

Gates closing on Sita Mata

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React

EDITORIAL

In Rajasthan, the dusty and dry landscape awaits the monsoons. The wheat is being harvested by women in colorful saris, children in school uniforms and men in flowing cotton pants. The grain must be taken in before the rains. The precious rain comes only for a few days a year, and if the ground is correctly handled it will absorb and retain the rainwater. If not, it will evaporate or flow away, leaving the fields dry, the people without food, and threaten India's economy with recession.

India is a rich and a poor country. Rich on resources, but poor in the management of them. India has the fourth-largest economy in the world, but at the same time 301 million of its citizens are poor, subsisting on less than a dollar a day. The paradox is that the poorest people live on the country's richest lands. Forests and minerals are of great interest to both state and industry, craving the resources to fuel the country's rapid economic growth.

But the urge to conserve forests and wildlife is equally strong. In Sita Mata wildlife sanctuary, the people of Mogiamba village are being forced out of their homes. In the government's eyes, they are illegal occupiers who pose a threat to the forest environment. The villagers cannot understand why they are being ordered to leave when they see themselves as the custodians of the forests.

During our stay in Delhi and visit to Pratapgarh, a tribal district in Rajasthan, we met with many people, and asked what they understood by the term 'clean environment'. More often than not, our question was met with bewilderment. 'Clean' did not fit with environment, but viable certainly did. In the West, the word 'clean' is often associated with something 'pristine', untouched by people. But to have a viable environment, people must be allowed to reconnect to their own, immediate environment.

Urban India represents the country's urge to grow. The urban India of littered streets and dirty rivers, desperately battling the challenges of becoming clean. We understood that high consumption societies also invest heavily to remain clean. Was this viable for a country like India?

Our goal was not only to witness, but also to participate in the environmental debate. Our campaign is aimed at Norwegian students who will be future development experts, scientists and decision makers. We need to rethink development. Techniques and structural fixes that work in Norway may not be viable in India. As the magazine articles, posters and web features will show, often the solutions lie in the traditional techniques and these combined with local participation ensure viability.

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Mobility or immobility?

Thale Henrikke Eddie

With India being one of the fastest growing economies, the demand for faster and more comfortable ways of travel has grown. Though a majority of people living in Delhi still use public transport, cars are increasing alarmingly. The city adds a thousand cars every day. Vehicles are the dominant source of air pollution. They also chew up an enormous share of city's space. Cars are squeezing out the bus from the public sphere. It is a crisis of mobility.

Favouring the car?

—Personal vehicles are being pampered, says head of Centre for Science and Environment (CSE) Sunita Narain. She also states the city planning in India is not made for mobility. An estimate by CSE shows there were four million vehicles in Delhi in 2006. This has an enormous environmental impact on the urban landscape. Emissions from vehicles are the most lethal form of air pollution since they are so high in exposure.

—Vehicles contribute 72 per cent of Delhi's air pollution, says Anumita Roychowdury, leader of CSE's clean air campaign. Buses in Delhi are a cleaner alternative as they all run on Compressed Natural Gas (CNG). The paradox is that the authorities are taxing buses 43 times more than the cars. When you buy a private car you pay a small amount as lifetime tax, but the buses are being charged a much higher annual fee.

Sustainable urban transport

Initiatives are being done to increase the equity of mobility. The most progressive and comprehensive initiative is the Bus Rapid Transit System

(BRTS). The system is currently being constructed as a holistic approach to mobility. The entire stretch will cover 100 km of Delhi and is set to be finished in time with the Commonwealth Games the city is hosting in 2010. By April 2008, four km of the stretch have been completed.

The BRTS has two basic principles; to segregate and include all individuals travelling. The road will have four lanes; the bus lane as the central, and lanes for pedestrians, cyclists and cars. This will remove the current chaotic friction among vehicles in Delhi. The BRTS has its roots in countries in the south, with Brazil as the first country to implement it.

Transfer of technology

This is one of the few technologies that are being transferred from the developing world into the developed world. Cities such as Leeds in the UK, Miami in the US and Vancouver in Canada have implemented the system. The BRTS will independently respect all roadusers with its democratic approach. However, economic de-

occupying only five percent of the road, whereas cars occupy as much as 90 per cent of the road. Cars only carry 20 per cent of travellers.

The infrastructure as it is today is hostile.—The urban landscape scenario makes marginalised groups as pedestrians, street vendors and cyclists vulnerable to accidents, says Roychowdury. Who should and is the city “shaped” for? Roychowdury stresses that — the city should be designed for the majority of people not for a minority.

Cleaner priorities

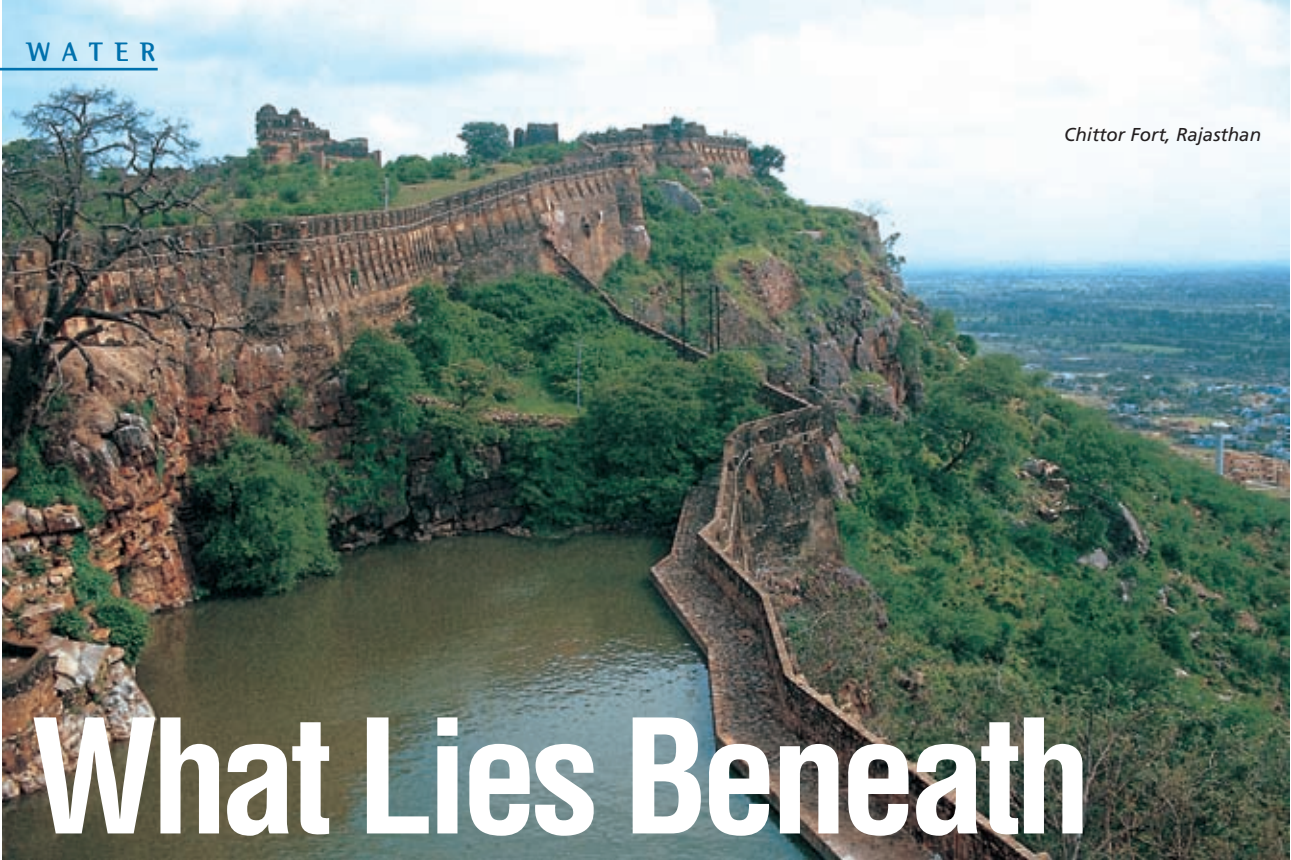
Within the last ten years, initiatives have been taken to make the urban atmosphere “cleaner” with the introduction of CNG, improved technology and by removing old vehicles from the road. This has decreased air pollution, but not as much as it could have. Traffic jams in Delhi make vehicles stand still and lose fuel, leading to severe pollution. Standing cars also take away the road availability.

Roychowdury says:—The positive gains from CNG, the removal of

Cars are so comfortable; one can even enjoy a traffic jam.

incentives are also essential to minimize the increase of cars. —The current economics favouring cars functions as a hidden subsidy for cars, adds Roychowdury. The private car not only decreases the level of travel efficiency, but is also taking up a vast amount of public space in terms of parking lots. Buses carry more than half of the travel needs of the city,

old vehicles and general improvement in car technology will be lost if we do not deal with the increasing population of cars. The BRTS has the potential to be a leading initiative to serve the majority of the global urban population. Cities worldwide face the problem of undemocratic car use, but the inclusiveness of the BRTS could be an inspiration, even to Norway. ■



What Lies Beneath

Kristin Dypedokk Johnsen

For centuries, India has coped with rainwater falling for only 100 hours annually. Not now. This ancient knowledge of rainwater harvesting became old fashioned with modernization. Water supply is one of India's major problems. But the real challenge before the country, however, is not lack of water.

India receives a good rainfall, but for a short period of time and most of it is unevenly spread. Still, peasants have created fertile agricultural societies through recharging groundwater. At the mighty Chittor Fort, located in the dusty state of Rajasthan, the maximized utilization of water could sustain 50,000 people through years of siege, using its 84 water sources. Today, only 22 of them remain; and people now live outside the fort, where they get pipe-water.

The key to the ancient water success was the understanding of groundwater.— Groundwater meets more than 70 per cent of the rural and 50 per cent of the urban water demand in India, says Salahuddin Saiphy at the rainwater unit of the Centre for Science and Environment (CSE),

Delhi. Without recharging groundwater levels, the pressure on groundwater becomes unsustainable.

Rainwater harvesting

The methods differ, based on the local ecology in which they are being utilized. But they are locally adaptable, made of accessible, inexpensive materials, and based on community cooperation. They are united by the key principle: to capture water when and

water engineering of the colonial regime and, more recently, the Indian government show that the state is the sole provider of water. In modern engineering, surface water is distributed by pipes over long distances. But, in addition to increased pressure on surface and ground water, there is considerable loss through leakages.

Despite the government spending huge sums on water systems such as dams and pipelines, these initia-

Rainwater harvesting: To catch water when and where it falls

where it falls. This is done by building structures, such as contour trenches and small walls, on hill slopes, slowing down water flow and preventing soil erosion. Re-directing rainwater into soil recharges groundwater and prevents water loss through evaporation. This ancient knowledge made the British describe India as a 'hydraulic' society. Since then, the approach to water management has drastically changed. The ideas of

tives have to a large extent failed to provide enough water. The pressure on water sources is not sustainable, as the mainstream water approach fails in recharging groundwater.

—The modern approach has broken the relationship between water and local communities, adds Saiphy. The new, centralized approach to water has impoverished local people. Villagers have lost the sense of responsibility they had over their

community-specific water supply methods. The key to successful water management is this connection to the environment.

The Foundation for Ecological Security (FES) is an organization working to reinitiate local solutions to rural water stress. In Kerwas village, Rajasthan, FES has enabled successful community management of water and soil. Better utilization of water and improved irrigation, maintained by villagers, boosted crop yield, improving food security and giving more economic freedom to the villagers.

Urban challenges

About 400 million people in the country live in cities. Rapidly expanding cities put massive pressure on ground and surface water. —Protecting water sources from pollution, initiating urban rainwater harvesting methods and controlling the water demand are the biggest urban challenges, says Suresh Babu, deputy coordinator of the river pollution unit at CSE. Poor quality drinking water poses health risks. This affects the poor more, who cannot afford water purifiers or bottled water. They have to buy water at higher prices.

A new paradigm is needed

Rainwater harvesting can relieve pressure on groundwater. Rainwater from only 1-2 per cent of India's land can provide the entire 1 billion people with 100 litres of water per person annually. The problem is not shortage of water, but how the water sources are treated, and a lack of equitable distribution of water.

It's time India parted with the conventional approach to water management. Community governance of natural resources and increased use of rainwater form an important alternative approach. Solving water stress needs a deepening of democracy, making water again everybody's business. —This needs a will to spend money on water, adds Suresh Babu. ■

The Holy Contaminated River

Kristin Dypedokk Johnsen

Why is the Yamuna, a venerated, holy river, burdened with Delhi's filth and still a drinking water source for the city's 14 million residents?

Rivers were always venerated in India. Temples were located on their banks, and cities were established around them. Today, however, urban realities have turned freshwater streams into sewage drains.

On an average, only 13 per cent of the domestic wastewater is treated before the waste is drained directly into India's rivers. The Yamuna begins in the Himalayas and reaches Delhi, before flowing downstream to Agra. In Delhi, the river is completely

only during the monsoons. This limits the ability of the river to dilute the huge amount of waste. As a result, the river is now black, thick and dead. Still, this water is used to irrigate the vegetable patches on its banks. The poor living on the banks also use the river's water to bathe and wash their clothes.

Saving measures

The government have so far spent millions of rupees to clean up the holy river. They have set up 19 sewage treatment plants near the river. Clearly, money alone does not make a clean river.

Sewage treatment plants (STPs)



Holy waste: The venerated Yamuna is now a source of pollution

choked with sewage and waste. Each day 3,267 million litres of wastewater is dumped into the river, most of it is human sewage from the city's 14 million inhabitants.

The river receives freshwater

are built on available land, not necessarily close to sources of sewage. Most of these swanky STPs do not run at full capacity. Government and urban planners refuse to recognize 'illegal' sources of sewage, from unauthorized

colonies springing up all over Delhi, and whose inhabitants use the storm water drains to channel their sewage into the river. The same dirty water is also an important source of drinking water for the city.

Clearly, the city spends massively to clean and supply the river's water, that too for a huge subsidy to city residents. In a vicious pollution cycle, this precious, heavily subsidized clean water is used to flush human excreta back into the river, where it is again cleaned and supplied to the urban rich. Laws are in place, but implementing them is difficult.

The river's fate is now even murkier, with different interests

Today, efforts to clean up the Yamuna demand huge investments

working at cross purposes. Delhi has ambitious plans to build the infrastructure for the 2010 Commonwealth Games, on the Yamuna's banks. Real estate developers need the lands for shopping malls. A determined government has made the first move. 'Illegal' slum dwellers settled on the banks were kicked out, blamed of polluting the river, as a step in the governments 'beautification' drive.

It has now reached a point where efforts to clean up the river demand huge investments. It is in everybody's interests to clean up the river, but it is easier to pinpoint those people further upstream.

Pressure from civil society groups to clean up the river is increasing. They demand that action must consist of making viable livelihoods, rather than pursuing profit interests. A crucial start is to tackle the problems of sewage, thinking in an alternative path regarding how to treat and reuse urban domestic wastewater. ■

What goes down must come up

Indian urbanization is threatening its own life-support system

Lucie Surinnerton

Lakes, kundhis and bavdis (both types of step wells), groundwater wells, tanks have historically stored water for all needs. They collected surface water during the annual monsoon which were naturally filtered through a process of overflow and seepage, then distributed via a network of canals and streams. By the time rainwater reached wells it was mostly groundwater, passed through layers of sand and gravel, and purified along the way.

In many instances, such as that of Chittorgarh in Rajasthan, drinking water sources were declared sacred, prohibiting any form of human pollution. No individual would taint the supply. Furthermore, the ancient philosophy in India was to never mix the clean water with the unclean. Accordingly, completely separate systems existed for fresh water and for sullied water.

Today, over 3,500 industries exist in the Udaipur basin, the water supply to Chittorgarh. They use water and discharge sullied water back into the environment. The infrastructure for treating sewage before their release does not exist and the people are increasingly having toxins dumped into their fresh water stores.

Pesticide, cement, fertilizer and mineral industries release waste matter directly into Udaipur's lakes. Municipalities unable to keep up with their growing urban population dispose of sewage. Similarly, in many regions litter collection systems either do not exist or have failed, resulting in

piles of garbage being deposited near lakes, and washed into them during monsoon. This has gone unnoticed in India, as lakes do not receive the same level of attention as drinkable sources, because they come in the early stage of a water supply chain, used predominantly for irrigation purposes. When several lakes are connected to one another, pollution becomes widespread, and industrial effluents and toxins are now being found in groundwater sources used for drinking.

This contamination has affected the health of the people. Neurological disorders, retardation of growth in children, abortion, disruption of the endocrine system and weakening of the immune system have been reported in increasing numbers over the past decade, and are said to be linked to high mercury levels in India's water. —High levels of mercury in drinking water can severely impair the nervous system, reports S K Wangnoo, senior consultant and endocrinologist at the Apollo hospital in Delhi.

The outbreak of Minamata disease that afflicted over 2,200 people in Japan in the 1950s was the consequence of mercury poisoning. Sufferers of this debilitating disease experience progressive weakening of the muscles, loss of vision, impairment of brain functions, eventual paralysis, and in some cases, coma and death within weeks of the onset. Time will surely reveal more on the effects of the pollutants being excreted into India's water. ■

India's Agricultural Challenge

During 1990s, output levels from farming in India reached its threshold, despite Green Revolution technology. Now India is on the quest for alternative solutions to save its agriculture

Ida Søgne Tveit

It is the rainfed parts of Indian agriculture that have been the weakest; they are also the ones that contain the greatest unutilized potential for growth, and need to be developed if food security demands of the year 2020 are to have a realistic chance of being met, says S Parthasarathy, leader of the technical committee on watershed programmes in India, when talking to *Down to Earth* magazine.

In order to feed its growing population, India needs to raise production to over 300 million tonnes of food grain annually, by 2020. This requires a 100 million tonne increase on today's output level. Chemicals and hybrid seeds are extensively being used to increase agricultural production. When these techniques are applied to rainfed areas however, the effects can be disastrous. The soil in one third of rainfed areas is already degraded. Traditional water management structures may be a solution, to restore soil quality and ensure a supply for irrigation.

In Sanoti, south Rajasthan, villagers have improved the traditional water management structures. Kushye, a village, explains: —Before the water management scheme, we only had one harvest season, in the summer. We could grow only maize. Now, we can grow two crops a year; maize in the summer and wheat in the winter. Wheat demands more water. Lakshmie, a neighbour, adds:

—During the monsoon in the summer, the area is rainfed, and during the winter it is irrigated. Kushye explains that she does not use artificial fertilizers, but she knows that some of the farmers in the village do. Fertilizers

require more water, which is now available through the new irrigation system. They too use artificial fertilizers. But farming in villages like Sanoti is less harmful to the environment because natural methods are still incorporated. A number of villages functioning under Green Revolution methods are employing almost only artificial inputs. In the long run, places such as Sanoti that have the potential to be more productive than the areas have been impacted by the Green Revolution because their methods do not exhaust the soil in the same manner. Improvement of infrastructure and use of natural solutions and local knowledge has worked for Sanoti. It might be the solution for the rest of India as well. ■



New act to employ rural poor

Julie Ness

One of India's most pressing problems is the seasonal unemployment of the rural population. The latest programme to provide employment was passed in August 2005 and by April 1, 2008 it will be implemented in all the 604 districts in India. Through the new National Rural Employment Guarantee Act (NREGA) the state is legally bound to provide 100 days of unskilled jobs per rural household within 15 days when it is demanded. If they fail to do so, the state must pay unemployment allowance. These aspects distinguish NREGA from the unemployment programmes of the past thirty years.

NREGA's aim is also to create sustainable livelihoods, protected from food insecurity. It involves providing productive assets to the community, which further helps prevent migration from villages. Villagers are employed to build water and soil management structures. NREGA also offers a solution to the problem of soil degradation. —About a million structures have been built since 2005, and about 80 per cent of those were related to water, says Richard Mahapatra, coordinator of the Natural Resource Management and Poverty Unit, at the Center for Science and Environment (CSE) in Delhi.

The structures that are built are not maintained. —The responsibility is with the panchayats, the village councils, but they do not have the money for maintenance, says Mahapatra, adding —However, NREGA has huge potential and has been successful in creating employment and productive assets in villages thus far. ■

Green oil fields of India

Jatropha is the new plant for biofuel and can be grown on wasteland, but does that make it the new wonder medicine?

Ida Søgne Tveit and Magnus Flacké

Will the western quest for clean environment compromise clean development? The discovery of the plant *jatropha* as biofuel has sent Europeans into a frenzy.

Jatropha is a drought-resistant plant that grows on wasteland and, therefore, for its proponents, the question of food versus fuel is irrelevant. This attitude has also been adopted by the Indian government. The Indian vision is to grow 7.5 million tonnes of *jatropha*-based biofuel a year, which will generate employment for 5 million people. Who will benefit? Is there really such a thing as wasteland?

Land matters

Food-insecurity chronically affects 350 million people in India. Today, the population is fast growing, beating agricultural production. 52 per cent of India's population relies solely on agriculture and many of these farmers do not have any land to spare. In India, a country which is trying to regain its self-sufficiency on food, all land is valuable.

Jatropha trees are a common sight in the dry north-western state of Rajasthan, often used as fence to keep grazing cattle away and to make household products. Four *jatropha* trees are scattered around the house of Gutham Lal Meena and his wife Thavri Bai Meena in the village of Devgarh. Their family of eight keeps two cows and four oxen and grows

food crops on a patch of arid land. Devgarh receives less than 100 hours of rain a year, and to an outsider cultivation seems like an impossible task three months prior to the monsoon. Mr. Meena uses his four *jatropha* trees to make household products.

—I use it to make soap. The tree is not edible, not even the cows will touch it and it is no good for fire fuel either, says Mr. Meena. Each *jatropha* tree gives him and his family enough seeds to produce five kilos of soap. Most of it is for personal use, but they earn about Rs 8-10 per kilo when they sell the surplus on the market. This is a little more than one Norwegian krone. Mr. Meena knows *jatropha* can also be used as biofuel and it is a frequent topic among his neighbours in the village. —It is a buzz going on, but we don't really know much about it.

Gutham Lal Meena demonstrates use of Jatropha seeds. Photo: Magnus Flacké



There aren't any factories in the area to process the oil into biofuel, so we would have to transport it a long way. When asked whether he would consider growing *jatropha* for biofuel if the infrastructure was in place, he is reluctant. —Yes, maybe, but my land is small, and I would not make much profit. If it was possible for small scale farmers to join together and form cooperatives, maybe I would start to grow *jatropha* for biofuel. But it's a lot of uncertainties and many farmers are waiting for the state government's final offer.

Wonder plant, really?

The main reason why *jatropha* has created such a buzz is that it can be grown on poor soils and will therefore not be competing with food production. EU has the objective that 20 per cent of fuel consumption in Europe will be biofuel by the year 2020. In order for EU to achieve this goal, land area the size of Belgium is needed. *Jatropha* fulfills the EU norm for biofuel quality. It can also beat other types of biofuels in terms of price.

According to official Indian estimates, 40 million hectares of total land area is categorized as wasteland. However, what the Indian government today considers to be wasteland is in reality used as pasture land, and in some cases cultivated for agriculture.

A little less than a hectare of Meena's land is considered wasteland. The state of Rajasthan has

approached him and asked if he will use his wasteland to grow jatropha for biofuel. —But if I use that land to grow biofuel, then what will my family eat? Meena definitely does not consider his wasteland as wasted land. —It is not great land, but we get some food out of it.

Rich waste land

The Indian government is well aware of the economic potential of their wasteland. In Rajasthan there are still a lot of uncertainties regarding biofuel production. Other states have more established structures in place in regards to the biofuel production industry. The state of Chhattisgarh is in the forefront when it comes to promoting jatropha biofuel and many incentives are dangled in front of larger companies to encourage participation. One such sweetener is allowing

—If I plant jatropha on my land, what will we eat?

private companies to lease government wasteland, for a trivial amount of money. The state government also provides the infrastructure required to keep the value adding process within state borders.

The Foundation for Ecological Security (FES) is a non-profit organization working to restore degraded lands in ecologically fragile areas. They are not opposed to cultivating wasteland for jatropha plantations. —The main concern is that marginalized communities change their land use to cash crop production alone. This may harm small scale farmers and could lead to food insecurity, says B.K Sharma, the team leader of FES in the city of Pratapgarh, Rajasthan. Families that were once self-sufficient in food supply will have to buy their food on the market. ■

Generation Wind

Thale Henrikke Eddie and Lucie Swinnerton

A cyclone hit South Gujarat in June 1998, destroying everything on its path—a month before Vestas had begun wind energy projects in India. The wind that killed thousands also hit its temporary office, recounts B V Rathod, an Area Service manager at Vestas' farm in Devgarh. He and four others fled into the windmill tower, which could not stand up to the eye of the storm, and fell, fracturing into two pieces. Vestas' brand new investment was completely destroyed by the violent storm. All five of its staff survived with minor injuries.

The Danish company was not deterred by this and continued their involvement in India. It currently has ten machines spread over the country. Plans for five thousand more mills are underway.

Status quo

Eighteen thousand wind mills exist in India and the number is growing. This renewable energy source is spreading globally. Overall, nine per cent of the total amount of energy produced in India today, comes from Wind Turbine Generators (WTGs). India is now on par with nations such as Denmark and Germany, in terms of its ratio of renewable energy to non-renewable sources.

The majority of the WTGs in India are owned by thirty to forty international actors. Unlike the UK and Denmark, India does not have strict regulations on installing windmills. Wind farms +have been built without proper consideration, resulting in problems.

The future of wind

Wind energy represents a benign fuel

alternative. Farms produce no water or noise pollution, and no CO2 emissions. Nevertheless, if WTGs are to satisfy global energy consumption, a myriad of machines is necessary. While 10,000 kilowatt hours of energy per day is sufficient to supply the entire city of Pratapgarh, India, estimates are that this would only sustain approximately one average Norwegian household's electricity consumption for three weeks.

If wind is to continue to grow as a global energy source, an impact on wildlife cannot be avoided. The blades of WTGs pose a threat to migratory birds, and the vibrations interfere with burrowing animals' natural habitat. Moreover, land otherwise used for alternative purposes will have to be given up. —The three machines on the Devgarh wind farm take up three hundred square metres of land, with a 150 metre safety zone between each tower, tells Rathod.

In addition, the landscape is aesthetically disrupted and for this reason, opposition to WTGs has added to the complex issue of where to place farms. ■



One man's waste is another man's livelihood



Photograph: Andreas Doppelmayr



40% of
wastepickers
in Delhi
have **migrated**
from
West Bengal.

Sikander (70)
moved from **Kolkata**
15 years ago to
make a **living** on
the **Yamuna**
river, the sewage
drain of
Delhi.

Parked in Sita Mata?

Wildlife conservation, a relocated village and a Tendu leaf contractor. They're all part of the struggle for Sita Mata's future. The level of tension in the wildlife sanctuary in Rajasthan is rising.

Runar Myrnes Balto and Nicolai Steineger

The iron gates of Sita Mata close behind us. We are inside the core area of a wildlife sanctuary, where no human beings are allowed to live. Our jeep makes its way through the rough terrain and monkeys are occasionally watching us from the treetops. But soon we catch a glimpse of cultivated fields through the trees. Children are waving from the side of the bumpy road and an old

The sanctuary seems like a conservationists dream. But this dream may be far from the reality.

The villagers

We stop in the village of Mogiamba, and are led to a big tree on the outskirts of the fields. It is the warmest time of the day and the shadow of the Mahua tree provides a natural meeting ground for the villagers. Fresh

mango groves. The village comprises 118 families, with approximately 700 people, dispersed over a large land area. The villagers grow maize, rice and two varieties of lentils. They sell the surplus in the market.

Sita Mata lies at the heart of the conflict between the tribal people living inside protected areas and the Forest Department. —The Rajasthan Forest Department is on the warpath,



The villagers have an uncertain future in Sita Mata. In front: Ramesh Chandra (left) and Mohan (right). Photo: Julie Ness

man is working the earth. Who are they, and why do they live inside the protected forest?

Rumor has it that this area has some of the most diverse wildlife in India, and several travel agencies arrange eco-tourism trips to the sanctuary. The Rajasthan Forest Department claims the area has a myriad of endangered species, including jackals, hyenas, wolves and panthers.

remains from a big bonfire in the middle of the clearing give the impression that it is used frequently when the community comes together to discuss common issues and problems. It is the dry season and the landscape is distinctly different from the lush, green scenery one would have imagined.

Mogiamba is one of the 24 villages inside the core area of Sita Mata. Mogiamba literally means the place of

trying to empty the sanctuary's core area of people, explains Jawahar Singh Dagur of Prayas, a local NGO. If it happens, that will be the second time this community will be forced to pack up and leave. The first people to settle in Sita Mata were those displaced by two dams, among them the large Mahi River Dam. The village of Mogiamba was established in 1966, 13 years before the area was declared a

wildlife sanctuary. Mohan, a village elder, describes how this affected them: —We had fields then and we have fields now. But the timber trade we used to profit from is now illegal and the area has become more lawless. You can now see cattle grazing the forest without shepherds. Outsiders send their cattle into Sita Mata, without sanctions from the Forest Department.

Mogiamba's inhabitants do not have access to electricity or motorized vehicles. Ramesh Chandra, our local guide, explains that it is illegal to install electricity poles within the wildlife sanctuary. —We are not allowed to make proper roads to our households and villages either. The children in Mogiamba go to school, but because building is prohibited, they haven't got any school facilities.

The Wildlife Protection Act, 1972, entitles the Forest Department to declare any forestland a wildlife sanctuary for the purpose of 'protecting' or developing wildlife. The law prohibits people living in the sanctuary, with the result that those settled

in the eyes of the all-powerful forest bureaucracy. They cannot get pattas for the land they inhabit now.

If the village had at least eight pattas, they could have formed a forest protection committee, making them partners with the forest department in managing forests and conserving wildlife.

Meanwhile, across India, the forest bureaucracy is in a hurry to relocate forest-based communities living inside wildlife reserves and national parks — before the Forest Rights Act (see page 14) is implemented.

The people in Mogiamba have been offered five alternative sites for relocation, together with one million rupees per family. Still, no villagers have relocated yet; the group we met seems determined to stay. —Where will we go? I'm an old man and have lived half of my life here. I don't want to start all over again, says Mohan.

The villagers consider the offers inadequate. They see three of the lands as unsuitable for agriculture. At the other two places, the local people

Fact box:

Notified as a wildlife sanctuary in 1979.

Location: Rajasthan, 45 km from Chittorgarh.

Area: 422.94 sq.km

Core area: 18%

Rainfall: 800 mm annually

Population: 4,000-5,000 inside the park

to work the entire Sita Mata area. Paliwal is thus an important source of income to many Sita Mata inhabitants.

The Tendu trees are in high demand for various sorts of carpentry, and their leaves are used for making beedies. Beedies are small cigarettes consisting of tobacco rolled in Tendu leaves. About 850 billion are smoked annually only in India, and the industry employs about 4.4 million people. The majority of the workers belong to scheduled tribes and castes.

His fingers are decorated with expensive rings and play with a pricey cellphone. It rings at least six times during our ten-minute interview. Gopal owns 20 jeeps, a warehouse, and a petrol pump, as well as his own beedi brand. —I bought the ex-king's

Sita Mata bears a conflict between tribals and the Forest Department

inside cannot claim their rights. —The problem is that we don't have pattas for this land, Chandra explains.

A patta, or land deed, is proof of ownership over land, which in the eyes of the forest department, these 'illegal encroachers' simply cannot have. Ironically, there are eight 'revenue villages' inside the wildlife sanctuary, and at least some of the inhabitants do indeed have pattas. A patta can dramatically change destinies, reduce constant harassment, and legalize a community or family's existence inside forest areas.

Because the people of Mogiamba were earlier displaced in 1966, and because they chose to settle inside a similar landscape, they remain illegal

are not willing to receive the Mogiamba villagers. But why is the Forest Department so determined to relocate the people? Mohan replies without a second thought: —The department prefers animals to people.

Tendu leaf contractor

Sita Mata sanctuary closely supports the area's local economy. Tendu leaves, for instance, are a crucial source of income for the villagers within the forest.

Gopal Paliwal is an important person in the Pratapgarh area. Paliwal is a second-generation Tendu leaf trader and his family has made big money from the business. He has a contract with the Forest Department



Gopal Paliwal is a Tendu leaf contractor, working the entire Sita Mata area. Photo: Nicolai Steineger

1872: Yellowstone, first National Park created in the US. Other countries in the world gradually follow the concept

1894: Land Acquisition Act passed in India. Conveys full right to the Government of India to acquire any land needed for public usage. In the process of displacement, a person is entitled to cash compensation

1927: Forest Act passed in India. Declaring of areas to be reserved or protected forest

1940s: New dimension on global preservation; Britain leaves Africa

1947: India gains independence from Britain

1964: The Wilderness Act passed in the US with the concept of protecting wilderness without human interference

1972: The Wildlife Protection Act in India passed. Created protected areas and conservation of wildlife

1980: Forest Conservation Act passed in India. Restrictions on forest land for non-forest purposes

2006: Forest Right Act passed in India. Focus on rights of forest people

palace and rebuilt it into what is now my house, he boasts, lighting up an American brand cigarette.

Another phone call is hastily rejected. —I employ 6,000-7,000 people for Tendu leaf extraction. They all get about 70 rupees for a days' work, he continues. Most of the people Paliwal employs are local people, but he also brings in people from outside when needed.

The future of Sita Mata

India has a total of 441 wildlife sanctuaries and 80 national parks, which constitutes five percent of its land area. Almost all of these areas are prone to conflicts. Sita Mata provides ample proof that wildlife is more than pretty trees and tigers. The sanctuary is both the home of people and an important source of income.

However, the future of the villagers and the Tendu leaf contractor is uncertain. There has been talk about upgrading the sanctuary to a national park, which would outlaw all economic activity and human interference in the park. Adding to the pressure on the villagers are the recurrent rumors of a plan to move a population of the endangered Asiatic Lion into the sanctuary.

Paliwal downplays his dependence on the protected forest, and seems to have little concern about the future. —Sita Mata constitutes a fracture of my income. But for the villagers the forest is everything. Although fear of moving is not a popular subject with the villagers, they are determined to uphold their lives in the park.

An old man in the back of the group raises his voice for the first and only time: —We wish to stay, and will fight if necessary. ■

Conservation, conflicts and displacement

Birgit Kvernflaten and Hanne Castberg Tresselt

The western approach to conservation entails wilderness with no human interference. This may go wrong in countries such as India, with a heavy population density where around 600 million survive on agriculture and depend on forest. This shows a different way of preservation where man has an active role.

The adoption of a preservation-scheme in India has had huge implications for many people, as India simply does not have large land areas free of people. Wilderness is not just about animals and plants, it is just as much about humans. The greatest conflicts over conservation and relocation in India are about wildlife preservation and development programs, particularly on dams. Such construction has led to the displacement of millions, mostly tribal people, known as Scheduled Tribes or Adivasis. They make up about 8 per cent of the total population, but represent 55 percent of displaced people.

A report published by the World Commission on Dams has calculated that according to the 3,300 large dams that India has built in the last 50 years, the number of people displaced by dams is likely to range from 21 to 33 million. This does not include displacement caused by other projects such as wildlife protection. In total it is estimated that the number of displaced people in India is over 70 billion.

Conflicting acts

There are now four major forest and wildlife management acts in India, which only amplify the confusion in

the small details and in their implementation. Most provisions of the colonial-era Indian Forest Act, 1927, are still in force, while the Wildlife Protection Act of 1972 'criminalizes' the forest people, because legislatively speaking, they are not allowed to live there or use forest-based resources for subsistence. The 1980 Forest Conservation Act put restrictions on diverting forestland for non-forest purposes. The Forest Rights Act of 2006 is in conflict with both of these acts because it focuses on giving forest dwelling people rights to their land. For forest people to claim their land, they need a patta, which is a proof of ownership. In order to obtain a patta, they have to prove that three generations have been living on the land. This can be difficult to prove, as the case in Sita Mata shows.

About five per cent of India's territory is notified as National Parks or Sanctuaries. Delhi-based Centre for Equity Studies (CES) says about 4 million people live inside India's protected areas. Many of them lived in the areas before they were notified protected and are now in danger of being relocated. In many cases people have been removed from their land without sufficient compensation. All forest areas, accounting for about 23 percent of India's land, is physically 'owned' by the Forest Department. In India, lands can be acquired from individuals needed for any public purpose. This principle is often invoked when establishing nature parks, often throwing out communities living in these areas for generations. ■

Reclaiming the power

Malin Lenita Vik and Martine Kværner Roberts

It's midday, the sun is burning hot in the dry and arid landscape of south Rajasthan, which opens up into the lush Hamarkhora valley. Between the green foliage and the golden stems of the wheat fields, is Kerwas village, home to the Meena tribe with its 18 households and 72 people.

We reach the valley and meet members of the local watershed committee and representatives from FES, Foundation for Ecological Security, an NGO working for ecological restoration in rural India. The committee consists of people from the age of 18 from the village and the panchayat. The panchayat is the lowest level of governance structure and normally has authority over two or three villages. The council meets regularly to address matters of common concern.

In the middle of the courtyard a hand-drawn ecological map of the habitat is rolled out on the ground. The village is situated in what is both a dry and high rainfall zone. There are short and heavy monsoons and a dry climate the rest of the year. It's crucial to save water where it falls and to consume the goods from nature in a sustainable way.

The leader of the community group points to the map, showing us how the natural resources in the area are managed. The map also illustrates how the natural resources have been distributed since a working plan was implemented.

—We came into contact with the people of Hamarkhora habitation in 2005 after conducting a survey of the Pratapgarh district, says Nadini Singh, project officer of the Pratapgarh FES office. —After initial trust-building between FES and the local communi-



FES and president of the community council show how rain water is channeled into the four *nalas* (streams) in the valley. Photograph: Junn Bjartung

ty, the process of identifying challenges and solutions for natural resource management began. A working plan was developed on the basis of local knowledge and preferences, with FES as a facilitator providing financial resources and technical assistance, says Singh.

The outcome of the planning process was a construction of watershed developments, which means the rainfall is channelled into several water bodies at the lowest point in the valley. The water is harvested and the water bodies provide for direct irrigation, as well as indirect irrigation through the recharging of groundwater wells. The community council regulates the usage of the harvested

water, so that no direct irrigation uses the two water bodies in the upper ridges because they are needed to increase the water flow in the lower streams and recharge the wells.

India's decentralization experiment

India has over 600,000 villages with almost 4 million elected local representatives. It is the world's largest experiment in decentralization. The union government is giving the power back to the people by giving the local government the special role of implementing development projects. This is all true on paper, but in real life communities are struggling every day to reclaim their right to control their own land and resources. Even though the state has political control, they cannot control nature. Rain falls where it falls, and is therefore completely decentralized: rain needs no political programme.

Attempts to bring government even closer to the people have been made, as is the case with the PISA Act

**The government
is giving power
back to people.
But how fruitful?**



Tamilbai, from Kerwas village, talks about her participation in the community council. Photograph: Junn Bjartung

of 1996, through which there are autonomous structures all the way down to the village level. The problem is that the actual implementation of the act still seems a million miles away. The vast number of Indian legislations is to some extent contradictory, as one law cannot replace another. This allows for strong, local communities to find innovative ways of reclaiming village power.

Local voices

FES believes watershed management is more than just a technical fix; it is also a social and cultural phenomenon entirely dependent on organization and the involvement of local people. There have been previous attempts made by government institutions to introduce water harvesting structures in the Hamakhora habitation.

However, since the local people were kept out of the process, the structures became futile within a couple of years. During the FES program the government's water harvesting structures have been repaired and are now

being used as a part of the watershed developments. Tamilbai, one of the elderly women living in the valley, is an active participant in the Kerwas village council. The small lady is shy, hiding half of her face behind her green sari while talking.

Tamilbai explains that the village council will come together whenever they have important issues of common concern to discuss. Most of the time these meetings will entail discussions about where and how physical infrastructure should be developed or maintained, and how the work burden will be shared among the households.

Tamilbai goes on further, talking about the importance of taking part in decision-making concerning her livelihood. —Before, the women used to voluntarily keep away from decision-making processes, but today 33 percent of the seats in the council are reserved for women. Since the decisions made in the council also affects our workdays, the women here have understood the importance of participating in the council, says Tamilbai.

In Indian rural areas, it is common that there is an indirect discrimi-

effects are many. The soil is much richer now that we have a proper irrigation system, and for the first time we are able to grow two crops a year, instead of only one. This means that we can sell some of the surplus of what we grow on the market. Before we used to have a problem with erosion, but that is not a problem anymore, after we built check dams and trenches on the hillsides. We have also started to grow soybeans, which we mainly sell on the local market, says Tamilbai.

Creating sustainability

—We are advising the village to grow mostly for self-consumption and to keep on prioritizing the traditional crops such as maize and pulses, wheat, mustard and gram, even though they have started to grow soybeans for commercial purpose, Shipra Gupta, another project officer from FES explains.

— In order to keep this program sustainable, it has been decided that direct irrigation from these wells should have a monetary charged, says Nadini Singh. The income from the communal water project is deposited

In rural India, discrimination against females is strong. They are forced to work more than the males do.

nation against the female sex, where the workload is heavier on females. This village is no exception; the women have the responsibility of the household in addition to having to take part in common work and attending to the fields.

—To participate in decision-making processes gives us an opportunity to influence the natural environment in our valley and it also gives us a feeling of ownership of our common resources, Tamilbai proudly says.

—What are the effects of the FES programme in your village? —Oh, the

with the panchayat. The funds are released when the community council needs to do repairs or maintenance of the water structure. This creates a management system that is self-sufficient, says Singh.

The Meena tribe, and many other tribes in India, is directly dependent on natural resources for their survival. In order to have water and food throughout all seasons they have to think and act strategically. The watershed program they use today is a clean and viable way of managing nature as it is highly energy and cost efficient. ■

What about recycling?

Henrik Bering and Gjertrud Egge Wennevik
Photos: Andreas Doppelmayr

Private companies are taking over waste-management in major parts of Delhi. This could prove to be catastrophic, both for the unofficial recyclers and the city's environment.

There are about 300,000 wastepickers in Delhi. Together, they are doing one of the city's most important jobs, recycling up to 20 per cent of its daily waste accumulation. Still, the state government does not recognize the importance of their hazardous work. Rather than cooperate with the wastepickers, they have started a privatization of the waste removal.

—Private companies are forcing us away from the dustbins where we used to segregate waste, says Siraj. He is in his mid-fifties and has been working as a wastepicker in Delhi all his life. In the last six months, a private waste-management company has been granted control over the area Takai Keli Khen, where he works. This is making his life difficult.

—They are demanding up to 2,000 Rs per month in 'rent' from us for letting us use the dustbins. Most of us are not able to pay them, and have to pick waste from the streets instead.

Before the privatization, Siraj and the other wastepickers used to earn about 170 Rs per day. Now they only make between 100 and 125 Rs a day. The money they earn is used to provide for their children's education. —I am working so that my children won't have to live the same life that I live, Siraj says.

In addition to making life harder for wastepickers, this privatization also increases pressure on the environment.

—The private companies do not recycle the waste, they just transport it directly to the dumpsites, says Yogesh Kumar from Chintan, an NGO fighting for the recognition of wastepickers. As the dumpsites in Delhi are already put to the limit, many feel this can hardly be argued as being a viable practice. ■



The wastepickers daily recycle 75% of the 1,800 tonnes of glass bottles. They earn from collecting and selling recyclable waste



Wastepickers are not recognized by the authorities and have no social or medical securities. They face harassment from police and locals.



The work the wastepickers of Delhi are doing saves the government 600,000 rupees daily.



—I am working so that my children won't have to live the same life that I lived, says Siraj, one of the wastepickers. He has a son and a daughter currently in school. He has to work every day from 5 am to 7 pm to make a living.

Did you know that...

25 individuals control 60 per cent of India's GDP?

The urban poverty line in India is Rs 18 (about 2 NOK); the rural is Rs 12 (1.50 NOK) and a bottle of water costs Rs 12?

301,7 million people live in poverty in India, approximately 60 times of Norway's population?

In 2003 India declared itself a developed country?

22 Indians consume the same amount of energy as one Norwegian per year?

India has the fastest growing economy in the world?

Delhi has the third most expensive real estate in the world?

92% of India's output is provided by the informal sector?

All buses and motorized rickshaws in Delhi run on compressed natural gas?

As Indian people eat with their hands, it is considered impolite for one to have dirt below the knuckles?

The number of cars in Delhi increases by 1000 every day?

Cows in India are also used as security for loans and dowry?

Rajasthani Daal Recipe

Ingredients :

250 gr of Mung Daal
250 gr of Urad Daal
2 large onions
1 whole garlic
2 green chillis
2 tomatoes
Half a ginger root
3 soup spoons of ground nut oil
1 tea spoon of cumin
1 tea spoon of fennel
1 tea spoon of coriander
1 tea spoon of mustard seed
1 tea spoon of black pepper
4 tea spoon of salt
2 bayleafs

seed, black pepper and bay leaf and cook for another 5 minutes. Add boiled Daal into the cooking sauce, stir well and cook for another 5 minutes; liquify with water if needed.

Bati Recipe

Ingredients :

250 gr of whole wheat flour
250 gr of whole corn flour
10 gr of salt
50 gr of melted butter

Mix whole wheat and whole corn flour, add salt and melted butter, stir firmly until a stiff dough is formed. Add water if needed. Form palm size



Photo: Camilla Andreassen

Boil Mung and Urad Daal together until cooked. In a separate pot, chop onions in small squares, add salt, cumin, fennel and coriander and fry in heated ground nut oil for 5 minutes. Add mashed garlic, ginger, chillis and tomatoes and cook content for another 5 minutes in high heat; Add mustard

balls. Traditionally the prepared dough balls are baked by being covered in cow dung coals. If cow dung is not available, bake in your preheated oven for 25 minutes at 200°C.

Enjoy your Daal with crumbed Bati spread or separately.

Want to know more



www.cseindia.org/react.htm

IT MIGHT NOT LOOK **CLEAN**, BUT IT IS **VIA**BLE

To cook food

Fertilizer



Insecticide

To build homes

Energy

No Bullshit!