champaran. Moved by exploitation of indigo farmers by the planters of the British Raj, Mahatma Gandhi gives his call for *satyagraha*. This was arguably the first call for Independence. Gandhi also envisioned the concept of *gram swaraj* (village republics) from this village in east Bihar.

Today indigo is history. So are Gandhi's dreams. The district squirms with nightmarish poverty. "*Yahan garibi ka kuch puchna hai kya* (Do you have to ask about poverty here?)" This what the people, for whom poverty is life, here say.

Gandhi based his dreams of self-sufficiency on the agricultural potential of the district, the very factor that drew the British planters to this resource-rich region. This agricultural potential today lies wasted making the district poorer than ever.

The British, along with the *zamindars* (landlords), imposed the *tinkathia* system. Under this system, farmers were bound to grow indigo on three-fourth of their agricultural land holdings. As *zamindars* controlled most of the land, the farmers were either sharecroppers or tenants. Things became worse when landlords leased the land to the British planters.

Things have not changed since: the government now wears shoes of the British. Now, 90 per cent of the west Champaran's population are marginal and small farmers. And over 75 per cent of farmers have less than two hectares of land. In east Champaran, 94 per cent of the rural land is under agriculture. "But in most villages, at least 40 per cent of the people are landless," says Rambabu Yadav, the village head of Chandrahian. The result: per capita cereal consumption (a benchmark for poverty) is 250 grammes per day compared to the national average of about 400 grammes.

So much for the nation's commitment to *gram swaraj*.

Poorest states like Bihar and Madhya Pradesh are also



Rainfall is abundant in Mandla. Still, it suffers from water scarcity

MANDLA

Brimful of thirst

Average rainfall: 1,300 mm

Irrigation: 2% of gross cropped area



IRRIGATION is a luxury that only a few can afford in Mandla, a water-rich district in Madhya Pradesh. The district receives an annual rainfall of 1,300 mm, which can easily sustain three crops a year. But Mandla residents can barely manage one.

The district is surrounded by the

mighty Narmada from three sides and crisscrossed by many rivers and streams. Ironically, residents of this district are dying of starvation, primarily caused by water scarcity. In 1999, three persons, belonging to the Baiga community, died in Kudwari village of Dindori block.

Baigas are traditionally known as "friends of forests" — forests are a part of lives, their traditions, culture and religion. For the past few decades, the government has evicted these traditional forest dwellers from the forest and rehabilitated them in the government-owned *van grams* (forest villages), where they were awarded certificates to practice agriculture.

But agriculture is alien to the Baigas. Though there is abundant rainfall, there is hardly any catchment area. Water available for irrigation is a meagre two per cent of the gross cropped area in the district. Without any irrigation facility, the plots of land have turned out to be a curse. They now work as farm labourers. The three persons who died in 1999, represent 63 per cent of the rural

rich in natural resources



population of the district that lives below the poverty line — 50 per cent of which earns just about Rs 300 per month, according to government estimates.

Since agriculture in Mandla largely depends on rain, a monsoon failure can be disastrous. “It’s all linked,” says Akali Singh who gets his name after surviving the severe famine of 1940s. “Our fields are not levelled and just a metre below the surface you will find rocks,” he says. “Every year, the rain washes off the top

soil even before the seeds can be sown. There is no way erosion can be checked. Our forests have lost their capacity to hold soil.” Agriculture in the district hardly provides six months of employment both to the landed as well as the landless labourers. “All we get is one crop. That too if it rains,” says Shankar Singh of Kudwari.

They were better off earlier when the forests of the district played a crucial role in ensuring livelihood throughout the year — each species of tree took care of a specific survival need. Earnings from *mahua* collection was the main source of livelihood for the Baigas, particularly during the lean period between June to September. “*Mahua* was the survival strategy of the tribals,” says Anand Sinh, a worker of Jabalpur Diocese Social Service Society (JDSSS), a voluntary organisation based in Mandla. But gradually, the collection of *mahua* went into the hands of traders. And Baigas lost their prime ‘survival kit’.

Now migration is in full swing. It is hard to spot young people in the villages. In the village of Sinkuhi, the youth have migrated to places like Bhusaval in Maharashtra, where they work as labourers in the railways. They manage to earn Rs 40-50 per day. “As the youth have deserted our villages, there is no one to look after our lands,” says Dumar Singh of Sinkuhi.

Poverty alleviation programmes have made some inroads in Mandla. They provide employment opportunities on a daily wage basis. But this is only an interim relief for the poor. The Rajiv Gandhi Watershed Development Mission, for example, is designed for

only four years — too short to show up any changes. “Programmes of the Integrated Rural Development Agency and other tribal development schemes have also failed because of the target approach and project mindset of the officials,” says Antony Roki of JDSSS. It is time to restore Mandla’s village economy.

Slow death

It’s a burden everyone will hate to carry. Shega Phadke, a resident of Maharashtra’s Nandurbar district, had to walk a few kilometres carrying his dead son’s body, a victim of malnutrition, before burying it on the way. It could well be the story for the parents of some 300 children who died of malnutrition last year in the district. Malnutrition is chronic in Nandurbar, especially in the rural areas. Aseem Gupta, collector of Nandurbar, who puts the figure at 22, says the reason is simple: the district suffered its worst drought.

Around 90 million people in rural areas lack access to safe drinking water. With rapid depletion of food pool like the forest and land, women and children, in particular, of districts like Nandurbar across the country have become prone to malnutrition — the first victims of environmental degradation. Due to increase in the price of cereal, rural population is consuming less of this crucial food. In fact, at the all India level, per capita consumption of cereals has been declining since the 1970s. This can probably explain why half of India’s rural children suffer from malnutrition.

WHO IS POOR? SOME PERCEPTIONS

What do people think about poverty? How do they know they are below the poverty line? In a recent participatory poverty assessment done by Praxis-ActionAid India in Balangir, Orissa, one of India’s poorest districts, local people were asked to list the key indicators of poverty.

People’s perspectives about poverty brought out some interesting aspects about the poverty-environment linkages. It also shattered the myth that poverty leads to environmental degradation. Sustainable use of the natural resources is a sign of prosperity, the study concluded. Some perceptions as to who is poor.

Someone...

- Who mortgages land to survive.
- Who doesn’t have livestock.
- Who can afford one meal a day.
- Who earns a livelihood by selling fuelwood.
- Who depends more on the forest.
- Who doesn’t cultivate two crops in a year.
- Who depends on daily wage to survive.
- Who doesn’t have a well.
- Who doesn’t have fuelwood.
- Who doesn’t get enough food from his/her own land.



A natural secret

Policymakers don't need to go too far to eradicate poverty. The solution is as close as is a village well to a villager

WHILE the Union government is bothered about the high cost of storing surplus foodgrain, groundnut farmers in Anantapur commit suicide. Clearly, measures of poverty need changing. Policymakers must now take into account the time spent by women to collect firewood or water. This distance needs to be shortened as this distance keeps them away from their gross nature product (GNP).

The approach paper of the Tenth Plan — approved by the National Development Council — has warned: “We cannot take it for granted that economic development will alleviate poverty.” The Planning Commission’s assessment of poorest states (including those reported in this story) reports a decline in the growth rate. A candid admission of five decade-old aberration. As examples suggest, villages’ prosperity revolves around a few trees and a few

water tanks. Poverty is thus a result of environmental degradation, contrary to what policymakers think.

A participatory poverty assessment done in Balangir district in Orissa shatters this myth. Residents, according to this survey, feel that over dependence on forest is an indicator of poverty. They suggested that survival on selling fuelwood is a sign of poverty (see box: *Who wants to be a millionaire?*).

In a dramatic turnaround, the approach paper of the Tenth Plan has suggested changes in the definition of poverty for the rural people. It says gross nature product will be the measure of prosperity.

But the admission of guilt doesn’t ensure that the mistakes will not be repeated. The current legal and institutional framework — not to mention the fossilised mindsets — will have to change to give people access and control over their immediate environment. Necessary governance infrastructure like area-specific planning, decentralised development and the right over the crucial resources will have to be ensured. Starting from the budget to the prime minister’s cry to use the surplus foodgrain as a blank cheque to rural prosperity may be repeating such mistakes. It will just fund the same employment generating programmes, which have failed in creating the necessary assets in rural areas for ecological security.

The latest India Development Report of the Indira Gandhi Institute of Development Research, Mumbai, points out that by raising the populist minimum support price of wheat and rice — 91 per cent of which comes from Punjab, Haryana and Andhra Pradesh — the government is curtailing its expenditure heavily on crucial sector like agriculture leading to lower GDP. “A 10 per cent increase in procurement prices of wheat and rice leads to 15 metric tonnes of additional stocks, 100,000 hectares of less irrigation and a lower GDP by 0.33 per cent in the third year. And it is adversely affecting 80 per cent of the rural population.”

The message is clear: create ecological capital at the village. Otherwise, the prime minister’s wish of a ‘hunger free’ country may be as elusive as the holy grail. ■

Who wants to be a millionaire?

The mood was sensationally upbeat in urban India when National Council of Applied Economic Research, Delhi, came up with the finding that the number of millionaires in the country was increasing. There has been a growth of 172 per cent in Mumbai’s super rich. The super rich were called ‘liberalisation’s children’ as India completed a decade of liberalisation policies.

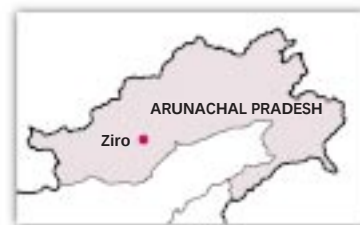
Far away from the commercial capital of the nation, a small village in Maharashtra’s Ahmednagar district, Ralegan Siddhi, could easily take on these millionaires. The secret: a sustainable community effort to regenerate their ecology. A study done by the Centre for Science and Environment shows that over a quarter of the households in Ralegan Siddhi earn in excess Rs 0.5 million a year. Ralegan, after a decade of “ecological regeneration”, has a branch of a major bank in the village with the total savings of villagers standing at Rs 30 million.

Shall we aptly term them “environment’s children”?

Create ecological capital to boost the village economy

Health wise

Arunachal Pradesh wakes up to the fact that women's health is the key to overall societal well-being



LIAN CHAWII ZIRO (ARUNACHAL PRADESH)

Arunachal Pradesh, though one of the less explored areas in India, is known for its breathtaking natural beauty, distinctive culture and tradition, as also its abundant natural resources. This inspiring beauty is, however, blemished by many inequities, not least of which is the sorry state of the women here. The women do more than their fair share of the work, but get nowhere close to claiming the dignity or respect that is due to them.

Future Generations Arunachal Pradesh (FGA) intends to change that. FGA has been playing a crucial role in improving the social status and health of women since it was set up in 1997. It currently works in 22 remote villages of the state, with a membership that varies from local communities to forest officers, doctors and nurses. The executive director, based in Itanagar, coordinates activities and distributes responsibilities to voluntary workers at the village level.

FGA has come up with an innovative system they call SEED, or self-evaluation for effective decision making, survey. Communities in every village prioritise their needs. Based on this prioritisation, an action plan for the following year is charted out. SEED enables communities to understand their social and environmental situation and moves them into active participation. The most important issues that came up after the survey are health, conservation of forests and education. Once these needs are identified, the FGA ties up with the local communities in organising medical camps, adult education classes, latrine construction and various other services.

However, the FGA was faced with a daunting task. The women of Arunachal Pradesh had very little time to consider their own health or affairs. Kago Yam of village Ziro says, "We work from dawn to dusk and our hands are rougher than that of our husbands, but we take it in our stride." This is where FGA saw the aspect of health and conservation

blending. The women face an additional burden due to the increasing distance between the forest and the villages.

"These days we have to walk around five to seven kms to collect firewood from the forests," says Hibu Yassing from Siro village. These difficult circumstances pose numerous health problems for the women. Yassing is one such victim, who frequently complains of pain in the calves and backache. "Backache, muscle pain and stomach ailments are the most common complaints among the women here," says Kago Kena, a local nurse in the health department.

Yet another problem the FGA is faced

return home by evening, expect the women to have their *oh* (local rice beer) ready and served to them," says Punyo Chada, a local school teacher. Little wonder then that liver cancer is so common among the men, says Kakoty.

Village welfare workers (vwv) constituted at the village or site level are trained in primary health care. "We learn to treat minor ailments like diarrhoea and fever and detect high blood pressure," says Takhi Oniya, a member of the vwv. "Married women with leadership qualities, who show a natural interest in social work, are selected for the training," says Amit Sharma, a member of the FGA.

Village women workers recruited by Future Generations Arunachal Pradesh



with: most women continue their strenuous work well into the last days of pregnancy. Miscarriage and stillbirth are common problems among the women here. "These women take no rest after childbirth, and are back in the fields soon after delivery," says S Kakoty, medical superintendent of Ziro.

"The men of these communities mostly carry out the hard labour, roam around the whole day and when they

The vwvs conduct a monthly door-to-door survey on the prevalent ailments, the results of which are tabulated at the head office in Itanagar. Many feel these figures are more reliable than that of the primary health centre because every house in the site is approached.

The FGA is aware of the daunting task that lies ahead. However, they plod on, encouraged by the dent their efforts have made. ■

An urban dream

Goans come together to protect the irreplaceable rain trees of Panaji against a callous government

FREDERICK NORONHA PANAJI (GOA)

What started as a plan to cut some 37 trees, including large canopy rain trees, along one of Panaji's most scenic riverfront roads between Campal and Miramar, ended with some unusual protests by citizens, and an embarrassing climbdown for the Bharatiya Janata Party (BJP) government. In about three weeks of hectic campaigning, a group of largely middle-class citizens thwarted the government's action to widen the Campal–Miramar road. The campaign, though, was more than just that. It was a caution notice to governments present and future of Goa.

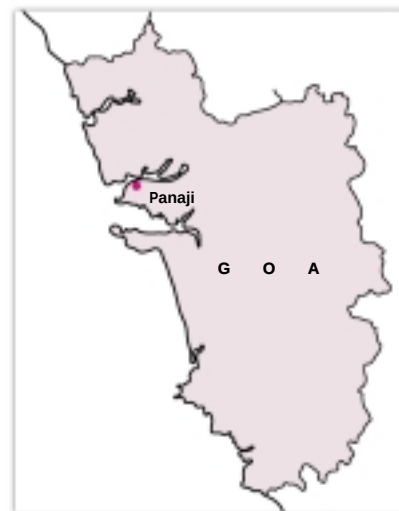
Goa has seen a considerable loss of its green areas (although official figures tell another tale) over the past four decades. Since colonial rule ended in 1961, there has been hardly any increase in the area under urban parks. One of the points that the campaign sought to drive home is that the government cannot improve Goa's abysmal public transport system at the cost of trees.

Microbiologist and environmentalist

Nandkumar Kamat was one of the first to raise an alert over the government's plans. Kamat, who recently headed the official one-man committee to study privatisation of beach facilities at Miramar and vetoed the plan, said, "The most shocking aspect is that the public works department (PWD) considers the trees a removable nuisance."

He pointed to a World Wildlife Fund study of some 907 trees in Panaji. Among the most beautiful species identified in this former Portuguese colony was the rain tree (also known as the 'monkey pod tree' because its seed looks like the fingers of a monkey). *Samanea saman* (or *Enterolobium saman*) has a huge canopy, and is conserved in Hawaii, Brazil, Argentina, Thailand and Philippines.

Some 22 of these majestic rain trees were to be axed. "Some are 90 years old, like the ones near the indoor stadium," he said. A number of these trees were planted during the Portuguese colonial period, and Kamat terms them 'irreplaceable arboreal wealth'. He believes these trees are some of the



largest specimens in Asia, imported from Latin America by the Portuguese.

The protest, held in the upper middleclass suburb of Panaji, is particularly unique in the manner in which it was conducted. The campaign also went on to cause some amount of controversy. There was an air of music and celebration, even as citizens protested peacefully. Of course, the protest had its share of detractors, like Goa University microbiology professor Joe D'Souza, who said, "To add a nail to the coffin of our woes, the call given by non-governmental organisations (NGOs) in support of trees turned into a *tamasha* and a musical extravaganza rather than emerge as a determined bid to save Goan society."

Interestingly, this is not the first time that the Campal locality has vocalised strong reservations against plans to cut down trees. In the late 1990s, there were strong protests against such plans. Journalist Cyril D'Cunha argues that the road being widened has hardly seen any traffic jams. "Is it a pocket-widening scam?" he asked, referring to the powerful contractor–politician–bureaucrat nexus in the state. Engineer Sylvester D'Souza of Dona Paula argues that there are traffic jams in the area, but they are caused "not so much due to the width of the road as the poor traffic planning".

However, this view too has a number of opponents in the state. The local daily *Gomantak Times* editorial on March 19 said, "There is no point crying hoarse about greenery because there are experts who know (the) requirements of social or urban forestry." Says Goa University political scientist and former

Cartoonist Mario Miranda adds his bit to the protest campaign



FREDERICK NORONHA

And they fell...

A less happy story from another part of Goa

Even as Panaji dwellers came together to protect rain trees that would have fallen to the government's road expansion plans, over 850 trees about as huge and old as the 37 they saved fell to the public works department's (PWD) axe in another part of Goa — the Mandrem–Chopde road in Pednem taluka.

It appears that the order for felling the trees was issued without the mandatory inspection, as the government had already acquired the land for widening the road. Even a preliminary inspection of the eight kilometre stretch that has been widened would have revealed that the road could have been diverted in many places to prevent the felling of these majestic trees.

Among the trees cut down were rare varieties of mango trees — manga hilario and musarad — which were a rich source of income for their owners. The paltry compensation paid for the felled trees is a disgrace. Rare tamarind trees, known for their delicate foliage and unique fruits, were also mowed down. Besides this, fertile paddy fields have also been covered by the road widening activities.

Suhas Pareskar, a school teacher, told the Goa Foundation, a non-governmental organisation, that he saw locals weeping when the trees were being axed. He heard people saying that the roads lined with shady trees were their tradition and that the Bharatiya Janata Party (BJP) government in power wishes to break with that great legacy.

journalist Aureliano Fernandes, “The coming together of citizens is a positive development as far as social capital is concerned...(But) in Miramar, a handful of people are involved in protecting their backyards. This is environmentalism disguised... another case of middle-class selfishness.”

Captain Leo Lobo, general secretary of the People's Movement for Civic Action (PMCA), one of the civic groups leading the campaign, asked some pointed questions. Was it “absolutely necessary” to widen this stretch of road? Was the cause of traffic congestion studied? How would the project affect people living on either side of the road? Given the high cost of the project, were any low cost solutions explored? PMCA concluded with an alternate traffic plan to tackle the situation in the area.

Patricia Pinto — civic campaigner, also on the Panjim municipal council — argues that trees along Panjim's avenues that fell have been replaced “by trees that do not blend with the surroundings”. For instance, rain trees have been replaced by badam trees. Botanical Society of Goa's Hemant Y Karapurkar, a former senior government servant himself, says that while he does not wish to glorify colonialism, the Portuguese rulers of Goa “introduced various types of trees into Goa — coconut, mango, ficus and mixed tree-lined avenues were a common sight.” Those days, there were fewer roads and less people, he points out.

Karapurkar points out that a



The rain trees that were to be cut down are actually conserved in Hawaii, Brazil, Argentina, Thailand and Philippines

problem today is avenues of monoculture — like avenues with only Australian acacia or gulmohar trees. “Perhaps more socially acceptable trees, mango, tamarind and jamun trees will find their way into avenue planting,” he adds.

On March 13, citizens sent this petition to chief minister Manohar Parrikar, who is also the member of legislative assembly (MLA) for Panaji. It stated, “We believe the government's decision is ill-conceived. It may resolve traffic problems on the Miramar road for a few years at best, but it is not a long-term solution to traffic congestion.” It suggested enforcing traffic discipline and other means to reduce the congestion. Parrikar sought to give an assurance that no tree will be “unnecessarily axed”. However, snubbing the outcry

from environmentalists and NGOs, he said, “These are mere attempts at raising a controversy...some groups have political interests.”

Possibly because the protestors were urban and affluent citizens, the Goan media went into overdrive. Advertising world guru Bal B Mundkur angrily wrote to local newspaper *The Navhind Times*, offering a Rs 25,000 donation to “start the ball rolling” for a Save Campal's Rain Trees Fund. Protests on March 17 included famed cartoonist Mario Miranda doing sketches, and others chipping in with poems, drama, “balloon magic”, art. This storm raised concerns from a far wider circle than just the few names known for taking up environmental issues in Goa.

The municipal council replied on March 19, “This council has not passed any resolution, nor issued any permission, for carrying out proposed widening of the road, which involves cutting of footpath and trees...The matter was taken up by the chairperson of this council with the chief minister, who clarified that there was no proposal for cutting trees along the road.”

The government said it was keeping the project “in abeyance” in view of the “concern” about tree cutting. But it argued that the road was “just” a two-lane stretch, while the adjoining stretches (including the newer Miramar–Dona Paula section) are four-lane roads. The protest, evidently, does not end with one small victory. ■



PHOTOGRAPHS: ANIL AGARWAL / CSE

SATELLITE MAPS FORESTS

Jhum farming destroys forest cover in northeast India

THE hills are alive with tradition. One method kills, slashes and burns, the other is healing, and sustains. In the northeast hills of India are found medicinal plants that are treasured for their life giving potential. Tribals use these plants to kill pain and treat diseases.

On these hills, people also practice the age-old method of shift cultivation, which involves clearing away forests to plant crops. After the nutrients in the soil are exhausted, they move away to newer forested areas for fertile land. The abandoned farmland needs almost a century to return to its former state. It is this method of cultivation that is solely responsible for the alarming depletion of land resources in northeast India.

For the first time a government sponsored study used space technology like satellite remote sensing and geographic information system for the purpose of bio prospecting and conservation.

This study found that about 0.45 million families in Northeast India annually cultivate 10,000 square kilometres of forests. With the phenomenal increase in human population, the cycle of shifting or *jhum* cultivation has decreased from 20-30 years to about 5 years and even up to 3 years in many areas. The total area already affected by this

method of cultivation is around 44,000 square kilometres.

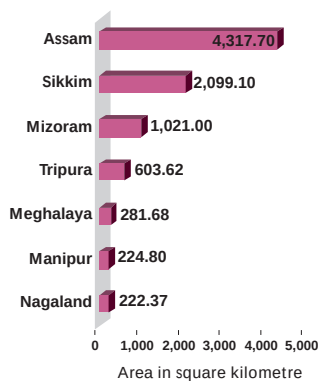
These are the gloomy results of this study on biodiversity characterization at the landscape level, jointly conducted by the department of space and the department of biotechnology in 1997.

The study aimed to create an information base for conservation by mapping land use, vegetation cover, and biological richness for the long-term maintenance of biodiversity. Bio-diversity is understood as the totality of genes, species, ecosystems and habitats in a region and the amazing web of connections between them. For example, the seeds that an elephants eats, which pass through its digestive system, tend to germinate better than ordinary seeds. Thus elephants do their bit to maintain biodiversity.

The study encompassed India's most biologically rich sites in forested landscape viz, Northeastern region, Western Ghats, western Himalayas and Andaman and Nicobar Islands. These areas constitute 8.73 per cent of the total forest cover of the country. Of this, the northeastern region comprises 5 per cent of the total forest cover. The recently published report focuses on biodiversity in northeast India.

Known as the bowl of diversity, Northeast India comprises the state of

Islands of green *Protected areas in North East*



Source: Indian Institute of Remote Sensing, 2002, Biodiversity Characterisation at Landscape Level in NE India using Satellite Remote Sensing and Geographic Information System

Sikkim and the seven sister states of Assam, Arunachal, Manipur, Meghalaya, Mizoram, Nagaland and Tripura. This region has a broad range of ecological habitats from grassy meadows to dense humid evergreen forest, disturbed secondary formations to almost virgin natural forest. Of the 16 major forest types in India, 13 types are observed here. Of the 8000 reported species of flowering plants from the Himalayas, 5000 species are found in this region. These states also boast of 54 ecologically stable formations, out of the 221 identified in other parts of the country.

Sadly, however, the study found that forests here were threatened with uncontrolled degradation and conversion to other forms of land uses. The report states, "The tropical vegetation of this region, typically occurring at elevations of up to 900 meters including the evergreen, semi-evergreen and moist deciduous forests, is facing maximum pressure due to human intervention. The evergreen rain forests in the Assam valley, the foothills of the eastern Himalayas and the lower parts of the Naga Hills, Meghalaya, Mizoram and Manipur, where rainfall exceeds 2,300 mm per annum have been extensively fragmented."

The report notes that a higher level of fragmentation allows for low biodiversity. Fragmented forests mean fewer plant species. Fragmentation also reduces the density of forest cover and therefore the species diversity.

The primary cause of this fragmentation is shifting cultivation. Also, human pressure on land, encroachments on forest lands, illicit felling, lopping for fuel wood and fodder and even industrialisation in the form of saw mills and plywood factories have led to deforestation. The absence of a scientific forest management strategy and weak government policies have also contributed to this degradation.

This has resulted in the loss of biological diversity, damage to wild habitats, soil erosion and degradation of watershed areas. Today, over-exploitation, habitat loss and fragmentation are the three threats to the bio-diversity of this region.

The study also found that the tropical semi-evergreen forest has higher diversity in Arunachal Pradesh followed by Meghalaya, Assam, Nagaland, Manipur and Mizoram. But

Verdant forests of the northeast



Northeast map

The area of study through space technology



this forest too was highly fragmented. Tropical evergreen forests have highest diversity in Arunachal Pradesh, followed by Mizoram, Assam, Nagaland, and Tripura.

Temperate mixed forests possessed higher species diversity value. These forests were least disturbed in many states as they occur at higher altitude usually away from the human interference zone. Other vegetation classes, pine, rhododendron, fir, hollock, hollow, bamboo, sal and teak possessed low diversity. The riverine forests had average species diversity. The jhum lands and degraded forest possessed medium species richness and mostly mixed and cosmopolitan species were observed in these forest vegetation types.

On the positive side, the report states that the human population density in this region has not yet reached levels that would be detrimental to biodiversity. However, population is most likely to increase and cross the level of disturbance threshold. It therefore suggests that to avert this situation, it is important to develop alternate sources of livelihood for the local people, including tree-based occupations like horticulture on already degraded forest slopes.

The report also suggests development of corridors between patches of forest, which would increase species diversity. It also recommends development of ecotones between adjacent communities. The report warns that fragmentation of large patches of natural vegetation must be avoided and isolation of patches should be minimised. An environment rich in biological diversity offers the broadest options for sustaining human welfare. ■

Polluting ships

Ships and boats could be polluting the air as much as cars and lorries, shows a new study conducted by researchers from the University of Delaware, USA. During their study, the researchers found that marine vessels emit twice the amount of nitrogen oxides than was previously estimated. This suggests that waterways should be included in air pollution audits that have so far just focussed on industry and road traffic. "For most part, these marine traffic emissions have been missing," agrees Brian Lamb from the Washington State University, USA.

Threats to forests

A new study warns that if timber harvest continues unchecked in the Mexican cloud belt forests, millions of monarch butterflies who spend their winter there would face imminent threat in the coming few decades. To assess the effects of logging, researchers from Virginia-based Sweet Briar College analysed aerial images of the forests that were taken over 28 years. The researchers found that in 1971, the forests were extremely lush, but by 1999 more than 40 per cent of this green canopy was reduced to semi-altered forests. "Our findings reflect the limitations of government mandated protection decrees as deterrents to habitat degradation," the researchers said.

Source not sinks

The rivers and wetlands of South America's Amazon rainforest breathe out as much carbon dioxide into the atmosphere each year as the dry regions of the forests absorb, shows a new research. This suggests that, as a whole, the Amazonian and other tropical forests are in a state of carbon dioxide equilibrium. Because carbon dioxide is an important greenhouse gas, this could help scientists work out how deforestation and industrial activity affect global warming. "Now that we have identified another source of carbon dioxide it makes the whole system appear a little bit more sensitive to disturbance," says Jeffrey Richey of the University of Washington in Seattle, USA.

Corals in trouble

Massive coral bleaching strikes Great Barrier Reef



Corals of Great Barrier Reef: endangered due to bleaching

AN EPIDEMIC of coral bleaching has adversely affected Australia's Great Barrier Reef for the second time in four years. This was revealed during a survey recently carried out by the Australian Institute of Marine Science. The epidemic is also fast spreading to the islands of the South Pacific. Coral bleaching occurs when higher sea temperatures force algae out of the coral polyps. These algae have a symbiotic relation with the corals and they lend them their brilliant colours. Usually, bleached coral recovers in the next cool season, but if all the algae are lost, the corals die and the reefs crumble.

According to the Great Barrier Reef marine park authority, bleaching around Keppel island is extreme, with almost all the species suffering there. Other places badly hit include Whitsunday island and Magnetic island. The bleaching follows record sea temperatures since the beginning of the year. "Almost the entire reef's temperature was 2°C or more above normal for more than two months starting from early January to mid March," said Thomas Goreau, president of New York-based Global Coral Reef Alliance. "This was warmer and

longer than the bleaching that wiped out the Maldives, Seychelles and western Australian reefs in 1998."

The high temperature seems to be connected to the onset of a new El Niño, which also caused the said bleaching in 1998. But Goreau says that global warming is the key underlying factor. "It means that the reefs are already under stress before the El Niño start," he said. According to him, catastrophic mortality of corals would have certainly taken place by now. He alleges that the Australian government is reluctant to discuss the extent of bleaching because of its ambivalence about action on global warming.

Marine scientists across the world are very concerned about the bleaching, especially in the wake of numerous reports about many bleached, dead coral lying across much of the South Pacific, including Tahiti, the Cook Islands, New Caledonia and Fiji. "It will take a long time before we have full confirmation of the magnitude of the disaster," he said. "But when it is all in, I predict we will have confirmation that almost all corals across the entire South Pacific have died in the last few months." ■

Not immune to threat

A compound commonly found in fungicides and pesticides causes irreversible damage to our immune system

A POTENTIAL counter threat to white blood cells (WBCs) has been recently uncovered. The WBCs are rendered irreversibly powerless after a brief exposure to triphenyltin (TPT), a compound found in some agricultural pesticides and fungicides. This was discovered during a study conducted by researchers from Nashville-based Tennessee State University.

Tests conducted by researchers indicated an apparent irreversible inhibition of the cells' function after as little as an one-hour exposure to TPT. "A one-hour exposure to TPT causes about a 50 per cent to 60 per cent loss of the tumour killing function of the cells," said Margaret Whalen, who oversaw the work. Even after the TPT is removed, the cells are unable to regain their strength, as evident during tests conducted by Whalen's group with human leukaemia cells. "Even after the compound is not present in the body, the WBCs are unable to kill the leukaemia cells," Whalen said. She believes the findings could explain to some extent why a few people face more cancer risks.

The tests were the first ever to examine TPT specifically in human natural killer cells. Most other studies have involved animal cell lines. It's also the first time the irreversible effect has been shown, she added. "The results indicate that brief exposures to TPT can cause persistent suppression of human immune system function," said Shar-nise Wilson, one of the researchers. "Though most of the TPT levels that agricultural workers are exposed to in the fields are probably lower than what was tested by us, it is hard to know what real life levels for phenyltins are," noted Whalen.

In the near future, Whalen, in collaboration with researchers from the Murray State University in Kentucky, USA, hopes to test blood samples of agricultural workers who have been exposed to TPT to see whether significant

quantities of the compound can be measured in their blood.

The researchers are currently investigating whether interleukin-2 — a protein produced by other immune system cells — might help reverse the inhibitory effect of TPT. "It looks like it can to some extent," said Whalen, but she quickly pointed out that the study is still ongoing and there is no conclusive data. ■

Deep impacts

Global warming has even increased the temperature of the lithosphere

OVER the past half-century, Earth's entire surface or the lithosphere has warmed up significantly and is gaining energy at approximately the same rate as the atmosphere and cryosphere (the portion of Earth's surface where water is in solid form such as sea ice, snow cover, glaciers, ice caps and permafrost). This was discovered during a recent study carried out by researchers from the St Francis Xavier University, Canada, and University of Michigan (U-M), Ann Arbor, USA. "Our findings remove the last doubt that warming of the planet is anything other than a global phenomenon," said Henry Pollack, one of the U-M researchers.

Until recently, the story of global warming has been built up primarily on the basis of temperature measurements of the atmosphere, cryosphere and the oceans. These measurements provide enough information to reconstruct a rough temperature history of Earth

for the past 140 years. However, such measurements have left out one major component of the climate system: the surface of the continents that cover almost 29 per cent of the planet's surface.

Now, Pollack and his colleagues have completed the picture by determining how much the continental rocks have warmed in recent centuries. The scientists based their analysis on temperature readings taken by lowering sensitive thermometers into holes drilled from Earth's surface into rock formations on six continents (Africa, Asia, Europe, North America, South America and Australia). These readings can reveal how temperatures have changed in the past because the heat that surface rocks absorb from the atmosphere travels slowly downward into subsurface rocks, leaving a distinct signature in the rocks. Signals from short-term daily or seasonal variations penetrate only a few metres, and the Earth quickly "forgets" them. However, temperature changes that take place over hundreds of years are preserved in deeper rock.

The researchers' calculations, based on data from 616 bore holes, found evidence of an increase in the heat content of the continents over the past 500 years, with more than half of that heat gain occurring during the 20th century and nearly one-third of it since 1950. "The magnitude of global warming we estimated is very similar to that which has come from the numerous studies of the ocean, atmosphere and ice," said Pollack. "We believe it makes a persuasive case that the warming has been truly global and steps should be immediately taken to contain it." ■

Heated relation

With an increase in temperatures the lithosphere is heating up

Time Interval	Mean Heat Flux (mWm^{-2})	Heat Gain (10^{21}Joule)
1950-2000	39.1	9.1
1900-1950	29.1	6.8
1850-1900	18.0	4.2
1800-1850	14.2	3.3
1750-1800	10.0	2.3
1700-1750	7.6	1.8
1650-1700	5.9	1.1
1600-1650	3.5	0.8
1550-1600	1.9	0.4
1500-1550	1.0	0.2

Note: mWm^{-2} = Watts per square metre. The values are often quoted in (mWm^{-2}) to make the numbers a sensible size (1,000 milliwatt = 1 watt).

Charting the menace

All components of the Earth are affected due to global warming

Climate system component	Time	Heat content increase (10^{21}Joule)
Lithosphere	1950-2000	9.1
Atmosphere	1955-1996	6.6
Oceans	1955-1996	182.0
Antarctic sea ice	1950s-1970s	3.2
Continental glaciers	1955-1996	8.1
Mountain glaciers	1961-1997	1.1

Source: All values were taken from Levitus et al. (2001) except for the estimate of the heat gained by the continental lithosphere.

Choking links

High levels of leptin, a hormone produced by fat cells in the body, could explain why obese people develop dangerous blood clots more often than people who are not overweight. The association between obesity and blood clots is well known, but the cause has remained a mystery. Now, new research with mice, conducted by scientists at the University of Michigan (U-M) Medical School, USA, indicates that leptin may be responsible. "Our results suggest that clot formation begins with some type of interaction between leptin and the leptin receptor on platelets — blood cells which stick together to make clots," says Daniel T Eitzman, a cardiologist at the U-M Cardiovascular Centre.

Successful fighting

India is making dramatic progress in its fight against tuberculosis. The disease infects two million Indians each year — one-quarter of all new cases globally. A treatment campaign that started in 1998 has now reached 40 per cent of India's population, up from two per cent at the outset, according to a report by the Indian government and Atlanta-based US Centres for Disease Control and Prevention. Four-fifths of patients are now recovering after the treatment, with the death rates in treated areas slumping from 29 per cent to four per cent.

Deadly predictions

Anger and loneliness are just some of the feelings people express when they discover they have Alzheimer's. But what if you knew 20 years beforehand that this was to be your fate? This disturbing possibility has moved a step closer with researchers from St Louis-based Washington University School of Medicine developing a blood test for Alzheimer's in mice. The test spots the chemical markers for the disease long before any symptoms appear. Many experts opine that the test would help in evolving better treatment for the disease that is the most common form of dementia in older people across the world.

Energising solutions

An improved ORS formulation would not only cure dehydration but even diarrhoea and cholera



Healing touch: ORS is vital for a dehydrated child

AN IMPROVED formulation of oral rehydration solution (ORS) has been recently approved by the World Health Organisation (WHO) and the United Nations Children's Fund (UNICEF). It is soon going to be endorsed by the Indian government. The new formulation has the same constituents as the old one — glucose, sodium chloride, potassium and citrates. But its glucose and sodium content is much less. Due to this, the new ORS is more diluted than the fluids in the body tissue and thus can be easily absorbed. This not only makes it a cure for dehydration that follows diarrhoea but for the disease itself.

Diarrhoea, a disease caused by pathogens such as *Vibrio cholera* or rotavirus, kills millions of people every year. The scientific community around the world felt that by increasing the ORS absorption levels such deaths could be prevented. Therefore, an expert committee was set up by the WHO in 1994 to

create sufficient scientific data for justifying the change.

Multi-centric trials were carried out in six countries — Bangladesh, Brazil, India, Indonesia, Peru and Vietnam — by various organisations including the International Centre for Diarrhoea Diseases Research, Bangladesh, Children's Hospital, Vietnam, and All India Institute of Medical Sciences (AIIMS), India. The trials were carried out on 147 adults suffering from cholera and 341 children suffering from cholera and diarrhoea caused by pathogens other than *Vibrio cholera*. Factors such as total stool output of the first 24 hours of treatment, duration of diarrhoea, need to provide the fluids intravenously and incidence of treatment failure were taken

into consideration.

The effect of the new formulation was dramatic in children. When tested in 341 children suffering from diarrhoea caused by pathogens other than *Vibrio cholera*, there was a marked reduction in the necessity of providing nutrients intravenously. Even in children suffering from cholera, the use of intravenous therapy was reduced (30 per cent as compared to 44 per cent in children given standard ORS).

"The new ORS reduces the period of sickness by 22 per cent and stool output by 30 per cent as compared to the old ORS formulation," said M K Bhan, coordinator of Centre for Diarrheal Diseases and Nutrition Research, AIIMS. A statistical analysis carried out to determine the cost benefit of the revised ORS showed that a total of 142 deaths per million cases of diarrhoea can be avoided if the new formulation is used. The money saved due to this would be around US \$1,200 per death. ■

Cleanly this means trouble!

Hormone-rich shampoos make some girls enter puberty early

UNBEKNOWN to many parents, a few hair products, especially some frequently used by black people, contain small amounts of hormones that could cause premature sexual development in girls, some experts claim. However, the evidence about the same is largely circumstantial and the case is still to be scientifically proven.

Throughout the West, girls are tending to reach puberty earlier. This has been blamed on everything from improved diet to environmental contaminants. But African-American girls enter puberty even earlier than their white counterparts. About half of them develop breasts or pubic hair by age eight as compared to just 15 per cent of the white girls, indicates a study. In sharp contrast to this, in Africa girls enter puberty much later regardless of their socio-economic status, experts say.

Such big discrepancies may be explained, at least in part, by the more frequent use of hormone containing hair products among African-Americans, says Chandra Tiwary, former chief of paediatric endocrinology at Brooke Army Medical Centre in Texas, USA. "I believe that the frequency of sexual precocity can be reduced simply if children do not use harmful hair products," he says.

In the past, Tiwary had conducted a study of four girls, including a 14-month-old who developed breasts or pubic hair months after beginning to use such products. The symptoms started to disappear when these girls stopped using the products.

Another study by Tiwary showed that some of the products used by his patients contained up to four milligrammes of oestradiol hormone per 100 grammes of the product. Others contained up to two grammes of oestriol hormone per 100 grammes of the product. B&B Super Gro, a shampoo sold in the US that is labelled as being rich in hormones, was found to contain 1.6 grammes of oestriol per 100 grammes of the shampoo.

Such harmful products are very popular because they are marketed as treatments to deep-condition dry and brittle hair. Moreover, most of them are not labelled for their harmful ingredients. Therefore, most consumers remain ignorant about their adverse affects.

A study published earlier by Su-Ting Li of Seattle-based Child Health Institute suggests that nearly half the African-American parents use such products, and that most also use them on their children. For other ethnic groups the figure is under 10 per cent. ■

The malefactor

Males are more susceptible to chronic arsenic poisoning than females

MALES are more susceptible to chronic arsenic poisoning than females, shows a recent study conducted by Japanese researchers from the University of Tokyo, Kumamoto University, International Medical Centre of Japan and Niigata University of Health and Welfare. During their study, the researchers analysed the correlation between arsenic exposure and skin lesions. The exposure was calculated by measuring arsenic concentration levels in the urine of the study's subjects. The study, carried out in two rural communities in Nawabganj district of

Bangladesh, involved people who were at least 20 years of age (112 males and 138 females from the first community and 108 males and 193 females from the second community).

After conducting several tests the researchers found that the urinary arsenic concentration value for females was much higher than those for males. However, this did not make them susceptible to the adverse affects of arsenic. But the males were found to be more susceptible despite having low concentrations of it their body.

According to the researchers the difference might be due to variations in the duration of exposure: the females were exposed less to arsenic since they had migrated from less contaminated areas after their marriage. Two other potentially confounding factors, sunlight exposure and smoking, may also account for the susceptibility of males.

But the researchers state that the results of the finding cannot be considered conclusive as it has several drawbacks, the main one being the huge difference between the number of males and females studied. The difference could have resulted in over estimation of the susceptibility. They assert that future comprehensive investigations are required to prove the inferences of their study. However, they say that elucidation of such modifying factors should be of great importance in the future implementation of any mitigation or intervention measures. ■



Proactive technique

Researchers at the Ohio-based Case Western Reserve University have developed a new technique for getting submolecular information about protein molecules using the Atomic Force Microscopy (AFM). Ordinarily AFM produces a rather fuzzy image of protein molecules. But the researchers used a combination of AFM, genome information and other electron microscopic data in a highly sophisticated image processing technique to produce a reasonable three-dimensional image of aggrecan, a cartilage protein. The researchers hope that the technique will lead to intelligent drug design and other interventions to prevent or alleviate diseases like arthritis.

New biosensors

Scientists from the US-based Princeton University have developed biosensors that can provide electrical measurements for individual living cells. The cells pass through a small fluid chamber in between two electrodes and in the process change the capacitance of the biosensors. The development could provide researchers with valuable aid in identifying the stages of cell development as well as distinguishing cancerous cells from normal cells.

Speeding up research

The world wide web has a huge resource of information available to tap. But precisely because of its size, it is also extremely hard to search for the relevant information. Now scientists have found that the web spontaneously organises itself into communities and a new search algorithm could speed up the hunt for the relevant material substantially. Researchers from Princeton-based NEC Research Institute have found that the pages on the web congregate into social groups that focus most of their attention on each other. The new search algorithm ignores the text of the page and only focuses on the link to other sites and so on till it identifies islands with things in common. When the new algorithm was tested it proved to be better than conventional engines like Google and Yahoo.

Discovering the starlet

A recently discovered galaxy could give vital insights about the formation of the universe

FOR the first time, astronomers have observed a very young galaxy. This observation could offer crucial clues about one of the most complicated puzzles of modern cosmology that pertains to the formation of structure in the universe. Though, in the past, several theories have been evolved about the formation of galaxies and other objects in the universe after the big bang, none of them have been very convincing.

The galaxy, termed MS 1512-CB58s, was recently discovered by S Savaglio of Italy-based Rome Astronomical

from it 10 billion years ago. This time period is also used for determining the age of the galaxy. Ordinarily, light from such a far off galaxy would be very faint, but due to some cosmic coincidence, light coming from MS 1512-CB58s was magnified. This phenomenon called gravitational lensing occurs when there is another object, like a galaxy or a cluster of galaxies, lying between the object and the Earth. The light from the galaxy is scattered and then magnified by the intervening clouds of dust and gas surrounding the 'in-between' objects.



Breakthroughs in cosmology help in understanding the mysteries of the universe

Observatory and her team working at the European Southern Observatory located in Chile. According to the astronomers, MS 1512-CB58s is about 12 billion years old, and when it was formed the universe was about three billion years old.

One of the most interesting things about our universe is that the farther we look into space, the earlier we look into time. This is a consequence of the finite speed of light — if a galaxy is 10 billion light years away, then the light that we are receiving from it today is the light which emanated

Because of the magnification, the astronomers were able to infer several interesting theories. According to them, since there is a lot of dust and gas in the immediate neighbourhood of MS 1512-CB58s, it is very evident that there is a vast cluster of galaxies surrounding it. This means that even as early as three billion years after the big bang, the universe had evolved to a great extent. Many experts opine that in future, this inference could go a long way in helping astronomers understand the formation of structure in the universe. ■

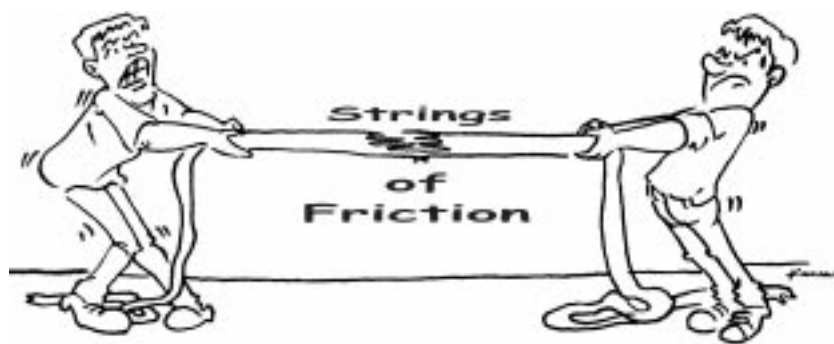
Rubbing up the right way!

Microscopic string like structures cause friction among surfaces

WHEN you move a piece of chalk on a blackboard, a nerve tingling screeching sound is produced. This is an example of the 'stick-clip' motion that occurs when two surfaces that are not lubricated move on each other. According to R Budakian and S Putterman of the University of California, USA, one of the main reasons behind this kind of motion or friction is the formation of microscopic string

balls. One, about 0.2 millimetres in diameter, was attached to an optical fibre, while the bigger one (about two millimetres in diameter) was fixed to a mechanism whose motion could be precisely studied and controlled. The scientists could precisely measure the smaller ball's displacement mainly because of the optical fibre's presence. Changes in the forces between them, and also in their area of contact helped the researchers assess the displacement. They first studied the pulling apart motion of the two balls.

What they found was that when the balls were held together, narrow bridges of gold formed between them and these broke when they were pulled apart. Surprisingly, when the balls were



like structures between the two surfaces when they are brought into contact with each other. The researchers say that these structure need to be broken before the surfaces can slip on each other.

At the most obvious level, roughness of the surface is responsible for most of the 'stick-clips'. But for scientists, smooth looking surfaces have ridges and irregularities that interlock with each other and provide the friction and hence the stick-clip motion. But with the new research results such theories would be revised.

To prove their theory, the two researchers experimented on two gold

made to slide on each other, a similar phenomenon was again noticed. Strings were formed when the balls came in contact with each other. The strings got stretched and finally snapped when the balls were made to slide on each other.

The finding of Budakian and Putterman would help a lot in building miniature mechanical devices. For these devices, conventional methods of lubrication have failed till now. A better understanding of what makes surfaces stick together as shown by the researchers' experiment would pave way to make considerable progress in manufacturing these devices. ■

Better than the best

Osmium metal is even harder than diamond

RESEARCHERS have recently broken the myth of diamonds being the hardest substance found on Earth. Researchers from US-based Lawrence Livermore National Laboratory (LLNL) have discovered that osmium, a metal, is harder than diamond. It withstands compression better than any other material.

A measure which is commonly used to study hardness of materials is the bulk modulus or the resistance to compression of a material. It is usually found that materials with higher bulk modulus are also hard. In the past, theoretical predictions about the higher bulk modulus of osmium as compared to that of diamond were not taken seriously. But now, H Cynn and his colleagues at LLNL have experimentally proved the higher bulk modulus of osmium. They used a diamond anvil to put a small piece of osmium under high pressure.

A diamond anvil consists of two diamonds separated by a metal gasket with a tiny hole in the centre. Osmium powder and argon were placed in the hole and subjected to very high pressure of 600,000 atmospheres. The atomic spacing of osmium was recorded using x-ray diffraction at various pressures and then the bulk modulus was measured. The researchers found that osmium has a bulk modulus that is about five per cent higher than diamond.

The finding could lead to the development of many novel superhard materials with unique properties. Since the atoms in osmium retain their spacing under high pressure, it should be possible to incorporate other materials like carbon in it to create harder substances. ■

FLOOD CONTROL

[or how to make embankments again and again]

Melting into oblivion

With rising atmospheric temperatures, glaciers worldwide are rapidly melting. This is a disaster in the making that is yet to be acknowledged

RITU GUPTA

TIP of the iceberg. This is an apt description for the recent collapse of a large Antarctic ice shelf — an apparent signal of an impending disaster. The catastrophe, blamed on global warming, had been predicted in 1998 by scientists from the UK-based British Antarctic Survey. Unfortunately, none paid heed to the warning. Experts say the collapse is a precedent for the future of glaciers worldwide.

Glaciers are accumulation of ice and snow. On the basis of their size and underlying topography, they are classified as ice sheets, ice shelves, ice caps,

more than its normal pace. Such glacial advances and retreats are natural phenomena that occur during glacial (time of accumulation) and inter-glacial (time of melting) periods.

At present, the world is witnessing an inter-glacial period. However, the retreat in recent times has been much more rapid than the gradual retreat expected in such a period. Glaciologists blame the rapid rates on global warming. "Dramatic changes in the recession rates were the first indicators of global warming. Increasing levels of greenhouse gases have accelerated the natural process of glacier melting to a great extent," says Syed Iqbal Hasnain of the

rising temperatures. For example, with the temperatures rising by 1°C, the Alpine glaciers have shrunk by 40 per cent in area and by more than 50 per cent in volume since 1850. For the past half a century, scientists from Switzerland-based Zurich University have monitored two specific Alpine regions called the Engadin and Simplon. Their findings indicate that in Engadin, 24 of the 54 investigated ice patches have vanished since 1955. In Simplon, 10 of the 31 bodies have melted completely since 1967. "Alpine glaciers are expected to disappear completely by 2050," says Martin Beniston of the Fribourg University in Switzerland.

Australian glaciers are vanishing too. A recently concluded expedition of the Australian Antarctic division to the remote Heard island revealed that the island's 34 glaciers have decreased by 11 per cent in area and 12 per cent in volume. For instance, the island's Brown Glacier, which was 6.3 km long in 1947, had retreated by 1.2 km till 2000, losing more than 26 per cent of its area.

The saga is unending. Since 1963, the Qori Kalis glacier in Peru has shrunk by at least 10 per cent. Its rate of retreat has been 155.5 m per year or 0.4 m per day! "You can sit there and virtually see the glacier retreating. Assuming that the current rate of retreat continues, this ice cap will disappear some time between 2010 and 2020," said Lonnie Thompson, a glacial geologist at the Ohio State University, USA. Quelccaya ice cap is another Peruvian glacier shrinking rapidly. It is at least 20 per cent smaller than what it was in 1963.

Even Africa's Mount Kilimanjaro is receding at a fast pace. Its mapping since 1912 to 2000 indicates that its snow cover has shrunk by 82 per cent. Experts say that by 2015 it will have no more snow cover. It's not the only one — the ice cap of Mount Kenya has also shrunk by 40 per cent since 1963. The Helm and the Illecillewaet glacier of British Columbia have both retreated by over 1,100 m starting from 1900. The Bering



ASHOK DILWALI

Glaciers across the world are facing an uncertain future due to global warming

outlet glaciers, piedmont glaciers and valley glaciers. Snow usually gets accumulated on a glacier's highest part known as the accumulation area. On the other hand, most of the melting and evaporation occurs further down in a region known as the ablation area. Between these two areas, there is a region where snowfall equals snowmelt. Here the glacier is said to be in equilibrium. Whenever this is disturbed, either by increased snowfall or by excessive melting, the glacier advances or retreats at

Glacier Research Group at Jawaharlal Nehru University (JNU), New Delhi. Global warming has even reduced the precipitation of snow.

Over the years, the alarming recede has been well documented by numerous studies, including several done by the US Geological Survey. During these studies, satellite data about present area under glaciers has been compared with historical records and fluctuations in temperatures. The results show that recession rates have increased with

glacier in Alaska has shrunk by 10-12 kms in length during the past century, losing 130 kms of its area. Venezuela has lost four of its six glaciers since 1972 and Papua New Guinea is virtually bereft of any.

The mammoth tragedy

The snouts of Himalyan glaciers are receding faster than in any part of the world, according to a study done by the International Commission for Snow and Ice (ICSI). "The melting of Himalyan glaciers is a burning issue. The maximum damage can be seen in the central and eastern side," says Somnath Dasgupta, professor in the geological department of Jadavpur University, Kolkata (see 'Beating Retreat', *Down To Earth*, Vol 7, No 23, April 30, 1999).

The Himalyan glaciers are extremely sensitive to changes in climate because they accumulate snow during monsoon and shed it in summers. "This is unlike Europe and other higher latitude glaciers that accumulate snow in winters and recede in summers. This gives them time to build up their snow cover," says Hasnain.

Among all the Himalyan glaciers, Gangotri has been the focal point of concern. "Its retreat in the last three decades has been more than three times the rate during the preceding two centuries," says Hasnain. Data from Geological Survey of India shows that between 1935 and 1996 the glacier retreated by 1,147 m — an average rate of 19 m per year.

The consequence of such recession is that Himalyan mountain lakes are being filled faster, threatening thousands of lives with colossal floods. This was revealed during a study conducted recently by scientists from the United Nations Environment Programme (UNEP) and International Centre for Integrated Mountain Development (ICIMOD). The study showed that at least 44 glacial lakes in Nepal and Bhutan are

Vanishing roof

Himalyan glaciers are receding at a fast pace

Name of the glacier	Location	Time period of study	Average rate of recession (per year)
Milam	Uttaranchal	1849-1957	12.5 m
Pindari	Uttaranchal	1945-1966	23.0 m
Gangotri	Uttaranchal	1935-1976	15.0 m
Bara-Shigri	Himachal Pradesh	1906-1945	26.0 m
Kolhani	Jammu & Kashmir	1857-1909	15.0 m
Machoi	Jammu & Kashmir	1906-1957	8.1 m
Chungphar	Jammu & Kashmir	1930	30.0 m
Dokriani Barak	Uttaranchal	1995-2000	20.0 m
Chota-Shigri	Himachal Pradesh	1995-2000	20.0 m
North Nanda Devi	Uttaranchal	1960-2001	35.0 m
North Rishi glacier	Uttaranchal	1960-2001	32.0 m
South Rishi glacier	Uttaranchal	1960-2001	44.0 m
Trishul	Uttaranchal	1960-2001	28.0 m
Bhagirathi Satopanth	Uttaranchal	1960-2001	45.0 m

growing in size so rapidly that they could burst their banks within as little as five years. A good example is Nepal's Tsho Rolpa Lake that is today six times bigger than it was in the late 1950s.

A UNEP spokesperson said that such a problem is likely to be globally widespread, especially in South America, India and China. Bursting of such lakes and a fast recession rate would cause large-scale flooding and mudslides and eventual drying up of the rivers. This would indirectly have important consequences for water supplies, hydroelectricity generation and riparian habitats.

Cold-shouldered

Ironically, despite such adverse affects, the Indian government has undertaken no studies about the phenomena. "It is essential to know the net loss of glacial mass that occurs every year to assess the impact of global warming on glaciers. But no infrastructure is in place for this," says Hasnain. Agrees R Shreedhar, a geologist and trustee of the Academy of Mountain Environics, a Dehradun-based non-governmental organisation. "The government always waits for a tragedy to happen. Climate change is an issue ignored by the government. We lack technologies to assess our snow melt," he

said. "Glaciers are studied by the government only for defence purposes. The results of such studies are kept confidential," says Sarfraz Ahmed, a glaciologist with JNU's Glacier Research Group.

Official apathy is reflected in the fact that the Union government's department of science and technology (DST) does not acknowledge the crisis. "It is not definite that global warming is the cause behind the recession. Glaciers keep fluctuating. It is a natural process. There is no reason to be alarmed about," says K R Gupta, a scientist at DST, who is a part of the department's programme about glaciers. However, Gautam Ghosh of Geological Survey of India agrees that the government has shown a lax attitude towards assessing the impact of the recession. "We have not systematically identified the fluctuation caused by global warming," he says.

Shreedhar opines that the only way out is to evolve disaster mitigation programmes and involve local communities in their implementation. "Good network of meteorological stations should be established and they should be run by local village councils," he adds. If the government fails to pay heed to these dire warnings, we may face a catastrophe of unprecedented scale. ■

SCANDALWOOD

[or how to make a tree vanish in a bureaucratic jungle]

No matter how one looks at the Supreme Court's April 5 ruling on air pollution in Delhi, it is undoubtedly a milestone in Indian judicial history. After extensive hearing on all the nitty-gritty, the court used significant innovations of the law, such as health as a part of right to life and use of the polluter pays principle to penalise a polluting technology, to chart an exact course of action for a vacillating, evasive government. Legal experts share their opinions



A SEMINAL JUDGMENT

The bold principles enunciated by the government are backed by a study of the practicalities involved



P N BHAGWATI

THE Supreme Court has delivered a seminal judgment, banishing diesel buses off the streets of Delhi, albeit in a phased manner. The judgment unambiguously demonstrates that where the executive fails in its duty, the court cannot merely sit and watch. There is no doubt that increasing pollution levels in Delhi are taking a very heavy toll on those living here. The court, appropriately moved, had to assume responsibility for protecting the citizens' right to health in the face of environmental pollution and an executive that was merely dragging its feet.

The right to a clean and healthy environment is part of the right to life enshrined in the Indian Constitution. There have been numerous occasions in the past when the Supreme Court has, by adopting a highly activist attitude, enforced the citizen's right to a clean and healthy environment. It has, in the process, directed the state and its officials to take positive steps to put an end to environmental pollution and ecological imbalance.

The Supreme Court has, through judicial activism,

fashioned the strategy of public interest litigation, and then used this strategy effectively towards ensuring environmental protection. The Supreme Court has rightly assumed the role of protector of the environment, so vital for human existence.

Cases involving environmental pollution and other social issues require considerable material to be placed before the Supreme Court, in order to enable the court to come to a correct decision, not only legally but also socially. The application and enforcement of the law cannot be made in the abstract. Law has to deal with and resolve social and economic conditions and issues. It has to, therefore, deal with causes and effects, facts and figures, the needs of the people and the implications and consequences of the decision that the court is to make. In the present case, for example, the court would need to have certain facts laid down before it: an assessment of how much compressed natural gas (CNG) is available in Delhi, production levels, whether there are enough outlets spread out over different parts of the city, and whether vehicles will have to form long queues for hours to obtain CNG.

I am happy to note that the Supreme Court has taken these practical considerations into account in its historic judgment. The court must be congratulated for taking a decision that, I am sure, will go a long way towards making Delhi relatively free from vehicular pollution, and a safer place for the teeming population of the city. ■

The author is former chief justice of India.

FOOD FIRST

Wealthy and impoverished nations cannot share common environment regulation mechanisms



RAJINDAR SACHAR

EVER since the Supreme Court ordered non-CNG (compressed natural gas) public vehicles off the road, Delhi commuters have been in the grip of a crisis. The Bhure Lal Committee's preference for CNG won the day over the earlier Mashelkar Committee report, which recommended multiple fuels, including diesel, for Delhi. The latter finding also had support from Tata Energy Research Institute director, Rajendra K Pachauri. That Pachauri's bid for chairpersonship of the Intergovernmental Panel on Climate Change was backed by the Bush administration, against the incumbent US chairperson, speaks volumes for his credibility.

In the choice between cleaner air and the alleged heavy burden on industry, the US government had no option but to heed to practical problems. The Indian Supreme Court, however, is in a luckier position. It is not answerable to public sentiment, even if both the Central and state governments are tearing their hair out, faced by the wrath of millions of daily commuters.

I do not wish to comment on the comparative merits of CNG and low-sulphur content diesel buses. But I do believe that the court, in attempting to lay down Euro environmental standards, is losing sight of ground realities, which is that it is the developed countries that have benefited from environmentally offensive trade in the last hundred years, and are principal offenders to this day. It is also important to note that since 1989, more than 500 attempts have been made to export toxic waste from Organisation for Economic Cooperation and Development (OECD) countries, which generate 98 per cent of all hazardous waste to non-OECD countries.

Even principle 11 of the 1992 Rio Declaration on Environment and Development says, "Standards applied by some countries may be of unwarranted economic and social cost to other countries, in particular, developing countries."

Though recognising the effects of pollution and consequential global warming, we must not forget that it has to be co-related to the development needs of each country. This is emphasised by Jagdish Bhagwati, UN economist, who says that the setting of 'international standards' for all ignores the fact that there are legitimate reasons for diversity in environmental regulation across countries.

I am not suggesting that the role of government officials and politicians, who deliberately ignored the directive since 1996, ought to be condoned. They may justifiably be accused of colluding with the industry or acting out of political considerations. But notwithstanding that, the courts have to maintain balance and to keep in view the question of prioritisation between environmental considerations and 'right to livelihood' guaranteed by Article 21 of the Constitution.

Also, considering new reports that the promised supply of CNG buses may not be possible to keep up with, a relook at this problem is called for. More so in the light of the fact that the US has categorically refused to be bound by Kyoto Protocol.

In their misplaced though well-meaning enthusiasm, courts, goaded by environmental-cum-business lobbies insist on applying Euro-II standards in an India that has an annual per capita income of US \$350. When the same was introduced in Europe hardly a decade back, the per capita annual income stood at roughly US \$15,000. These rigid standards have resulted in mass unemployment and also the present crisis of public transport, thus seriously jeopardising the livelihood of hundreds of thousands, and consequently violating their



human right of living and working.

I must confess that I am bitter that these so-called clean air enthusiasts invoke the language of the first world, and seek to apply the same, most certainly inapposite, tests in developing countries. I may sound reactionary to environmental faddists, but if ever a choice were to be made between preserving the human right to livelihood and shelter, and the so-called environmental standards laid down by the first world, I would unhesitatingly opt for the former. To me, nothing takes precedence over the right to food. ■

Justice Rajindar Sachar is retired chief justice of the Delhi High Court.

THE RIO TAX

[or how to line your pocket and
blame it on the 1992 Rio Earth Summit]

THE SHERLOCK PRINCIPLE

When there is only one option left, it is the right answer: this was the Supreme Court's logic in the CNG order



RAJEEV DHAVAN

ON APRIL 5, the Supreme Court finalised its order on the use of compressed natural gas (CNG) buses in Delhi, ensured that an adequate supply of CNG would be available to the transport sector, imposed fines on diesel bus operators who continued to flout the apex court's order and scheduled the supply of buses on a realistic basis to convert Delhi's fleet of buses to CNG. The diesel lobby and some commuters are furious. Should the Supreme Court be doing these things? Are courts taking over government?

Every citizen has a right to health and clean environment. A huge amount of literature persuaded the court that Delhi's citizens lived at their own peril. There was little dispute, on the basis of studies — Indian or otherwise — that where the levels of respirable suspended particulate matter (RSPM) were exceeded, people, especially children, were placed at asthmatic and cancer risk of frightening proportions. A World Bank study of 1992 estimated that the annual health costs due to lack of ambient air quality was Rs 5,550 crore. This is an underestimated number.

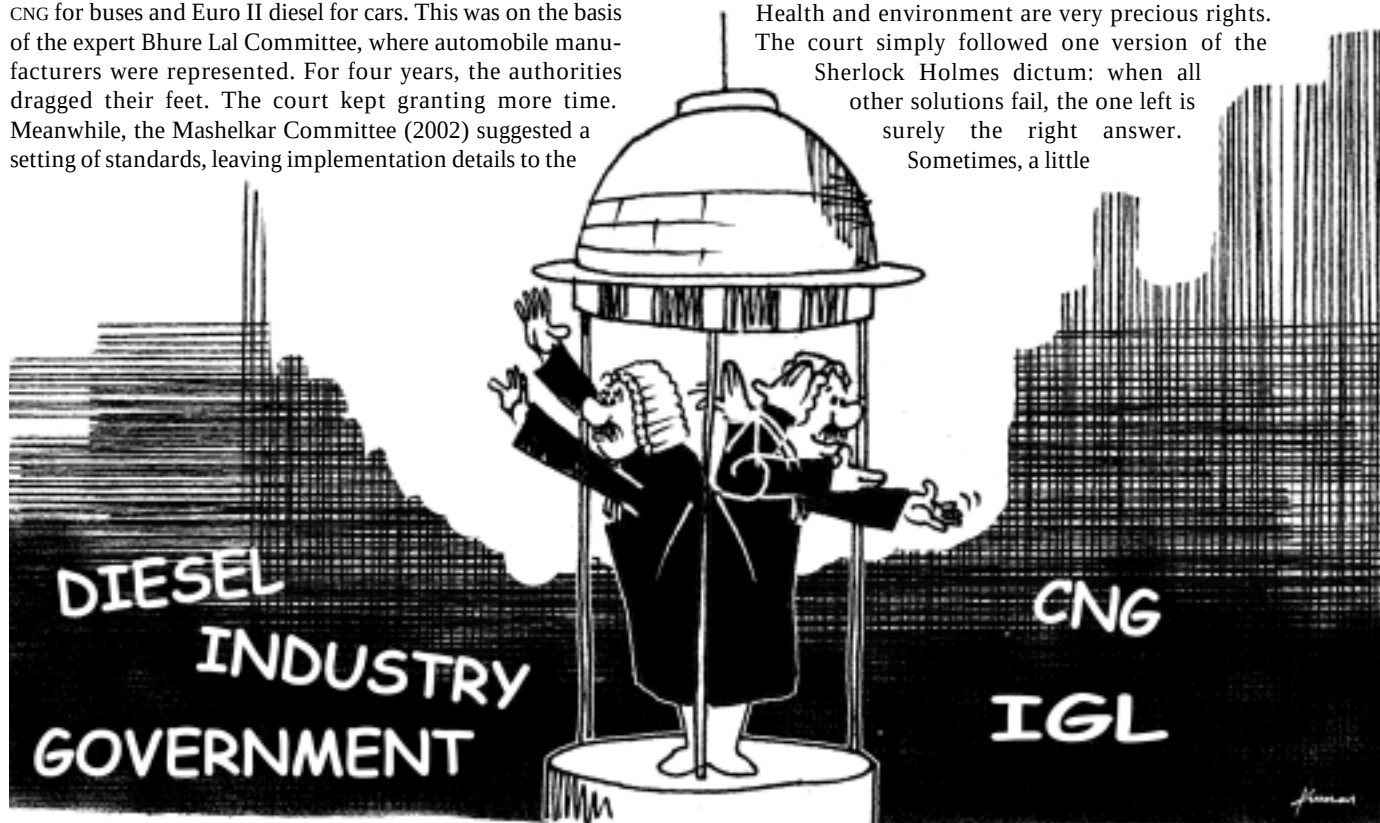
If the government did nothing, it is surely the business of the Supreme Court to ensure that it did. On July 28, 1998, a composite order was passed, where all concerned agreed on CNG for buses and Euro II diesel for cars. This was on the basis of the expert Bhure Lal Committee, where automobile manufacturers were represented. For four years, the authorities dragged their feet. The court kept granting more time. Meanwhile, the Mashelkar Committee (2002) suggested a setting of standards, leaving implementation details to the

bus and car people. The Supreme Court rightly called this solution naïve.

The truth was simpler. The alternative of a safe diesel of five ppm (possibly comparable to CNG) is simply not available in India. No less, the Bhure Lal Committee found proof of adulteration of both kerosene and diesel. Under the influence of which lobby was the government operating? Meanwhile, TATA, having got approval for its Euro II cars realised that, along with Ashok Leyland, they were in an oligopolistic position to make money on CNG buses. So, the lobbies to which the government was responding were the diesel lobby, the diesel bus people and the so-called commuters, who were artfully pushed into newspaper and media hysteria. In order to make matters worse, an artificial shortage of CNG was created by deliberately diverting CNG to the industrial sector. Only a fraction of the vast 'gas' resources are required for transport.

What the Supreme Court did was really quite simple. Applying the 'precautionary' and 'polluter pays' principle, the court gave constitutional priority to the right to health and environment, which were in dire peril. It exposed the attempts of governments in Delhi and the Union to show that diesel was not a financially or otherwise viable alternative. The government had dragged its feet and created an artificial crisis. The Mashelkar Committee report was a crafty ploy to duck the problem rather than resolve it. The CNG solution had been accepted by all on the basis of expert advice in July 1998. Neither the nation, nor the court, nor the people of Delhi — which continues to rank amongst the most polluted cities in the world — could be kept waiting.

CNG is less about judicial activism and more about the government's deliberate hoodwinking of the court and the people, with the claim that they can provide a healthy and environmentally safe Delhi by some other means. Health and environment are very precious rights. The court simply followed one version of the Sherlock Holmes dictum: when all other solutions fail, the one left is surely the right answer. Sometimes, a little



bit of temporary inconvenience to some could result in securing enormous benefits for all. Schematic reliefs of this nature are germane to the law and a gift to the nation. In this case, where others failed and the rest was subterfuge manipulated, the Supreme Court did not falter. What has been done in Delhi should be replicated in Calcutta and Bombay, as it is in Beijing and Korea. The Supreme Court is not always infallible. This time it has proved its supremacy. ■

The author is senior advocate, Supreme Court of India, and director, PILSARC.

PULLING NO PUNCHES

A tough order from the apex court was all it took to clear up the air



PRASHANT BHUSHAN

THE apex court's latest order (Justices Kirpal, Khare and Bhan) in the compressed natural gas (CNG) case is literally a whiff of fresh air. The court not only stands firm in its commitment to provide clean air to the residents of Delhi, despite persistent and determined attempts to derail the CNG programme, but also pulls no punches in castigating the government on its malafide intentions and motivations.

"Its (central government's) intention clearly is to frustrate the orders passed by this court...The manner in which it has sought to achieve this object is to try and discredit CNG as the proper fuel; secondly, to represent to this court that CNG is in short supply and, thirdly, delay setting up adequate dispensing stations. It is clear that there is a desire to benefit private industries at the cost of the public exchequer...The only concern of the government now appears to be to protect the financial health of the polluters...at the cost of public health," the court said.

Rubbishing the Mashelkar Committee report, hurriedly appointed by the government a year ago, the court pointed out that apart from the fact that enforcement of emission norms is difficult, adulteration of liquid fuels would completely erode any benefit of low sulphur diesel. "Therefore, it is naïve of the Mashelkar Committee to expect that merely laying down fresh emission norms will be effective or

sufficient to check vehicular pollution," the court said.

The court used bold and innovative principles to arrive at its conclusion. Working on the basis that right to health is a fundamental right and that the precautionary principle enjoins the authorities to treat an activity as environmentally harmful unless it is proven benign, the court issued tough directions to the government to phase out diesel buses at the rate of 800 per month till they all convert to CNG. The existing diesel buses must pay a daily penalty to continue plying.

The court relied heavily on statistics in rubbing out a number of government contentions. The judges pointed out that the projected requirement of the transport sector of Delhi was only 4.5 per cent of the capacity of the CNG pipeline. It further directed the Government of India and Indraprastha Gas Limited (IGL) to ensure adequate supply of CNG to the transport sector. This particular direction would have been more effective if the court had also issued directions that the government should increase the number of CNG outlets, and allow IGL — which has been denied permission on specious grounds — to complete their gas pipeline along the Ring Road.

There is no substance in the criticism that the court has acted arbitrarily or has usurped the administrative functions of the government. All the orders of the court in this case have been based on the reports and recommendations of an independent expert committee, namely the Environment Pollution (Prevention and Control) Authority, also known as the Bhure Lal Committee. There is, therefore, no substance in the criticism that the court has substituted its own prejudice over the views of expert bodies like the Mashelkar Committee. Moreover, the court gave cogent reasons for rejecting the Mashelkar Committee report.

The more often used argument is that the court has usurped the administrative functions of the government. However, when the court finds that the government is acting,

or refusing to act, on malafide considerations — such as the illicit gains being made by all sections of the decision-making apparatus in the adulteration business — the court can, and indeed has a duty to, step in. Of course, such orders must be made carefully and with circumspection. In a case such as the present one, where the court justifies its actions with detailed and satisfactory explanations, there is little room for doubt about the lack of bonafides of the authorities.

I only hope the court will soon make the necessary orders regarding the pipeline and dispensing stations. ■

The author is a well-known activist lawyer.

Where all other

institutions fail

the people, the

court can, and

indeed has a duty

to, step in

DIESELMANIA

[or how the rich drive expensive cars on cheap untaxed diesel]
[or how the poor drive cheaper cars running on highly taxed petrol]

INTERVIEW

Former Executive Secretary of the

United Nations Framework

Convention on Climate Change

(UNFCCC), MICHAEL ZAMMIT

CUTAJAR, speaks to ANJU SHARMA and

NEELAM SINGH on the impact of the

climate negotiations, the damaging

role of the US and the road ahead for

developing countries.

Excerpts from the interview

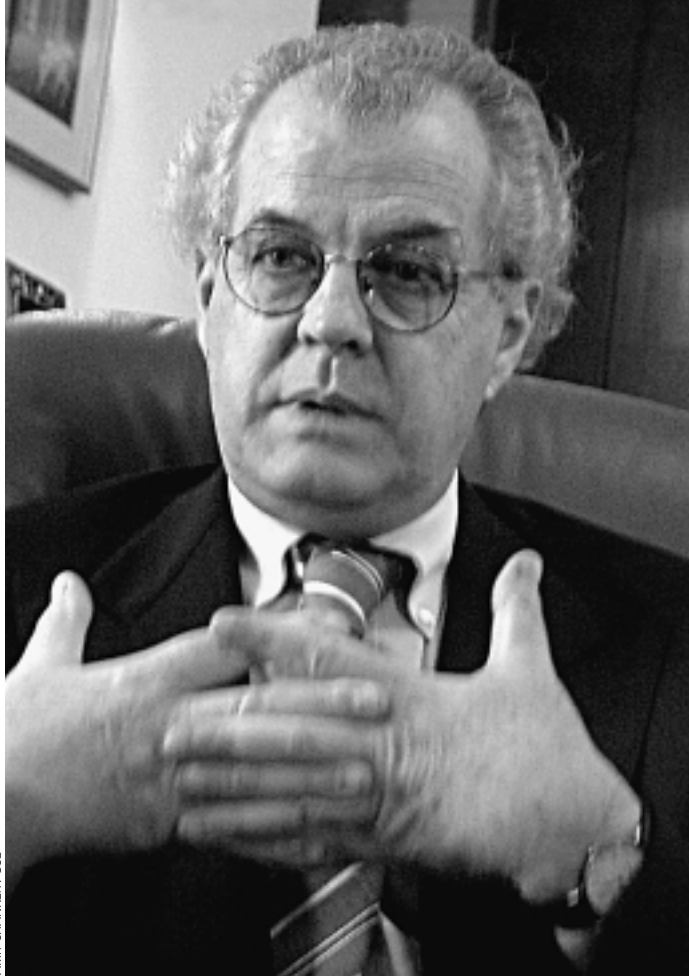
What has been the most challenging moment in your 11 years as executive secretary of the UNFCCC?

Maintaining optimism after The Hague (where the sixth conference of parties broke down without any decisions, threatening the future of the Kyoto Protocol). Another challenge was the shift of the secretariat from Geneva to France. It was a political decision with some human cost.

My relationship to the negotiations has been one of proximity, sometimes involvement, in the sense that sometimes I would be asked to provide some sort of fix for a blockage. But I have always been very conscious that the climate negotiations, like they should be, are negotiations between governments who are jealous of their positions. So my challenges are not necessarily those of a negotiator.

To what extent have the climate negotiations been able to deal with climate change?

We recognise the problem, and are starting to work out how to deal with it. Of course, recognition of the problem is a big step. There are still people who doubt the science, while others may not doubt the science, but say well, we can deal with it later. I am one of those who is convinced that the earlier you start to deal with climate change, the less it will cost. The negotiator is going to be inspired or motivated by economic considerations — by what is the cost of action. They do not factor in the cost of inaction — adaptation is for later, somebody else is adapting.



AMIT SHANKER / CSE

‘Slow, creeping catastrophe’

The countries that have to take action to reduce greenhouse gas (GHG) emissions are not the countries that are going to be most affected. Do you think the industrialised countries are adopting a shortsighted and selfish approach in this matter?

Shortsighted yes, because rich countries think they will be able to buy their way out of this problem. This is the fundamental inequity of climate change, of the process itself: while it is a product of economic growth and consumption patterns in rich countries, the impact is on the least developed. Looking at it on a long-term basis, I think recognition of the issue, the conviction that there is a problem, is a major step. Climate change is a long-term phenomenon, and there are no quick fixes.

But do we have time to delay action?

I'm not saying we should delay action, but that we should be taking the long-term view. And when somebody says that, well, maybe in 10 years we will have a better solution, it is a rational argument. I wouldn't agree with that argument because I would say let's start

with what we know now. I'm not in favour of inaction. Nor do I approve of an exaggerated representation of the danger. The world is not burning. It is a very slow, creeping catastrophe.

How do you see the engagement from developing countries? It is not a question that is being addressed so far.

Well, it should be. I would say that unless and until the Kyoto Protocol is in force, it is no use talking at all about developing countries' commitments. Indeed, if I were a developing country negotiator, I would wait to see serious steps taken by industrialised countries towards meeting commitment.

I think it will be useful in the meantime to look at two topics that have not been developed in the discussions. One is to work on a longer-term target. One of the weaknesses of Kyoto is that although it sets up the system for emission reduction, it only gives a short five-year target. This doesn't give enough indication of where we are heading with respect to burden sharing. I think we should try and go beyond five years, and work out where we should be in 2050.

How would you consider the sharing to happen — on a per capita basis?

Per capita as a guide is certainly the only typical guide that there is, but I don't think it will happen that way. I don't think that governments would be prepared to put their name to something that says 'per capita'. The first step would be to recognise what (developing countries are doing) already, for instance, China and its record in avoiding emissions. That idea of recognition is an important assurance.

How does the world deal with the US, which is a barrier in the climate negotiations?

There are two things. One is that you are negotiating with a person who is not sure that he or she can sell the result of the negotiations to the legislature. The second factor is the economic and political weight of the US. You cannot ignore it. Why did Clinton go and agree to the Kyoto Protocol when he knew that the US senate wouldn't ratify? The problem with the US is this that you are never quite sure if we have a valid interlocutor, somebody who can deliver on a deal. And that is true not just of the environmental treaties. Added to which is the general reluctance of the US to sign up to an international treaty. The list of treaties it hasn't signed is very long. Its pattern of behaviour is to negotiate a treaty, and then not ratify it, but act in accordance with it on the side.

One of the inputs to (George Bush's climate plan) is a report from the Council of Economic Advisors. I was quite saddened to find a statement in it, which says that international emissions trading is not easy or realistic. And the experience of the US with climate change and sulphur dioxide is not exportable. When the Kyoto Protocol was being negotiated, trading was a make or break issue for the US. It is very difficult to deal with them, and I don't have a solution for it.

Do you think there is a way out?

Yes. As President George W Bush might say in another context: the cause is just. Now there are signs of dissatisfaction within the US. US corporations, who had been gearing up to participate in the move towards the new carbon economy are seeking ways of engaging despite the fact that their government is not in.

How does this sort of attitude from a superpower bode for a fair global framework for cooperation?

Typically, the US always wins vis-à-vis the EU and Japan. To put it very clearly, vis-à-vis the EU, they tend to stick up on different positions, and then the EU has to concede because otherwise they lose the US. This is again not just climate but in general. Perhaps on trade the EU is stronger but otherwise no. Japan wants to be a part of the US position.

The convention negotiations was my first exposure to this, and one of the clear guidelines of the then chairperson of the negotiations was that we must have a deal with the US in. If we have a much better deal with the US out, what's the point? So the US does always win. Maybe with some pushing and pulling, not always being concessional, trying to get the US strategically, that is the way out until you have some countervailing force in the world that can bring the US on board. That is the long-term strategy.

How much would you say the US has affected the climate change negotiations?

Very much. The US, after all, has been the source of much of the climate science. The US has also been at the forefront of the design of the instrument. The Kyoto protocol is made in the US. It may be rejected but it is made in the US. And even the clean development mechanism (CDM). So the US has been extremely influential in raising the subject, in giving it a scientific basis and designing the regime.

How would you rate the performance of developing country leaders in the climate negotiations?

Well, they have been very good on certain points of principles. The convention laid down the underlying principles that had a very strong input from developing countries. They were effective in determining the Berlin mandate, which essentially says no commitments to developing countries in the protocol. They are weak in some ways, not because of lack of negotiating skills but very often the issue is not very important in the national priority.

The problem with the US is you are negotiating with a person who is not sure that he or she can sell the result of the negotiations to the legislature

Do you think climate is going to be an issue at the World Summit on Sustainable Development (WSSD)?

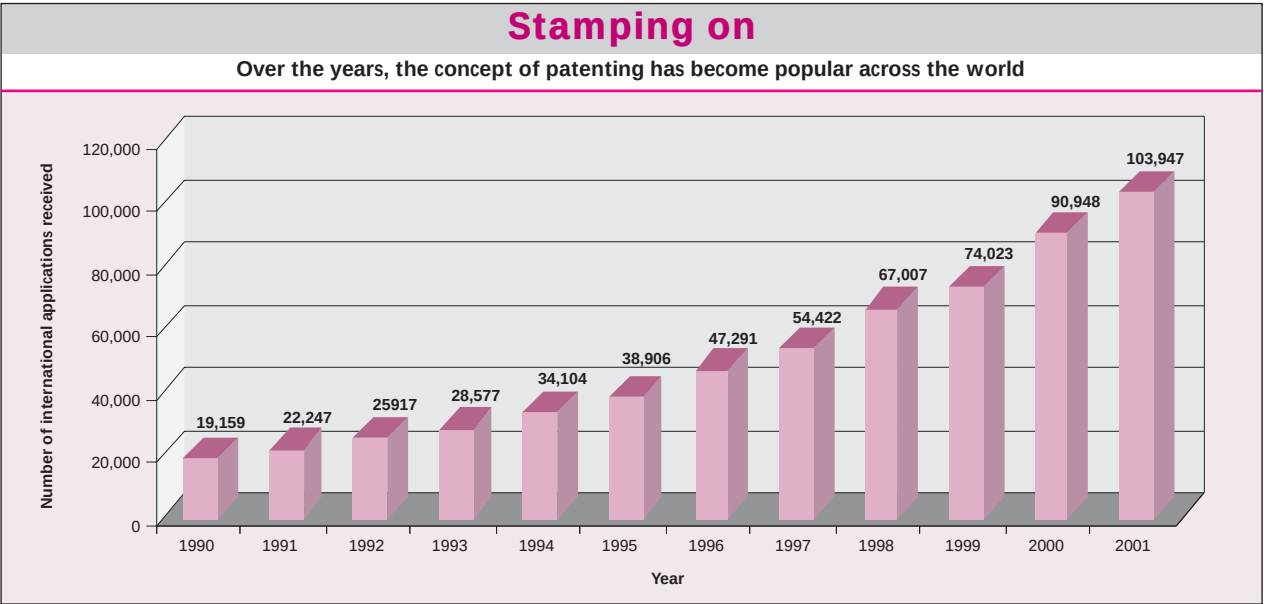
The simple answer is 'no', but let me qualify that. I don't think there will be any negotiations on climate issues at WSSD. It will certainly be kept off the agenda. But Johannesburg is the political target for ratification. Many governments will want to go there having ratified the protocol, including India, I hope. The fundamental underpinnings of climate change will be discussed there. Consumption patterns that are sustainable and poverty alleviation — that is what is driving climate change. ■

THE CRUSADER

[or how to annoy corrupt politicians with devotional songs]

Leaving their mark

With almost all the countries entering the ‘patents’ bandwagon, year 2001 witnessed a dramatic increase in the number of patents application. The International Bureau of World Intellectual Property Organisation received a total of 103,947 applications filed worldwide, which not only represented a 14.3 per cent increase over the number of applications filed in 2000, but also marked a milestone of 100,000 international applications filed in one year. Applicants from the US filed the largest number of patent applications in 2001 — 38.5 per cent of all applications, followed by Germany (13.1 per cent), Japan (11.4 per cent), the UK (6.0 per cent) and France (4.4 per cent). Surprisingly, the filing of patent applications in developing countries increased overall by 70.6 per cent as compared to 2000, with a particularly high increase in applications filed by China (188.4 per cent), India (102.6 per cent), the Republic of Korea (53.1 per cent) and Mexico (50.7 per cent). Such increase marks the growing popularity of the patent cooperation treaty system that offers inventors and industry an advantageous route for obtaining patent protection internationally.

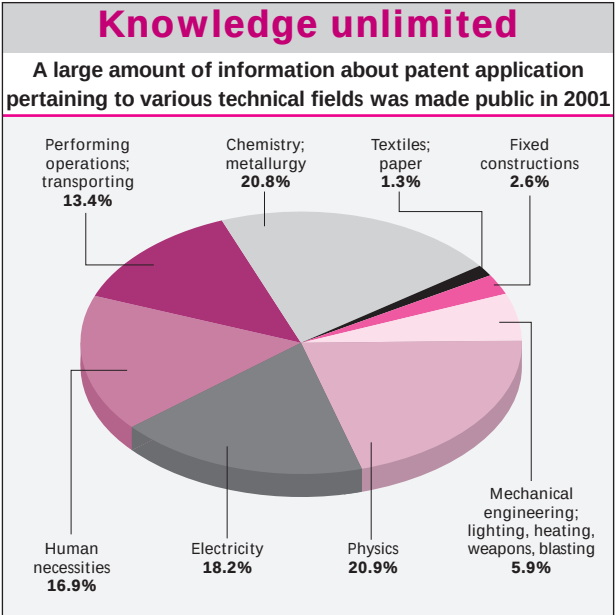


Screening at a glance

The year 2001 witnessed an increase in the number of applications filed all across the world

International search authorities	Number of applications received	
	2001	2000
European Patent Office	63,128	55,414
USA	17,793	17,386
Japan	11,182	8,850
Sweden	4,481	4,040
Australia	2,086	1,886
Republic of Korea	2,033	1,217
China	1,661	573
Russian Federation	556	595
Spain	514	440
Austria	493	545
Total	103,927	90,946

Note: Each international application is subjected to an international search carried out by one of the major patent offices, acting as an international searching authority under the patent cooperation treaty.





AGA KHAN FOUNDATION

New Delhi

Programme Officer (Rural Development)

The Aga Khan Foundation, incorporated in Geneva, Switzerland, is a private, non-denominational, international development agency providing grants and technical assistance to long term, locally managed initiatives in South Asia, Central Asia and East Africa. The Foundation has been working in India since 1978 primarily on the programme themes of health, education and rural development. In rural development the approach is to foster community institutions that enable efficient and productive use of natural resources leading to economic development and poverty reduction through community participation.

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Please send CV with a covering letter setting out why you would be suitable for the position to:

Ms. Kusum Sharma

fax 011 378 2174

email kusum@akfindia.org

Only shortlisted candidates will be contacted for interview and tests. The closing date is 15 May 2002.



The Aga Khan Foundation is part of the Aga Khan Development Network

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