SOCIAL CHANGE

5th Social Change Annual Lecture

Ecosystem People, Biosphere People, Ecological Refugees

Madhav Gadgil

23 January 2023

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Social Change

Social Change, founded in 1971 and with Kamla Mankekar as its first editor, is a multidisciplinary social science quarterly. It carries full-length research articles, brief write-ups, and book reviews focussing on issues related to social change and development in India. It welcomes contributions on social change and development in Asia, Africa, and Latin America, and is open to relevant contributions on European, North American, and other contexts. It also disseminates scholarship on emerging concerns through its special thematic issues. Its book reviews and review articles aim to inform its readers of important and current trends in global scholarship. Sponsored by the Council for Social Development, *Social Change* has a global readership in the academic, activist, and policy circles. Published by SAGE, it carries contributions from established as well as emerging scholars from India and abroad.

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Council for Social Development

The Council for Social Development (CSD) has functioned, for decades, as a non-profit, non-partisan, vibrant research and advocacy institution engaged in issues of social development, especially the welfare of the marginalised. A brain-child of the legendary freedom fighter and social worker Durgabai Deshmukh, CSD had its faint origin in 1962 in the form of an informal study group at the India International Centre (IIC), New Delhi. The transition from being an informal study group to having a formal existence took about two years. In 1964, in view of the study group's track record of noteworthy activities, the IIC resolved to set up CSD, which was to have its own constitution and almost complete autonomy. This marked the formal beginning of CSD. Subsequently, with a view to expanding the reach of CSD's activities, its Southern Regional Centre (SRC) was established in Hyderabad in 1967.

CSD was formally registered under the Societies Registration Act in 1970, with C. D. Deshmukh as its President and Durgabai Deshmukh as its Executive Chairperson and Honorary Director. Presently, the distinguished diplomat and educationist, Prof. Muchkund Dubey is CSD's President and Prof. Biswajit Dhar, noted economist, is its Vice President. Prof. Nitya Nanda, an economist, is its Director. SRC is governed by a managing committee and presently, the eminent educationist and child rights expert, Prof. Shantha Sinha, is its Chairperson. Prof. Sujit Kumar Mishra, an economist, is its Regional Director. SRC is currently funded by the Indian Council of Social Science Research (ICSSR) and the Government of Telangana.

5TH SOCIAL CHANGE ANNUAL LECTURE

Ecosystem People, Biosphere People, Ecological Refugees

Madhav Gadgil

One may assign people to three broad categories from an ecological perspective. Ecosystem people meet the bulk of their resource requirements from a limited area near their habitation through gathering or low-input agriculture and animal husbandry. Biosphere people enjoy access to resources garnered from the entire biosphere and made available through markets, while ecological refugees are people that have lost access to their traditional base of natural resources yet have very limited access to resources through markets. In India today the ever-growing pressure of biosphere people is converting an increasingly large proportion of ecosystem people into ecological refugees.

In 2010–11, I undertook field trips in Maharashtra and Goa on behalf of the Western Ghats Ecology Expert Panel in consultation with state government officials (WGEEP, 2011). I met with the people's representatives at various levels from gram panchayat to state legislature and talked to people at the grassroots. In September 2010, I visited Ratnagiri and Sindhudurg districts over six days and submitted a preliminary report. A meeting of senior secretaries was convened in Maharashtra's secretariat to discuss the points raised in the visit report.

The report stressed that inter-regional imbalances in development were the bane of India's development efforts. The inherent strengths of each region needed to be focused on development of that region, and not sacrificed to meet the requirements of other regions. So, the development of the energy or mineral resources of Ratnagiri–Sindhudurg should be aimed at meeting their own demand for power. The annual energy requirement of these two districts at the time was 180 megawatts (MW), while production was 4,543 MW which was a major contribution to the national pool. I suggested that as Mumbai had huge power requirements, it would be reasonable to set up a giant coal-based power plant on Malabar Hill, where the city's rich and mighty live, since it offers a topographical site similar to that of the Jindal plant in Ratnagiri. Such a location would have the advantage of cutting down the costs of transmission, losses of power during transmission, and losses in horticultural production in areas under power lines in Ratnagiri–Sindhudurg. Taken aback, the secretary chairing the meeting remarked that this was an outrageous suggestion. I asked why he should think so, when it made both economic and environmental sense and was in consonance with the core values of our Constitution—justice, liberty, equality, and fraternity. His only response was to glare at me; he no doubt believed that Mumbai had every right to impose the cost of its development on the farmers and fisherfolk of Ratnagiri and Sindhudurg. Without further discussion, the chairman decided that we should move on to the next item on the agenda.

A FISSURED LAND

This conversation in the secretariat was symptomatic of the glaring divide in Indian society, between the better-off, mostly English-educated, urban dwellers and the economically weaker population of farmers with small holdings, landless labourers, artisans, herders, fishers, and hunters. The educated urban dwellers who are engaged in organised industries and the service sector represent only a small proportion of India's population, while the weaker sections of the urban

and rural population, engaged in the unorganised sector, make up 85 per cent. And if one looks at the global situation, things are no better. The developed western countries, at a huge advantage because of their industrial civilisation backed by modern science and technology, have for centuries suppressed and exploited pre-industrial societies, engaging in colonialism, wars, genocide and slavery. While genocide and slavery are now largely out of fashion, racial discrimination is still rampant and aggression against countries like Iraq, Iran and Afghanistan is still justified in the name of democracy. The gulf in India between the economically stronger and weaker sections of the population parallels this worldwide divide, and partly overrides other divisive tendencies rooted in India's feudal, segmented society based on caste, religion, region, and language.

In terms of ecology, the better-off urban dwellers constitute the biosphere people (BP) and the economically weaker rural population tied to the health of natural resources of their surroundings constitutes the ecosystem people (EP) (Dasmann, 1989). The BP have the political and economic power to avail themselves of the resources of the entire global biosphere and are insulated from the ill-effects of degradation of the environment in rural areas.

The better-off BP of Mumbai consume electricity produced by hydel projects in the Western Ghats, consume kiwi fruit from New Zealand and salmon from Norway, and ride in Japanese cars. Their ambitions are jobs in multinational companies or emigration to Britain, Canada, the USA, or Australia. They have internalised the language, the culture, the fashions, and the values of these countries. They are therefore alienated from people rooted in our own country, the EP, and totally unsympathetic towards the manifold difficulties faced by them. At the same time, the livelihoods of an increasingly large proportion of the EP are destroyed by an erosion of the base of natural resources, such as fisherfolk victimised by water pollution and sand mining who are forced to migrate and join the gangs of construction labour. One may

term them as ecological refugees (ER) (M. Gadgil & Guha, 1995).

THE PLIGHT OF FISHERFOLK

Permit me to cite two examples from my Ratnagiri study tour. Golap-Ranpar and Lote were two of the localities that I visited during the September 2010 field trip to Ratnagiri and Sindhudurg districts, sites where processes transforming fisherfolk subsisting as EP into ER were in operation. The predominantly fishing village of Golap-Ranpar is situated at the mouth of an estuary. A Maharashtra government committee had recommended that a fishing jetty be constructed in this estuary. But before this could be taken up, Finolex established a coal-based power plant on the hill above. The company had allegedly obtained clearance by misinforming the villagers that a plastic tube production plant was to be established there. As it swung into operation, Finolex went to the High Court and obtained a stay on the construction of the jetty for fishing boats. In its place, it managed to quickly obtain clearance for the construction of a jetty for the import of coal. For the villagers this was a twofold tragedy—suffering air pollution and losing access to the sea for fishing. The fisherwomen complained bitterly that the company had organised stitching classes under their corporate social responsibility programme, adding insult to injury. They have no interest in becoming tailor-women; they enjoy their occupation of selling fish which they have been deprived of. Indeed, all coastal-dwelling Maharashtrians have respect and affection for the vivacious local fisherwomen. I asked them whether their representatives in the gram panchayat did not support their cause. They expressed the usual tragic tale—as soon as leaders are elected, they turn back on their promises to people, and support the companies which benefit them personally.

The second case I would like to mention relates to the chemical industry complex at Lote near Chiplun. I had a detailed discussion with the local *Abhyas Gat* (or study group, which is expected to supervise the functioning of the Lote Industrial Estate and suggest improvements)

and visited the Common Effluent Treatment Plant (CETP) and some surrounding areas as well as Dabhol creek where I had discussions with community members. I found that, contrary to information provided by authorities in a meeting in Mumbai, the *Abhyas Gat* had been totally inactive, with no meetings for over two years. Despite its demand, Kotavale village, which had suffered most from pollution, was not represented in the *Abhyas Gat*. It was revealed that the CETP could not handle the quantity of effluents it was receiving, and its functioning was highly defective. We saw large overflows of untreated effluents from the plant going into streams serving Kotavale village. Since the problem was not being addressed, the Sarpanch of Kotavale attempted suicide by drinking the polluted stream water. He was rushed to Mumbai and saved, but there was no abatement in the pollution affecting Kotavale.

Also, in 2000, about thirty school children near the Lote Maharashtra Industrial Development Corporation (MIDC) complex had become unconscious due to inhalation of poisonous gases. The company involved took no notice and did not even come forward to take the children to hospital. People reported that many industries at Lote were pumping toxic waste into groundwater through bore wells and poisoning groundwater. Apparently, three such cases had been brought to light, but there had been no action. Just prior to my visit, some unidentified party had dumped toxic waste via a tanker in Boraj dam, which is the water supply of Khed town. The town water supply had to be stopped for several weeks, but nobody had been brought to book. There had been significant decline in fish landings from Dabhol creek due to Lote chemical pollution, and severe loss of employment opportunities for members of the fishing communities. With all these problems persisting, all that the Pollution Control Board had done was to transfer its Lote office to Chiplun, rendering any chance of effective action even more remote. With all these persistent and unrectified problems, an MIDC officer informed me of their plan to set up a new petrochemical industry on 550 ha of their land—despite the government's Zoning Atlas for Siting of Industries report providing data which indicated that this

was inadvisable. I later learnt that about 11,000 people are employed in the chemical industry, while as many as 20,000 members of the fishing community have reportedly lost their employment.

Violation of Civil Rights

The forcible conversion of EP into ER is by systematic suppression of their civil rights. For the first time in my life, I had the bitter experience of being denied the opportunity of talking freely to people. I was shocked on being informed on the morning of 8 October 2010 that my plans for a field visit and open consultations with the people of Jaitapur had to be drastically modified because the Collector had promulgated the *Bombay Police Act 1951* Sec, 37(1)(3), prohibiting public gathering of more than five people. My understanding is that there has never been any violent demonstration of protest in Ratnagiri–Sindhudurg districts. And yet, such prohibitory orders are being routinely clamped to suppress any expression of dissent against industrial, mining, or other development activity being imposed on the region, though such imposition meets near-unanimous opposition in public hearings. The *Bombay Police Act 1951* Sec, 37(1)(3) has been used on a number of occasions to prohibit people's protests against unacceptable 'development' activities (see Table 1).

Table 1. Use of The *Bombay Police Act 1951* Sec, 37(1)(3) to Prohibit People's Protests

Sr. No.	Date	Reason	Number of Days
1	28.8.07 to 11.9.07	Andolan against Ranpar Project of Finolex	15
2	9.12.07 to 11.12.07	Jindal Project at Jaigad	3
3	22.3.08 to 4.4.2008	Protest against Finolex Company	14
4	5.4.08 to 19.4.08	Protest against Finolex Company	15
5	16.4.08 to 30.4.08	Protest against project of Dhopave Tal. Guhagar	15
6	28.4.08 to 12.5.08	Protest against Finolex by Ranpar-Golap Sangarsh Samiti	15
7	19.6.08 to 30.6.08	Protest of Villagers against Lote Parshuram MIDC Zone	12
8	15.7.08 to 30.7.08	Protest of 17 Gaon Sangarsh Samiti against water pollution in Lote Parshuram area	16
9	2.8.08 to 2.8.08	Protest against Lote MIDC by MNS	1
10	6.8.08 to 6.8.08	Protest against Pintoki Co. by Khed Shiv Sena	1
11	19.8.08 to 31.8.08	Protest against Lote Parshuram MIDC by Local Parties.	13
12	17.9.08 to 30.9.08	Protest against Pintoco Co. and Pending Question of 11 workers to take on work.	14
13	1.2.09 to 10.2.09	Protest against Lote MIDC by Shiv Sena and other political parties	10
14	12.2.09 to 26.2.09	Protest against Lote MIDC by Shiv Sena and other political parties	15
15	23.5.09 to 1.6.09	Protest of 17 Gaon Sangarsh Samiti against water pollution in Lote Parshuram area	10
16	06.06.09 to 15.6.09	Protest of 17 Gaon Sangarsh Samiti against water ollution in Lote Parshuram area	10
17	18.6.09 to 28.6.09	Protest of 17 Gaon Sangarsh Samiti against water pollution in Lote Parshuram area	11
18	27.10.09 to 27.10.09	Compensation to farmers against Jaitapur-Madban lands	1
Total Number of Days			191/600

Source: Records in Ratnagiri Collector's Office

Fisherfolk Rights Act

Before the 1960s, the fishing communities on our sea coast were largely autonomous and had exclusive control over inshore fisheries. The entire seacoast was divided into mutually exclusive territories of the fishing communities which had their settlements close to the coast. From there, they launched their country fishing crafts for inshore fishing and operated *rampons* or beach seines. These were huge nets that were used to surround shoals of fish close to the shore. The seines were then pulled in on either side by ropes by tens of fishermen in a cooperative effort. This led to such an abundance of fish that beyond use for consumption as fresh fish they were dried and used as a fertiliser in coastal coconut orchards. The Mumbai metropolis was once a series of fishing islands occupied by such fishing communities. Many of these were displaced over centuries but such displacement was rather limited till 1960. Beyond that displacement of fishing communities for a variety of harbours like the Naval Seabird project near Karwar or the latest Vizhinjam harbour in Kerala; by polluting industries like Lote Chemical Industries complex in Ratnagiri district and Zuari Agrochemicals in Goa; and overfishing by mechanised fishing crafts from India as well as foreign countries has severely depleted fishing and has been increasingly depriving fisherfolk of their livelihoods and converting them into ER. The fishing communities have been resisting as with Goa Ramponkar's agitation against Zuari Agrochemicals pollution or the currently ongoing agitation by fisherfolk of Kerala against Vizhinjam harbour, but with little success. Jairam Ramesh, then the minister for Environment and Forest in the central government had proposed in 2010 that we should have a Fisherfolk Rights Act on the model of the Forest Rights Act, but the proposal has not made any headway.[1]

ROCK QUARRIES

The Western Ghats hill range is being increasingly afflicted by rock quarries. In November 2013, I spent a memorable day under police protection on a visit to Chembanmudy in the hilly tracts of Ranni in

Pattanamthitta district, Kerala. Granite quarrying and crushing had been going on in two giant quarries and crusher units in the hill for a decade. Diesel emissions and quarry dust had triggered cases of asthma, lung cancer, chronic bronchitis, and tuberculosis among the population. As many as 125 giant diesel lorries had been plying on the panchayat road that passed by homes, *Anganwadis* and schools. There were landslips and serious adverse impacts on streams and agriculture. A Geological Survey of India team inspected the locality and reported that extensive unscientific quarrying activity and dumping of 'overburden' material, mainly laterite, along the southwestern flank of the Chembanmudy hillock was the main cause for the landslip. Fifteen streams of the first order originate from the hill, seven of them from its southern flank. There was unscientific drainage modification, and huge dumps of manufactured sand (crushed granite) and granite chips produced by the crusher unit along the hill slope. The concrete water tanks near a buried stream-course had created additional pressure on the loose 'overburden' material. A large pond was created by quarrying in the hill at an elevation of 275 metres above sea level. The pond was separated from the break-in slope of the hillock with a 9-metre-thick column of earth material. The report warned against chances of a catastrophic pond-break during the peak monsoon, if the separating column containing filled debris material caved in under pressure created by the rising water in the pond. The geologists strongly recommended against blasting and urged that corrective measures be taken against future threats. The district administration ignored this and continued to support the quarry operator. Unable to tolerate this any longer, the people launched a year-long mass movement against quarrying and crushing. The protesters, most of them women from nearly a hundred Kudumbasree (a state poverty eradication mission) units, marched to Chembanmudy on 21 March 2013, forcibly bringing the operations to a halt.

It was against this background that I drove the 35 km from the temple town of Aranmula to Chembanmudy in a convoy with police escort.

This escort had become necessary because the moneyed interest behind activities like Chembanmudy quarrying had raised a storm of protest against the report of the Western Ghats Ecology Expert Panel that I had chaired and whose pro-environment and pro-people recommendations were adverse to their interests.[2] As we began to climb the final winding hilly stretch to the village of Naranamoozhy, there appeared cloth banners on the road announcing the mass protest of the villagers against the quarry. We halted at the village and a group of people that included local political leaders conducted us to the quarry site. The landslip, the blockage of streams feeding the sacred Pamba river, and the destruction of fields and orchards were all in full view. We heard horror stories from workers at the quarry, mostly tribals from Jharkhand who had themselves been driven out of their lands due to devastation caused by mining. These workers had lost contact with friends and relatives, and it was rumoured that whenever there was an accidental death, the quarry owners threw the body into the deep quarry pit, wiping out all traces of the victim. In terms of ecology, the local rural people who were protesting against the quarries were EP, the quarry operators and the district administration supporting them were BP and the workers at the quarry were ER.

JHARKHAND TRIBALS

As mentioned, many of the quarry labourers came from the state of Jharkhand. This region adjoins the old, thickly settled Gangetic plains that were the nucleus of the two-thousand-year-old Magadha empire extending over much of the Indian subcontinent. Emperor Ashoka of Magadha is renowned for his conquest of and subjugation of the tribals in the extensive hilly tracts that border the Gangetic plains. This part of the country fell rather early to British colonialists, who quickly established control over the region during the second half of the eighteenth century. The forests of Jharkhand are rich in sal (*Shorearobusta*), an important timber for the production of railway sleepers. This was a resource much valued by the British who therefore banned all shifting cultivation by

the tribal people in early nineteenth century. The forests were then taken over either as a property of the British government, or that of the private landlords. Where the tribal villages were a part of the state-controlled forest lands, the tribals were totally deprived of any rights to forest resources. The landlords did not come from amongst the tribals themselves, but from castes at a higher level in the hierarchy. These landlords exploited the lower caste or tribal tenants ruthlessly. The tribals were therefore subjected to extreme political as well as economic subjugation as early as the first half of the nineteenth century. Their only earnings came from work as poorly paid tenant farmers or as forest labourers along with sale of some minor forest produce at extremely low rates. They thus have a long history as poor people serving as agents of destruction of biodiversity.

These Jharkhand tribals are today amongst the most striking examples of ER of the country. They have served as the most mobile source of very inexpensive, unskilled labour in many contexts. One of the major economic enterprises under British rule was the development of tea estates replacing the rain forest of Brahmaputra valley in North-East India. This involved wholesale destruction of biodiversity. While the plantation owners were British, the labourers responsible for actual destruction of biodiversity were mostly Jharkhand tribals working under conditions that have been described as being close to slavery (D. R. Gadgil, 1959).

Elsewhere, these tribals were resettled in so-called forest villages. The primary focus of the forest plantations they worked on was to replace the natural sal dominated, fairly diverse humid forest with monocultures of teak (*Tectona grandis*). Teak is excellent timber, resistant to termite and fungal attacks, highly valued for ship building and gun carriages in the nineteenth century and for furniture and house construction in the twentieth century. But teak is hard wood, little used traditionally. It also does not provide any other product of local utility. On the other hand, sal leaves are used to make plates and sal seed has value as an oil seed.

Many associates of sal, such as *mahua* (*Madhuca longifolia*) and *tendu* (*Diospyros melanoxylon*), also have great local utility. So the replacement of natural sal forests by teak plantations deprives local people of access to a diversity of biological resources of value.

GRIST FOR THE MILLS OF THE BUILDING INDUSTRY

Today, with the ongoing spree of construction of housing for the rich and of roads and railways and harbours, these ER from Jharkhand serve as ill-paid and ill-treated labourers. The product of their labour goes to support constructions in the city of Bengaluru, the city where I lived for over three decades. Bengaluru citizens get clean drinking water lifted from the river Kaveri at huge subsidies, while the city discharges its sewage without proper treatment into the river Vrishabhavati, imposing considerable health-related costs on the rural population living downstream. The better-off Bengulurites, the BP, consume electricity generated by the Linganmakki hydel project in the Western Ghats, consume apples from California and ride in South Korean cars. They show off their sophistication by discussing French wines and Swiss cheese. They are completely alienated from people rooted in our own country, the EP, and are totally unsympathetic towards the manifold difficulties faced by them.

In a notable incident in May 2020, a large number of migrant construction labourers wanted to leave Bengaluru at the end of the painful Corona-related lockdown, but the Karnataka Chief Minister, Shri Yediyurappa, cancelled railway trains, forcing them to stay back to serve the interests of the construction industry.3 The outcome of this ill-conceived building spree became apparent during the floods of 7 September 2022.4 These floods wrecked many slum houses, cut transportation links, knocked down power and disrupted business operations in parts of the city. The economic development of the city has attracted huge migration over the past decade, prompting an ever-growing expansion of real estate in areas that are increasingly showing cracks in proper planning. Many

gated communities submerged that week, requiring boats, tractors and cranes for evacuation.

FORCED INTO THE MAINSTREAM AS REFUGEES

The conversion of EP to ER leads to a substantial reduction in the quality of their lives and worsening of social disparities. Describing the impact of the Bhilai Steel Plant on local tribal people, Shri B. D. Sharma, one-time Scheduled Castes and Scheduled Tribes Commissioner to the Government of India, informed me that the men were turned into poorly paid labourers and many of the women were forced into prostitution (personal communication). The injustice being done to them fuels terrorism in the form of Naxalite movements. What is obviously desirable is that EP should join the mainstream by moving into the class of BP. Many BP take a contrary stand and say that EP becoming capable of handling the market economy would mean a tragic loss of their innocence. I was a member of the committee formed by the Government of India to frame the rules for the Forest Rights Act. The Act gives ownership rights over minor forest produce to the gram sabhas holding community forest rights and authorises them to process, add value and market the produce. One of the committee members, a woman who herself enjoyed an opulent lifestyle in Chandigarh, vehemently pleaded against this provision. To me this is completely unacceptable. I have lived amongst Gond tribals of Gadchiroli district, sleeping in their company on the ground in their schools or community halls in their villages since 1991 and know that they do not enjoy being poor. They want to be able to afford smartphones and many other amenities of modern life and want to join the economic mainstream with honour. In other words, to move from the life of EP into that of BP while retaining their cooperative community spirit.

THE FOREST RIGHTS ACT

The Forest Rights Act has made this possible for the Scheduled Tribes

and other traditional forest dwellers. *The Scheduled Tribes and Other Traditional Forest Dwellers (Right over the Forests) Act of 2006* (in short, the FRA) was the result of a long struggle to undo the historical injustices to the tribals and other forest dwellers of India resulting from laws imposed during British rule.[5] The FRA, implemented from 1 January 2008, presents a major opportunity and a great challenge not only for conservation, but also for sustainable use and regeneration of the country's forests as well as domesticated biodiversity. In its preamble, the Act declares that the recognised rights of the forest-dwelling Scheduled Tribes and other traditional forest dwellers include the responsibilities and authority for sustainable use, conservation of biodiversity, and maintenance of ecological balance, thereby strengthening the conservation regime of the forests while ensuring their livelihood and food security. The rights granted under the FRA include secure individual or community tenure, or both, on all forest lands, including reserved forests, protected forests, and protected areas such as Wildlife Sanctuaries and National Parks to which the community had traditional access. The community rights are of two kinds—first, over a limited area for community facilities such as hospitals or *Anganwadis*; second, and more significantly, over larger areas (without a specific limit) known as Community Forest Resources (CFRs) for management of non-timber forest resources. These CFRs are defined as customary common forest land within the traditional or customary boundaries of the village, or seasonally-used landscape in case of pastoral communities, including reserved forests, protected forests, and protected areas to which the community had traditional access. On such lands, the people enjoy the

1. right of ownership, access to collect, use or dispose of minor forest produce (MFP). The FRA defines MFP as all non-timber forest produce (NTFP) of plant origin including bamboo, brushwood, stumps, cane, tussar, cocoons, honey, wax, lac, *tendu* leaves, medicinal plants and herbs, roots, tubers and the like.

2. right to protect, regenerate, conserve, or manage the community

resources, and

3. community rights to intellectual property and traditional knowledge related to biodiversity and cultural diversity.

Furthermore, the holders of forest rights, the gram sabhas and other village-level institutions, are empowered to protect the wildlife, forest and biodiversity; ensure that adjoining catchment areas, water sources, and other ecological sensitive areas are adequately protected; and ensure that the decisions taken in the gram sabha to regulate access to community forest resources and to stop any activity which adversely affects the wild animals, forest, and biodiversity are complied with. The FRA thus very specifically empowers village-level institutions, an important step in the direction of direct, participative democracy. It confers on forest dwellers the responsibility and authority for sustainable use, conservation of biodiversity, and maintenance of ecological balance. Regrettably, powerful vested interests (for example, mining corporations) are pitted against the implementation of community forest resource rights, and there has been very tardy progress in assignment of CFRs all over the country with the exception of a few districts in eastern Maharashtra.

The Gadchiroli Experience

Gadchiroli, Maharashtra's easternmost district, has the highest level of tree cover in the state at over 70 per cent, safeguarded by its predominantly tribal population. It is the one district where the authorities have implemented the FRA properly, assigning over 1,100 villages several lakhs of hectares as CFR to manage minor forest produce sustainably. CFRs have been granted from 2009 and have led to fruitful skill development and community-based employment. The assignment of CFR rights has brought about a profound change in the approach of the people at the grassroots to the utilisation of forest resources. Prior to the assignment, when they went into the forest to sustain their lives and livelihoods, they were treated as encroachers by the forest bureaucracy. Unfortunately, in India, the bureaucracy uses its regulatory powers not

to regulate honestly and effectively but to extort bribes from violators. This led to illegal encroachments on forest for cultivation and for collection of forest produce. People tended to extract as much out of the forest as quickly as possible when they got a chance, resulting in many destructive practices.

All of this changed with the assignment of CRF rights. In Kharkadi, the gram sabha has not only stopped further encroachments, but also forced many who had encroached earlier to pull out of the encroached land. Earlier, people tended to cut down whole branches to harvest *amla*, which is in great demand, often before the fruit were mature. Such destructive harvesting has stopped, and the communities are reviving traditions of sustainable, prudent use of NTFP, including *amla*, *chironji*, mango, *ber*, tamarind, *mahua* flowers, fruits and seeds, and wiregrasses. The community members wait till the produce is fully mature and ready to harvest and then perform a ceremony called *polo*. On *polo* day, nobody goes out for work; the whole village gets together for a community feast to signal that the produce may now be collected. Also, people earlier would not venture into the forest to douse a forest fire because, if they did, they would be booked as criminals by the Forest Department. Now, they collectively work to extinguish forest fires in the CFR areas.

Mendha (Lekha) village of Gadchiroli district has been a leader in the movement to win and effectively implement community forest resource rights. Its gram sabha became the first one in the country in 2009 to be assigned CFR.[6] Gram sabhas constitute the lowest tier of our democratic system and have every right to function in the same fashion as zilla parishads and state governments. Nevertheless, Mendha (Lekha) had to struggle to open a bank account in the name of the gram sabha and then to market the bamboo resources over which it had clear ownership rights. They succeeded in all of these struggles and paved the way for the assignation of CFR rights in 1,100 gram sabhas.

In 2010, I began working with the Mendha (Lekha) villagers to prepare a management plan for the Mendha (Lekha) CFR area of 1,800 hectares.

While the local people have an in-depth understanding of many aspects of the ecosystem of the CFR area, they are not at all used to quantitative information. The management plans have to generate quantitative estimates of various NTFP resources, e.g., the amount of bamboo, *tendu* leaves, *mahua* flowers, or *amla* fruit available in the CFR area over which gram sabhas have ownership rights. This facilitates sustainable use of these resources by working out the levels at which they may be harvested without depletion, and also helps plan the marketing of the produce. This needed inputs from technical experts like me and my computer scientist colleague, Dr Vijay Edlabadkar. The youth in the village constituted our field level task force, many of them being highly intelligent though with little formal education. Most had stumbled at the 10th or 12th standard exams primarily because of lack of knowledge of English and weakness in mathematics. In those pre-smartphone days, the process of generating the necessary information involved a series of laborious steps, recording observations with pen and paper and employing an assistant to help in the computerisation of data. The quantitative estimates of resources such as bamboo were then subjected to the acid test of the market as traders were asked for bids. We were delighted that none of the traders complained of the estimates being incorrect and the Mendha (Lekha) gram sabha realised substantial revenue from this auction. In another pioneering move, they decided to set apart 12 per cent of CFR area solely as nature reserves in the tradition of sacred groves. This area includes seven patches representing different plant assemblages occurring in the CFR area.7

Pachgaon's Initiative

Pachgaon, a village in neighbouring Chandrapur district, was assigned CFR rights over 1,000 hectares.[8] To kick off the process of its management, the gram sabha asked each family to submit five rules regarding management of forest resources and other civic affairs. These were then discussed in a meeting over two days and 115 rules were unanimously accepted. The entire community now abides by these rules,

which include regimes of harvesting of bamboo and other minor forest produce, regular patrolling of CFR areas, and sharing of responsibility in sorting and auctioning produce. The villagers used to earn a fair income plucking *tendu* leaves for contractors earlier. But this involved setting fire to parts of the forest, which the people deemed undesirable. So, they stopped harvesting *tendu* leaves and the *tendu* trees are now producing an abundance of fruit. This fruit is in high demand, and, in the long run, the village may be economically better-off selling the fruit rather than the leaves. They paid wages for bamboo harvest to their own gram sabha members at rates three times higher than what the contractors paid. Nevertheless, they managed to make a net profit of Rs 35 lakh from the sale of bamboo in 2015. This has been invested in organising forest and village development works which provide year-round employment. Prior to being empowered by the CFR rights, many villagers used to migrate all the way to Gujarat to earn a living. Onlya very small number do so now.

Training Programme

The lessons from villages such as Mendha (Lekha) and Pachgaon must reach all other CFR-holding villages. To build such a capacity, Maharashtra's Tribal Development Department organised a training programme for nominees of CFR-holding gram sabhas under the aegis of Mumbai University from 2 October 2018 to 23 February 2019 in the field at Mendha (Lekha).[9] I was associated with this programme in which twenty-four young men and three women were trained. Each fortnight, the trainees attended five days of lectures and practical demonstrations in the Mendha (Lekha) CFR area, then returned to their own villages to undertake practical work under the supervision of their gram sabhas in their respective CFR areas for the next nine days. Given the low levels of income of the population in this area, having to forego daily earnings for five months is a substantial financial burden. The trainees, however, faced these difficulties bravely and as the training programme progressed, their enthusiasm, curiosity, and energy kept on rising. They possessed

a great store of experiential knowledge of the plants and animals and the forest ecosystem and were tremendously enthusiastic about field work. Little of the experiential knowledge of local communities has been incorporated in the framework of formal science. Indeed, there is hardly any systematic scientific knowledge on NTFP with the Forest Department; all that seems to be officially available is anecdotes and educated guesses. When I was on the Governing Council of the Indian Institute of Forest Management in Bhopal, I found this institution had initiated a programme of documenting techniques of sustainable harvest of non-timber forest produce (NTFP) and had prepared a draft handbook that was not based on any scientific experiments but provided some rules of thumb. This project was subsequently abandoned.

A compilation of the material generated by the trainees as part of their homework showed that at least eighty different NTFPs of economic importance are available in Gadchiroli district, and that there is a great deal of variation among different CFR areas. It is essential that this variety of NTFPs be managed by taking on board locality-specific conditions. Hence the CFR Working Plans being prepared for gram sabhas depend greatly on accumulating proper information on particular localities. The modern discipline of Landscape Ecology is very pertinent to organising the collection of such information, and the trainees absorbed and learnt to put to good use such new knowledge and techniques. In fact, the course became an experiment in participatory development of knowledge in the context of landscape ecology, and the entire class of twenty-seven diploma students along with myself and my colleague Vijay Edlabadkar discussed and prepared a list of thirty-odd landscape and waterscape element types relevant to their region. One of the guest faculty for the course was very knowledgeable and experienced in use of the *Right to Information (RTI) Act*. The homework assigned for the trainees following his lectures included making two applications under the RTI Act for some information relevant to their gram sabhas. The trainees then applied for some important information from the gram sevak. He initially refused, but on finding that the students now knew

all the provisions of the RTI Act, began cooperating with the gram sabha members. To give one example, the trainee from village Yerandi obtained the official rates for beat cutting and digging for the pond through the RTI Act's provisions; this enabled the gram sabha members to claim appropriate additional wages.

In another encouraging development, the people of gram sabha Sinsur were made aware of the dimensions of bamboo in their CFR. A trader had bid and won the auction for bamboo, specifying a higher rate for bamboo above a certain girth and length and lower rates for those below those limits. None of the bamboo qualified for the higher rate, so the dealer's offer amounted to deliberate dishonesty. The people, now better informed, argued with the trader and forced him to revise the contract.

TRIBALS IN THE KNOWLEDGE AGE

The students became experts at handling smartphones and recording the latitude and longitude of a locality, tracing the boundary of an area, and uploading it on the Google Earth satellite imagery. They also learnt to make accurate ground-level observations on vegetation and upload the information using new facilities such as the mobile-based data collection software *Epicollect5*. This permits the organisation of data collected in different localities and at different times in a well-designed database. More significantly, the trainees are not only collecting information in prescribed formats but providing very useful suggestions as to what to look for and how to organise the information based on their own extensive experiential knowledge. Becoming familiar with Google apps, the trainees discovered new possibilities on their own and mastered the technique of using Google photo and lens apps to arrive at the scientific name of any photographed organism. This confers on them a tremendous advantage because now they can use this scientific name to learn much more about various uses and ways of processing of the plants, find out local names used in other localities (such as, say, Telugu names of produce, used in markets in Andhra Pradesh), and

figure out the most profitable way of marketing their produce. In this fashion, they rapidly advanced beyond being scientific assistants and are now working with us as scientific collaborators. While the course was in progress, the students had decided to continue working together following the training. They constituted a group, unanimously elected a chairman and secretary, and have continued to act cohesively after being awarded their diplomas at the conclusion of the course.

A project on the forest vegetation of Gadchiroli is underway through a grant of Maharashtra's Rajiv Gandhi Science and Technology Commission (RGSTC), with myself and Edlabadkar serving as investigators. The data being collected under this project are very much related to the data needed to develop CFR Working Plans. This is a wonderful opportunity for the diploma holders to combine learning and earning, doing scientific research as well as collecting information of value for natural resource conservation and management. While achieving these basic objectives, it is desirable that they develop their abilities to take the lead in planning, organising, and executing such work. They are eager to take on the responsibility and have set up a coordinating group to organise further field work, and analyse and interpret the data, at least in the seventeen villages they hail from. We are thus witnessing the emergence of a grassroots-level cadre of scientific and conservation workers who are well-trained, competent, and motivated to work on problems of social and economic relevance to their own communities—in this case, the conservation and sustainable management of forest resources.

We have designed a structure for Community Conservation and Management Plans for CFR villages, which the diploma holders and other villagers will be able to complete with minimal inputs from outside experts. The methodology of developing the plan starts with taking stock of the resources through detailed surveys. Based on the data/information collected in the surveys, many parameters and listings need to be computed as the plan is prepared. We used an online data

collection method employing the *Epicollect5* software. Several forms are designed and employed for collecting data/information on issues ranging from natural resources to rules for self-governance. Finally, the data from the *Epicollect5* server is downloaded and used to prepare textual narrations/ parameters/ annexures. The textual narration and parameters help create documents which serve as different sections of the Community Conservation and Management Plan document. The compilation of these sections and annexures in proper order finally creates the plan. So, the steps of manually recording data during surveys and then keying it in on the computer are no longer required (Edlabadkar & M. Gadgil, 2021).

The young diploma holders reported that during the RGSTC project, they formed groups of villages for processing and marketing NTFP, while diligently maintaining accounts and paying taxes. Inevitably, the older leaders of the concerned gram sabhas and some NGOs associated with them, who are completely ignorant of modern tools, are jealous of their own nominees and are now striving to sideline them. However, many of the youngsters have earned considerable respect and recognition from their own gram sabhas for their valuable contributions and are determined to strike their own path. While the old leadership does not want them to organise a cooperative society, they are going ahead with their plans. For instance, the gram sabha of Marada is fully backing the diploma holder Ramesh Koram who is from the same village. This enterprising young man is being paid an honorarium by the gram sabha to organise the processing and marketing of *tendu* leaves over which they now have ownership rights. Ramesh explored various options and various markets for *tendu* leaves and learnt that it was possible to obtain good prices at a major market in neighbouring Gondiya district. He oversaw the entire transaction—processing of the leaves by the villagers, transportation, storage in godowns, and finally sales— and realised a much better price for the produce. Learning from Ramesh's experience, the gram sabha of Jangda Budruk is now beginning to market its minor forest produce collectively. In other progressive developments, many

gram sabhas have stopped burning leaf litter under the trees to collect mahua flowers. Now they spread old saris under the trees, thereby collecting flowers in a better condition so that they fetch a higher price. Similarly, they have halted the practice of collecting *chironji* by hurling stones at the fruit; now the fruit is collected on plastic sheets spread under the trees. Regretfully, there has been a setback as man-eating tigers have made their appearance in these forests since 2020 and killed several women collecting fuelwood to cook meals at home. As a result, the villagers cannot move freely in the forest even to undertake operations such as dousing of forest fires. Hopefully, the situation will be brought under control through the various measures that are being undertaken.

Following the 2018–19 training programme in Community Forest Resource management, Vijay Edlabadkar and I continued to work with the seventeen committed diploma holders to finalise the CFR plans for their gram sabhas. As recounted above, all of them had smartphones and set up a WhatsApp group to remain in constant communication. The scientific names of minor forest produce yielding plant species were an important input for the CFR plans. Our group members were also curious about a whole range of living organisms in their surroundings. They knew the local Gondi names and often Marathi names of many of the species. But during the training, they had become aware of the scientific names and their importance in ensuring broader communication. They had become addicted to Google searches, exploring the internet for information on markets, studying Wikipedia articles on MFP species for further information such as worldwide commercial uses. They had also become experts at downloading and installing newer and newer apps.

They were constantly posting on the WhatsApp group photographs of local plants and animals and sharing their experiences of these. Although familiar with many species of plants and animals, I am no expert in taxonomy and I therefore invited a friend trained in plant taxonomy

to be a part of the group, hoping he could provide the scientific names. However, he seemed to be reluctant to share this information; like a traditional pandit, he wanted to preserve his monopoly over knowledge. Then one day, one of the group members, Saduram Madavi, began posting scientific names for many of the plants and animals whose images were earlier shared on the WhatsApp group. I kept verifying his information against articles in Wikipedia and found him to be almost always correct. He told us that he had found two apps to be of great value—Google photo and Google lens. These apps check the picture uploaded by a user against Google's enormous database of over a billion images of plants and animals, and instantly communicate one or more possible English and scientific names to the user. So, suddenly they were freed of the stranglehold of a privileged minority over specialised knowledge such as of plant and animal classification. There then followed a very interesting development. Saduram identified a rare ground orchid from his locality, *Geodorum laxiflorum*. The botany teachers in the local college had started consulting him and he pointed out this orchid. It turned out to be a new record and together they published a scientific paper on this occurrence. So Saduram, with little formal education, is now a card-carrying member of the scientific community (Bhoyar et al., 2022).

FARMERS IN THE KNOWLEDGE AGE

As stratified, hierarchical societies came to be constituted in irrigated agricultural tracts, rulers realised that control over information could be used to dominate people and created systems of monopoly over knowledge. This philosophy is articulated, for instance, by Lao Tze (c. 2,500 ybp), a contemporary of Gautam Buddha. In his advice to rulers, he writes, 'The people are hard to rule when they have too much knowledge. Therefore, ruling a state through knowledge is to rock the state, ruling a state through ignorance brings stability to the state' (Chalmers, 1868). The philosophy persists in contemporary India, where the ruling classes see benefit in keeping farmers ignorant, poor, and unorganised. To a large extent, the government agriculture

departments, agricultural universities or Krishi Vignyana Kendras fail to communicate reliable and useful information to farmers at the village level. In particular, farmers receive no information on the identity of pests and diseases affecting their crops, cost-effective remedies, and good practices of cultivation. What is available to them instead is advice from local pesticide and chemical fertiliser dealers whose only motivation is to maximise their own profits.

In the modern knowledge age, farmers are joining the economic mainstream by taking advantage of the rapidly advancing Information and Communication Technology (ICT). Public access to information has made rapid progress thanks to the development of computer and cellular phone communication technology, and the internet that triggered the social media boom in1994. These social media include a great source of reliable information, the Wikipedia initiated in 2000. A particularly important contributor to this information revolution is Google search—the web search engine developed by Google LLC in 1995 and that currently handles over 5.4 billion searches each day.

This information revolution was accelerated by the introduction of smartphones, whose use in India rapidly increased after 2014. They have now penetrated to the most remote villages of the country. Motivated to reach as large a number as possible, mobile phone manufacturers and service providers have provided for easy use of Indian languages and scripts. Around 80 per cent of the country's users today employ Indian languages, thus creating vast networks of common people cooperatively sharing information with each other. In India's farming community, smartphones have served to connect experts, interested farmers, and providers of credit and farm inputs. Backed by a rich variety of app software, they have increased efficiency of business as people can stay connected 24x7, can share information and photos about best practices, inputs, pests, and diseases, markets, and prices, besides providing means for exchange of scanned documents and for payments.

Advances in Artificial Intelligence

Technical advances in machine or artificial intelligence (AI) are now being used to support apps with remarkable capabilities. A notable example is *Plantix*, a free mobile crop advisory app for farmers, extension workers, and gardeners.[10] *Plantix* was developed by PEAT GmbH, a Berlin-based AI start-up that instantaneously responds to its users' queries on the basis of the images of crops and pests and diseases. It can diagnose pest damage, plant disease, and nutrient deficiencies affecting crops and offer corresponding treatment measures. Users can participate in the online community where they can find scientists, farmers, and plant experts to discuss plant health issues and can access local weather reports. From the daily new images sent by *Plantix* users worldwide, the network constantly learns more. This constantly growing database provides *Plantix* users with current information and alerts on plant diseases, pests, and their worldwide distribution. According to developers, as more and more people use it, the app becomes more accurate—the algorithm obtains more information, while its AI-based Google Lens app gives users access to scientific names of the plants. *Plantix* has 13 million users worldwide. Most of them are from India, and the app is available in ten Indian languages.

The main concern of farmers in India, like farmers anywhere else, is not the country's food security but income and profitability. Small farm families (the largest segment) balance a portfolio of crops, livestock, and nonfarm work. Their choices and decisions are based on potential profit, risk, and cash flow (including for family consumption) as well as sales of produce. But farm-level profits and integration across crops and enterprises have never been the priority of governmental initiatives to provide service and support for farmers through research, extension, and policy. They are either about larger issues that are of little relevance to farmers, such as food security or yield gap; or narrowly focus on single factors of input like seeds, fertilisers, and pesticides. The new technologies have provided farmers with sources of support more geared to their needs. They have reduced farmers' dependence on

experts for diagnosis of pests, diseases, and nutrient deficiency. Private entrepreneurs can now gather large amounts of farm-level data such as on soil and nutrients, and integrate these in models of climate, crop, pest, disease, and farm economics. Such context-specific integration of diverse datasets can answer farmers' long-sought answers on queries over best bet crops, trees, livestock, comparative economics, etc. Several start-ups are lined up to explore this business opportunity.

Online Sales Platforms

In a heartening development, goat farmers in remote and underdeveloped parts of India are using social media tools like WhatsApp as well as online sales platforms like OLX and Quikr (the Indian versions of e-Bay) to boost their business. Women in Bihar have started to click pictures of their goats on their little cell phones, upload the images, and sell their goats even to buyers located 500–600 kilometres away at nearly 40 per cent higher prices. From desi breeds like Malabari, Jamnapari, Sirohi, Beetel, and Thalacherry to exotic varieties, customers have plenty to choose from. The business gets done quickly without any hassles or the interference of brokers or middlemen. From remote villages in Tamil Nadu, Kerala, and Maharashtra, goat farmers rearing exotic breeds like Saanen and Boer can find customers with high purchasing capacity. Boer goats which are originally from South Africa have fetched Rs 50,000 to 80,000 per goat, depending on the size.

Several farmers initiate and manage WhatsApp groups based on themes such as dryland farming or market access, and it is heartening to see that agriculture scientists and traders join these groups as enthusiastic participants. An inspiring success story is that of Dnyaneshwar Bodke from Pune's Mulshi taluk, who transformed from being a marginal farmer to becoming a successful farming entrepreneur leading a group with Rs 400 crore turnover. His Abhinav Farmers Club is spread across six states—Maharashtra, Telangana, Andhra Pradesh, Gujarat, Madhya Pradesh, and Karnataka— and has over 1.5 lakh farmers and

257 farmer leaders.[11] His commercial success comes from integration of his innovative poly-house technology for production of vegetables (both exotic and local), fruits, and pulses with direct marketing and farming automation. The impressive online marketing platform ensures customisation of packing, delivery, and redressal of complaints. The poly-house technology has increased productivity and cut costs through automated water and climate sensors, and water and nutrient delivery though micro-irrigation. The group's members interact regularly though WhatsApp groups and occasional in-person meetings.

Sensor Technology

The prices of several cash crops are largely determined by their percentage content of value to the buyer. Sensor technology has enabled cheap and accurate measurement of these parameters and several entrepreneurs have penetrated small towns to provide this information to users. For instance, the oil content of oilseeds varies greatly, depending on the crop variety and growing conditions, and is critical in determining the price of oilseeds. Earlier, only oil extractors and large traders had access to knowledge of oil content; this was a trade secret, and small traders and farmers were at a disadvantage. Now, spectrometers used to measure oil content have been scaled down and are affordable by small businesses. Entrepreneurs have set up labs in major oilseeds markets to provide measurement for reasonable fees, thus enabling a fair bargain. The case of turmeric is similar, as the percentage of curcuminoids determines the market price of the produce. Now major turmeric markets in Salem and Kochi have private labs to measure this. Another start-up, *Agricx*, is using smartphones to test and ensure quality by sorting and grading at the farm-gate itself to ensure better prices. It has completed successful pilots to measure soluble solids, sugars, dry matter, and maturity level in papaya.

As 67 per cent of the nation's irrigation is based on groundwater, the water level in bore wells is a major concern for farmers. Very little data

is available, apart from some data from sparsely distributed observation wells (without pumps) of government geology departments, which is not made public. One indication of the high demand for such information is the widespread use of on-hire equipment to view bore well holes. Cameras with light are inserted into the bore hole to view water flow from fractures underneath and improve the understanding of water yield from the well. Two start-ups in Bangalore, *Elcinotech* and *Quadbiotics*, have recognised the critical need of farmers for information on water levels in their bore wells and the groundwater aquifer from which the wells draw water. This requires continuous measurement from working bore wells, data analysis, and communication to the smartphones of users.

Aranmula Jackfruit, a WhatsApp group led by farmer and journalist Shree Padre, is already showing what is possible.[12] It covers all aspects of jackfruit, from cultivation and processing to how to consume it. It actively promotes collaboration between different stakeholders with complementary interests and competence—farmers, entrepreneurs interested in value addition, scientists engaged in jackfruit research. Its members extend beyond India to Sri Lanka, Southeast Asia, Mexico, the USA, South Africa, and West Asia. The free exchange of best practices and innovations have yielded benefits beyond the usual problem-solving. It has inspired several new and lucrative entrepreneurial activities in jackfruit wine, jackfruit seed flour (as a gluten-free alternative), and jack leaf tea.

These technologies have helped the majority of farmers who do not know English or may even be illiterate. They use WhatsApp to exchange photos of fertiliser bags or pesticide bottles, videos of best practices, audio recordings in local languages, and similar workarounds to communicate and acquire new knowledge. Location sharing helps in efficient delivery of inputs from afar. Most importantly, people are getting united in this world as language barriers break down with ease of translation. There is hope that such increasing communication may

lead to a new, more equitable and peaceful global society, which can collectively face serious challenges such as climate change.

THE 'WELCOME GENERATION'

It has taken the modern ICT revolution for Indians to be able to readily access knowledge on a substantial scale. But South Korea followed a different course. As the nation rose from the ashes of the war in 1953, it concentrated its attention on providing free primary and secondary education and primary health care. Its spectacular industrial development is anchored in this foundation of an educated and healthy population. This has permitted South Korea to build enterprises like Hyundai and LG. Additionally, it has fostered a hugely popular musical group, the K-pop boy band BTS. The band made a formal appearance as diplomats at the UN General Assembly on 20 September 2021.[13] A video of the band's speech immediately received 6.4 million views on YouTube, far outstripping the next two most popular speeches by the UN Secretary General and the UK Prime Minister with less than 5,000 views each. The band septet spoke about how the future of their generation will be shaped by the COVID-19 pandemic, but emphasised that they want this generation to be remembered for their positive impact, instead of as victims of lost opportunities during the pandemic. The band leader RM said, 'I've heard that people in their teens and twenties today are being referred to as COVID's lost generation, that they've lost their way at a time when they need the most diverse opportunities and must try new things. … But I think it's a stretch to say they're lost just because the paths they tread can't be seen by grownup eyes'. Vocalist Jin suggested that the young generation be called the 'welcome generation' instead of the 'lost generation. …Because instead of fearing change, this generation says "welcome" and keeps forging ahead'. Now, BTS did not just give a speech at the UN; it was also seen at the UN headquarters in New York City in a performance of its smash hit, 'Permission to Dance'. The band filmed a version of this song in the UN's vast auditorium before the event, which the UN tweeted and shared on YouTube. When I visited the YouTube

site just one day later, it had already registered 12 million hits!

I am quite confident that our own 'welcome generation' will guide us on to a new, better path. This will be the third generation of people born in free, democratic India whose constitution professes values of social justice, equity, equality, non-racism and non-sexism, human dignity, an open society, accountability, and the rule of law. This generation will reject the prevalent iniquitous system of perverse incentives that militates against these values, applauding handouts to the rich and powerful as 'Reform' and condemning handouts to the weak and poor as 'Populism'. I believe that India's 'welcome generation' will usher in an era in which the EP will cease to forcibly becoming ER and instead honourably enter the development mainstream as BP. They will simultaneously free agriculture from its current dependence on chemical pesticides and fertilisers. More examples of farmers like Dr Rajaram Tripathy, winner of the President's award in farming, will counter the propaganda that organic agriculture is economically unviable.[14] Tripathy's innovative natural farming practices include growing pepper vines on Australian teak, with turmeric and other high-value crops in the understorey—requiring very low inputs and care but generating very high income. His company now has 22,000 affiliated farmers and generates further profits by the processing and marketing of medicinal and aromatic produce.

I look forward to this era when Indian youth from among the masses will stop the country's ongoing process of rapid degradation of the environment and worsening of economic and social inequities, so that we may move towards an equitable, harmonious, and environmentally-friendly society.

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Watch out for the Special Issue on
Nationalist Urbanisms on the National Peripheries Volume 53, Issue 2, June 2023

About Issue: Nations have largely been imagined from urban centres of power, and nation-building in postcolonial states has been one of the most important forces driving developmental urbanisms. This special issue brings together a set of articles exploring nationalist urbanisms in civic, provincial, precarious and everyday spaces in India that are rendered peripheral in the dominant national imaginations.

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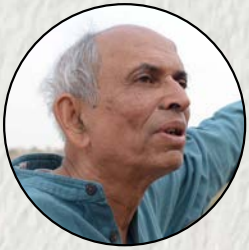
SOCIAL CHANGE ANNUAL LECTURE*

Year	Speaker	Topic
2022	Bina Agarwal	Gender, Presence and Representation
2021	G. N. Devy	Thinking of Crime: The State, Migrant Population and the Missing Justice
2020	Uma Chakravarti	From the Home to the Borders: Violence Against Women, Impunity and Resistance
2019	Gopal Guru	Migration: A Moral Protest

*Previously known as the Social Change Golden Jubilee Lecture, this lecture series was started in 2019 to mark fifty years of Social Change's publication.



Madhav Gadgil was born in the city of Pune where he developed an interest in natural history, trekking and athletics from an early age. These outdoor interests fostered his love of ecological field work, which has been his lifelong passion. He was educated at Pune, Mumbai and Harvard universities and has taught at Harvard University, Stanford University and University of California, Berkeley. For 31 years, he served on the faculty of Indian Institute of Science where he established a school of ecology, and engaged not only in basic scientific research but also in working with people at the grassroots and in many policy initiatives.

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