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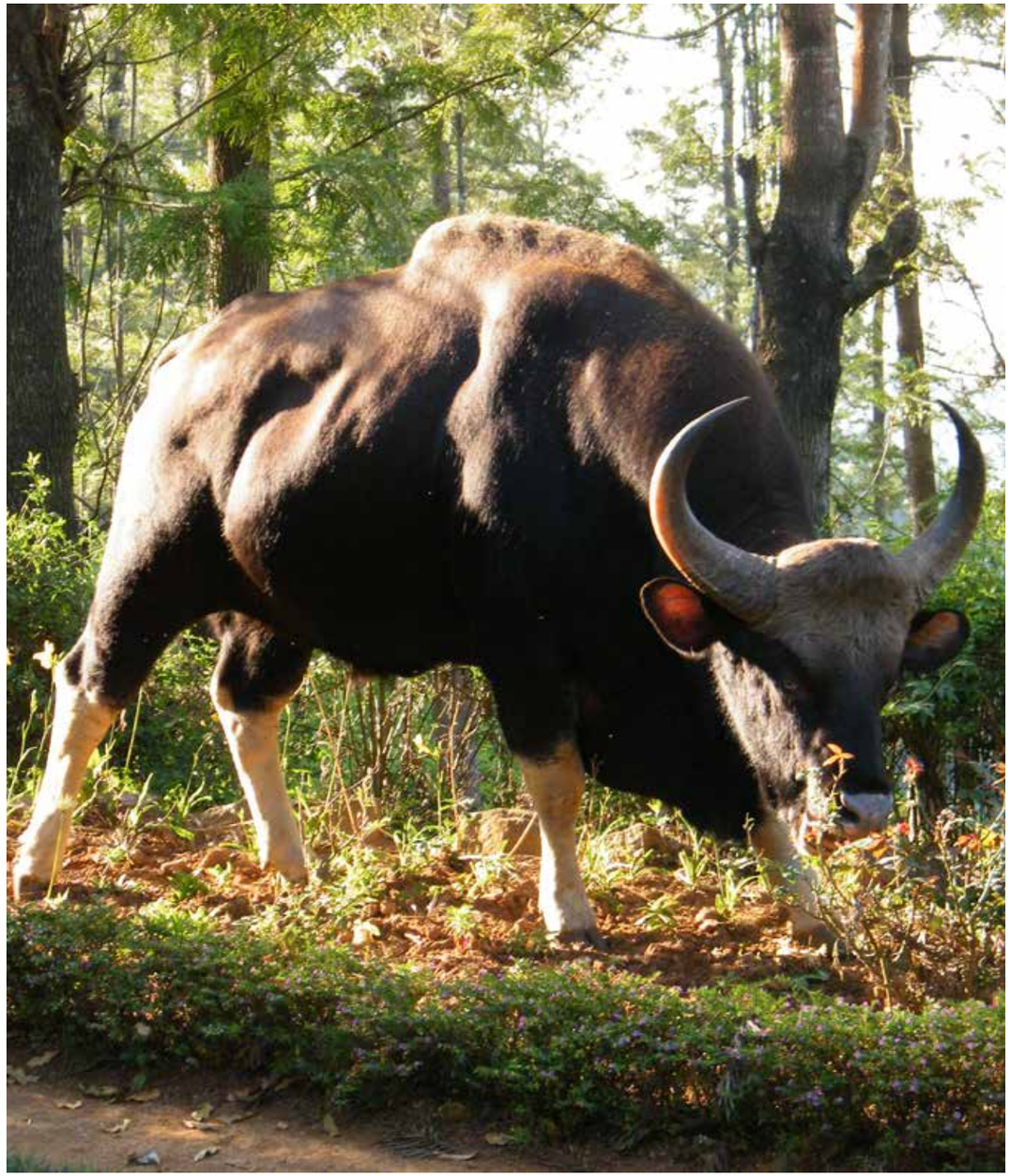
contents

The idea of Payments for Ecosystem Services (PES) is intuitively appealing. After all, everybody benefits from the 'services' that ecosystems provide such asclean air and water. Grouped as provisioning (food and water), regulating (climate and disease control), supporting (nutrient cycles and pollination) and cultural (aesthetic, spiritual or recreational) services, these collectively provide irreplaceable benefits for humankind. The idea then is that we should be willing to pay for these services, since not everyone shares the burden of maintaining these ecosystems in a state where they can provide these services.

In this issue, we examine this claim that PES is the panacea to our environmental problems while ensuring social justice. Lele examines whether PES delivers on the win-win outcomes it promises by deconstructing how Reducing Emissions from Deforestration and forest Degradation (REDD+) works. Jha contends that the loftier goals of Green India Mission are corrupted by its dependence on existing forest governance mechanisms that are not truly participatory. Menon and Kohli argue that the monetisation of forests has led to a commodification where their multiple meanings in ecology and culture are lost. And Buscher's analysis of PES in action in the Maloti-Drakensberg Transfrontier Park suggests that it is best viewed as a form of neo-liberal conservation. In summary, it seems that PES should be treated with care, and might not be the solution to environmental problems that many make it out to be.

A gaur in my garden *Bos gaurus*, Niligiris



Prema Ganapathy

In the last decade, populations of the Indian bison or gaur have increased dramatically in the upper Nilgiris plateau and they are now a frequent site in gardens and tea estates.

Citizens follow bees for science

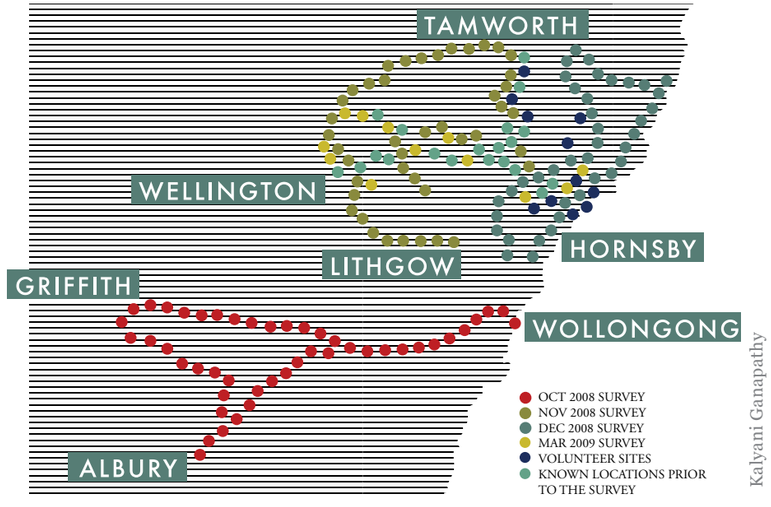
Scientists preempt a potentially harmful invasion in Australia, thanks to enthusiastic citizens

Slowly, yet steadily, invasions are taking place across the world. Plants and animals, sometimes by accident, end up in new territory and try their best to survive, even if it is at the cost of harming native species in that region. Whether it is the worldwide spread of *Prosopis juliflora* (mesquite), or the water hyacinth that is clogging waterways almost everywhere, we hear of the adverse effects they can have on native systems and how no measure of control and eradication seems to be effective. In Australia, already known for many invasions gone haywire, scientists have found recent introduction of a species of bee, *Halictus smaragdulus*. In order to gauge the extent of its probable distribution, the authors of this study used a multi-pronged approach, which included involving members of the general public, in addition to bioclimatic envelope modelling and observing habitat preferences.

Climate matching (fancifully called bioclimatic envelope modelling) techniques predict possible locations of a species using climate information from known locations of the species. However, this method is not very reliable —what if the species adapted to a new location with climatic features different from known locations? One could also search for the bees in areas around known locations but again, what if some bees flew further away from detection? Apart from these methods, the scientists also enrolled people from the general community to collect bees from their backyard. These citizens were sent a trapping kit with instructions, specimen jars, a training video, etc., and they could ask questions on an interactive blog.

From all these approaches, the scientists found that the bees had indeed extended their range, now occupying an area of approximately 46,800 square kilometres. This could lead to increased competition with native bee species for flower resources, spread of diseases and introduced weeds, etc. Most importantly, this study has once again shown that citizen science can help provide large amounts of data and save costs among other advantages, even though in this particular study volunteers only captured one specimen of the species!

Ashcroft MB, Gollan JR, & M Batley(2012). Combining citizen science, bioclimatic envelope models and observed habitat preferences to determine the distribution of an inconspicuous, recently detected introduced bee (Halictus smaragdulus Vachal Hymenoptera: Halictidae) in Australia.



Kalyani Ganapathy

Panthers in the papers

How does the depiction of wildlife news by media affect what people perceive

With the increasing human population worldwide encroaching upon forest lands, there is a good chance that the morning paper has an article or an image of a trapped 'man-eater' leopard or crop-damaging elephants. These incidents graduate to a two minute news update on the local news channel only if they are extremely serious and unfortunately fatal. There are more than 100 endangered panthers in south western Florida, where they are known to kill livestock and there is public concern.

Susan Jacobson and colleagues from the University of Florida sifted through newspaper articles, editorials and letters in papers with local and state-wide circulation. Not surprisingly, local papers published significantly more on panthers than state-wide papers, although the latter had twice the number of graphic photographs than the local papers. While local news was more episodic, focusing on attacks on people and livestock, state-wide articles reported more on panther biology.

Despite these differences, people in and outside of core panther habitat perceived low risk from panthers. This could be because the chances of seeing a panther are in fact very low. Many local news articles mentioned panthers in a land development and urban growth context, thus providing insights into carnivore management strategies and policy planning. It looks like the paparazzi might have positive effects on the recovery of Florida panther populations.

Jacobson SK, Langin C, Carlton JS, & LL Kaid. (2012). Content analysis of newspaper coverage of the Florida panther. Conservation Biology, 26: 171–179. doi: 10.1111/j.1523-1739.2011.01750.x

Robbie Ayers

Born with a killer instinct

Understanding an invasive predator to better predict its impacts on the ecosystem

Mayflies are native to Ireland, in some parts where a species of amphipod crustacean, nicknamed Gamma (because its real name, *Gammarus pulex*, is clearly too long), has recently earned the reputation of a ruthless invader. Scientists know that adult Gamma feed on the young of mayflies, nymphs. But do young Gamma also feed on nymphs? If they do, it might be bad news for the mayflies, a 'double whammy', as the authors of this study put it.

Jaimie Dick and colleagues from Queen's University, Ireland, collected small, medium and large (young, juvenile and adult) Gamma and examined gut content. Much to their surprise the scientists found that all Gammas ate mayfly nymphs, providing no time for the latter's growth and development. The largest Gamma ate the smallest nymph even. Another ominous fact, Gamma can occur in great densities, up to 3000 per square metre, when compared to declining numbers of the mayfly.

The effects of a predator, especially a non-native one, on the community of animals and plants it interacts with, have been long studied. However, it is usually restricted to adult predators. In order to understand and predict an impact before it occurs, one must know a predator's behaviour throughout its lifetime. This study highlights the possibility of larger effects of a predator and calls for looking at other known potential invaders, from this angle too.

Dick, Jaimie; Alexander, M.E.; MacNeil, C. Natural Born Killers: an invasive amphipod is predatory throughout its life-history. / Biological Invasions, Vol. 15, 2013, p. 309-313.

Toby Barton

Mayflies or shadflies are aquatic insects that belong to the order Ephemeroptera *(in Greek* ephemeros *means short-lived and* pteron *means wing). Adults have a very short lifespan ranging from few minutes to few days while the immature stage, called nymphs, can last upto a year in fresh water.*

How costly is it to be vigilant?

Different survival strategies for solitary and group living animals

Animals in the wild have to constantly watch their backs in order to survive, even if it means compromising on feeding time. They have evolved to exhibit variations of this vigilance behavior, depending on their surroundings, the number of group or family members with them, etc. Is one strategy better than another? Do some species have a better chance of survival because their strategy is more efficient than that of others'?

Aliza le Roux and colleagues tested this by following two different species—the yellow mongoose which forages alone or in small groups of two to seven members, and the social meerkat that moves in groups of up to 18 members. They observed the animals for 2 years and recorded their births and deaths, nearest refuges and plant cover. They found that the presence of group members did not affect vigilance patterns in either species, but they showed different overall strategies. While the meerkats spent more time looking down and foraging, mongooses were alert more often. The latter were found closer to safety more often than meerkats and also spent more time under complete cover.

Like many other small mammals, both species remained close to cover and refuge, the mongooses more so because they did not have as many other eyes scanning the area. Despite these differences in their behavior, both species showed similar chances of survival, indicating that both strategies were efficient in helping them avoid their predators.

le Roux A, Cherry IM, Gygax L and MB Manser. 2009. Vigilance behaviour and fitness consequences: comparing a solitary foraging and an obligate group-foraging mammal. Behavioral Ecology and Sociobiology 63(8):1097-1107.

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Joachim S. Müller

Meerkats (Suricata suricatta) *are always found in groups. While most members of the group search for food, there is always one on guard watching for predators.*

Buying our way out of environmental problems?

PES is often touted as win-win with both environmental gains and poverty alleviation. But REDD+ does not neccesarily translate into forest conservation or benefit local communities.

Q: How viable is trading of carbon credits as a mitigation measure?

A: They work well in certain systems, but then, is it for everyone? I believe that our textbook thinking is pretty bad here...

(Excerpt from interview of Elinor Ostrom in Financial Express, 5 Feb 2012)

Kalyani Ganapathy

In the past decade, the idea of payments for ecosystem services (PES) has caught the attention of many donors, policy makers and researchers. It is now being touted as the solution for multiple problems: water scarcity, biodiversity loss and global warming. The powerful attraction of the idea is because it sounds non-coercive (communities may only do things that they perceive are in their economic interest) and win-win (poverty alleviation with environmental gains). The debate appears to have almost shifted away from 'Is PES a good idea?' to 'How do we implement PES?' Nevertheless, many concerns and criticisms remain unaddressed. Understanding the concept, its applicability and its limitations requires us to first clarify our own normative position towards conservation and development issues. We then need to examine the assumptions and theory underpinning claims about how, in what sense and to what extent PES might deliver win-win outcomes as it promises. REDD+ (Reducing Emissions from Deforestation and Degradation-Plus), a concept that involves payments for avoiding deforestation and for improvements in forest quality/quantity and which has reached pilot stage in many countries, provides a good case for such examination.

NORMATIVE STANCE

The proponents and critics of PES schemes do not always differ on empirical claims. They often care about very different things. For instance, those worried about biodiversity criticise REDD+ because they fear that it may lead to the replacement of slow growing (diverse) natural forests with fast-growing monoculture plantations. But clearly REDD+ is not about biodiversity conservation—it is about reducing emissions. So is one holding it up to a wrong standard? But what is the right standard against which one evaluates any such proposal? I would argue that all such proposals must be examined on multiple dimensions: long-term environmental benefits, livelihood gains, equity, and democratising potential. This is because the ultimate societal goal, especially in developing countries, is not just environmental conservation but sustainable and equitable development.

THE THEORY OF PES

The idea of payments for ecosystem services as a way to solve environmental problems involves a sequential set of claims:

•that society as a whole cares about certain environmental impacts caused by the actions of a few,
•that this caring can (and should) be translated into a willingness-to-pay of society at large to those few;
•that this willingness can be translated into actual and adequate payments that will reach those few;
•that individual actions of forest users in response to such incentives will in fact add up to gains in forest cover and in carbon sequestration;
•that monitoring systems can be set up such that if actions are not forthcoming in proportion to the payments, they can be easily detected and payments withheld and
•that such market-based arrangements are the most 'efficient' ways of meeting environmental goals and in many cases will also meet poverty alleviation goals.

Let us see whether and to what extent these claims are tenable, specifically in the context of REDD+.

WILLINGNESS-TO-PAY, WILLINGNESS-TO-FIX

Climate change is a global problem, and the bulk of it has been created by the burning of fossil fuels primarily by developed countries over the past 200 years. Does global society care enough about climate change? As of now, there is little evidence of it—witness the pointless accords in Copenhagen and Durban. If we cared enough, there would have been tight caps on emissions, and then, since currently some trading is allowed, this would have automatically led to a huge demand for carbon offsets. But the bottom has fallen out of the carbon offsets market, with the price hovering around US$5/tC. Clearly, the biggest problem is not the absence of one more mechanism to offset carbon emissions, but the unwillingness of the emitters to take responsibility for emissions in the first place.

Kalyan Varma

FIXING BY PAYING OFF? OR PAYING FOR NOT DAMAGING?

Should a willingness to fix be converted into a willingness to pay off someone else? The position of many economists notwithstanding, there is an inalienable ethical content to this question. This is because all individual actions that impinge on societal welfare (which are virtually all individual actions!) have ethical implications. People's ability to make such payments is not an ahistorical random phenomenon, but the outcome of historically high levels of exploitation of natural resources by their predecessors. Buying one's way out of the problem one created seems morally inappropriate. Similarly, the idea of paying for avoided deforestation (paying for not damaging) seems somewhat problematic: it makes a blanket assumption that those who deforest have the right to do so, whereas most societies have put some limits on these rights.

WHO WILL GET HOW MUCH?

What does a price of US$5/tC mean? Under reasonable assumptions, this would translate into a measly few hundred Indian rupees per household per year in a village of 100 households that dramatically regenerates a barren piece of 50 hectares over 20 years. It would also assume that this land was otherwise lying useless. Clearly, if the recipient is a forest-dwelling Indian household, this payment, even if it reached them, would be meaningless. Even ten times this amount would be hardly significant in the battle against poverty. But will, in fact, this payment even reach them? In any market, payment goes to the owner of the produce. But do forest-dwellers own the carbon in the forest they use? Perhaps in some countries in Latin America, where individuals own significant areas of forested land, the answer is 'yes'. But in much of South and Southeast Asia and Africa, this is hardly the case. Forest departments

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are the owners, and villagers are tolerated on sufferance, if at all. Forest departments would be the first ones to lay claim to the carbon money, and for them, even $5/tC translates into a significant addition to their budgets (several thousand rupees per hectare per year). This would make them even more intolerant of villager presence in and use of the forests, which would be a further setback to the already faltering attempts to bring about the democratic decentralisation of forest governance in many such countries.

Similarly, forest-dwelling communities are not homogeneous or uniformly poor. Gains from REDD+ could easily be pocketed by the rural elite: it has already happened in many donor-funded forestry projects in the past, including Joint Forest Management in India. Indeed, in many such cases, the rural elite collaborate actively with state agencies to 'deliver' (at least in the short run) the desired environmental outcomes, even while imposing negative impacts on poorer households. This is particularly true in tree planting and conservation programmes such as REDD+, which effectively shut out other uses of the landscape such as grazing and firewood collection that are the needs of the poorest households. In other words, given that REDD+ is about saving forests on public/community lands and not planting trees in people's backyards, collective action will be essential and such collective action can easily turn coercive for some, especially given the current dispensation, negating the whole idea of win-win that is the key selling point of PES schemes.

WATCHING THE CARBON

Related to this is the issue of transaction costs. Markets 'work', i.e., deliver most benefits to the producers and consumers when transaction costs are low, such as with goods that can be easily sold across counters and whose quality is transparent. But in the case of carbon sequestration, credits are being sold by remote villagers to international buyers, and whether these credits translate into real sequestration has be to be monitored year after year—all implying a huge intermediary presence and lots of room for fraud and exploitation. We see that even where forest-dwellers are trying to sell tangible forest products such as wild honey or beedi leaves, the structure of government controls and market conditions is such that they barely get a subsistence wage. What would be the case in an international market for a much less tangible commodity like forest carbon? Middlemen would have a field day.

LIVELIHOOD NEEDS OR OTHER FACTORS?

Ultimately, REDD+ assumes that increasing the value of standing forest will translate into forest conservation. The success of REDD+ depends upon this diagnosis of the deforestation problem. But is that really so? Are forests disappearing simply because forest-dwellers find it more profitable to cut them down? Or because forest departments are short of funds? All the research on tropical forests over the past several decades points to a much more complex array of factors, including unclear and centralized forest rights, corruption and mismanagement, pressures of mining, roads and other external developmental activities, and so on.

FORESTS ARE NOT ONLY ABOUT CARBON

Climate change has sometimes been called the 'mother of all environmental problems', but it is clear that not all climate-friendly acts are necessarily environment-friendly in other ways. Just as the building of nuclear reactors or hydro-power dams in the name of avoiding emissions has other impacts, fast-growing monocultures that are great at carbon sequestration could lead to biodiversity loss and increased transpiration losses of scarce water resources.

WHAT ROLE THEN FOR ECONOMIC INSTRUMENTS?

It seems that the assumptions on which PES is based do not hold in the case of forests and REDD+. Forest carbon is something over which property rights are unclear in many parts of the world, and over which state forest agencies, and perhaps village elite, rather than poor forest-dwelling households, are most likely to lay claim. Forest carbon sequestration is not like a commodity that can be traded across a counter—it has to be constantly monitored across large scales, imposing huge transaction costs. And all this when it is not even clear that there is any serious global interest in mitigating climate change, nor an ethical consensus on who should bear how much of the mitigation burden and how much 'trading' if any should be permitted. REDD+ exemplifies, perhaps in an acute form, the problems involved in blindly promoting market-based approaches such as PES to achieve environmental goals. How much and what kind of environmental conservation we should aim for, at whose expense and how this may be reconciled against livelihood needs of the poor and consumption wants of the rich is a deeply ethical question, that society at large is far from even confronting, let alone answering.

At the same time, people also think in economic terms and respond to economic incentives, and there is surely a rationale for using economic instruments such as carbon taxes on 'commodified' environmental goods such as petroleum for which markets are already well formed. But forests and many other environmental 'goods' are not so easily commodified—they have multiple ramifications and require collective action at various levels for their conservation. Given what the history and current structure of forest governance in most developing countries has been, financial incentives flowing from the top (whether from international markets or from national governments themselves) are hardly the solution to the problem of deforestation or degradation. And the real challenge may lie in changing people's attitudes so that they 'demand' (in a broader political sense, rather than narrow economic one) societal action for sustainable and equitable development. Some financial mechanisms may serve to lubricate the wheels of change, but the driver of change has to lie elsewhere.

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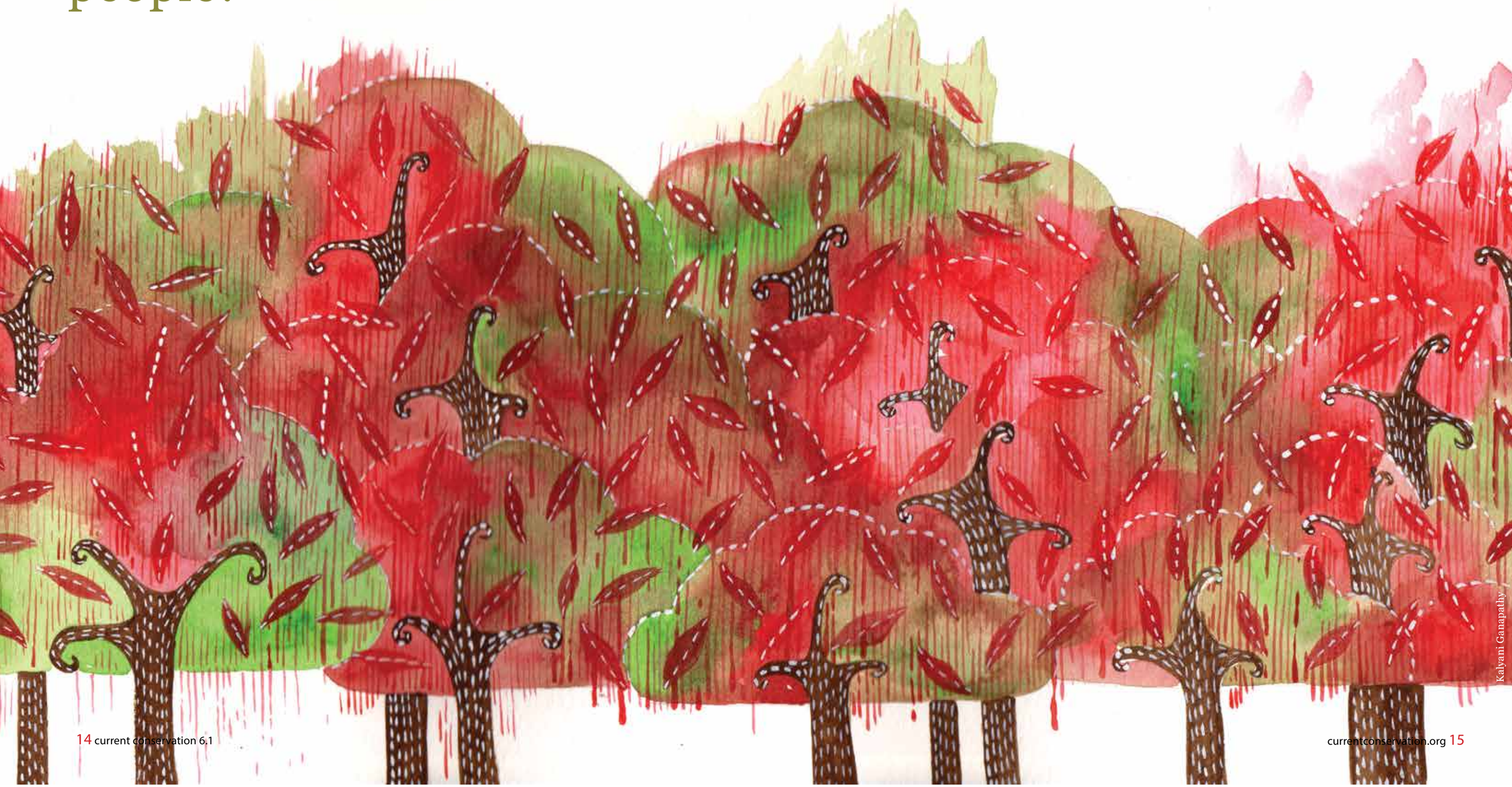
Does REDD+ induce inclusive exploitation of forest people?

The Green India Mission aims to raise carbon stocks to tap benefits from the global carbon market. But its reliance upon JFM institutions strengthens the regime of exploitation.



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REDD+ (Reducing Emissions from Deforestation and Forest Degradation and Carbon Stock Enhancement) is a critical component of the international initiative for mitigating global climate change. Recently, in favour of a comprehensive REDD+ approach, India presented an ambitious Green India Mission programme under the National Action Plan on Climate Change (NAPCC) in 2008 to advance the objectives of the Kyoto Protocol. The Green India Mission (GIM) is one of eight National Missions under NAPCC which aims to raise carbon stocks to tap benefits from the world carbon market. Hence, the proposed Mission aims to address the issue of climate change by enhancing carbon sinks in the State's forests while enabling forest dependent communities by providing them certain monetary incentives. In this context, I try to assess the impact of India's REDD+ initiatives and argue that this process of enhancing carbon stock though incentivising approaches results in an 'inclusive exploitation' of forest peoples, leading to negative impacts on their relationship with nature and threatening their livelihoods.

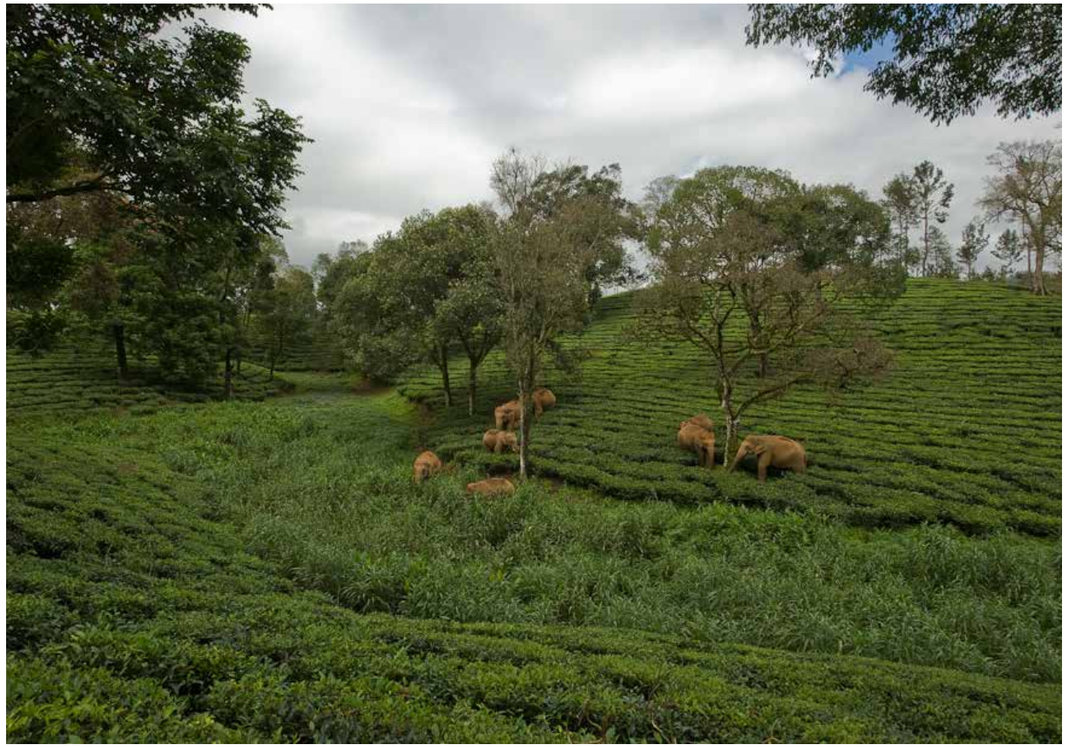
WHY REDD+?

REDD+ initiatives created an enormous opportunity for India to gain 'positive incentives' for its 'pro-conservation approach', guided by the World Bank and other bilateral donors. Following the 13th Conference of the Parties (COP 13) to the United Nations Framework Convention on Climate Change (UNFCCC) in Bali in December 2007, the scope of REDD was broadened to REDD+, which also provides incentives for increases in carbon stocks and emission reduction credits from a wider array of forest management practices. Improvements to logging practices, forest fire prevention, afforestation/reforestation and sustainable forest management, in addition to forest conservation, become potential credit-generating activities under REDD+. Under the REDD+ initiative, India expects to be rewarded for providing carbon service to the international community through nationwide greening programmes, such as the large scale plantations under 'Social Forestry' during 1970s and 1980s and National Afforestation Programme during the 2000s. One major incentive for India to design REDD+ strategy development plan has been the prospect of accessing funds from the World Bank-administered Forest Carbon Partnership Facility (FCPF) and, more recently, from the UN-REDD Programme. It is estimated that a REDD+ programme for India could provide capture of more than 1 billion tonnes of additional CO_2 over the next 3 decades and provide more than US $3 billion as carbon service incentives under REDD+. As a part of its REDD+ strategy, India has undertaken several initiatives in recent years including a submission to UNFCCC on REDD in 2008, establishment of a Technical Group and a National REDD+ Coordinating Agency.

The most landmark initiative in this regard is the announcement of an ambitious Green India Mission programme under the National Action Plan on Climate Change in 2008 to be implemented between 2010-11 and 2019-20 by the Ministry of Environment and Forests (MOEF), Government of India. Recognising that climate change phenomena could adversely affect natural biological resources and associated livelihoods, the overarching objective of the Mission, with a budget of US $10 billion (approximately), is to increase forest/tree cover on 5 million ha of forested and non forested land, and improve quality of forest cover on another five million ha—a total of 10 million ha. The Mission will also focus on improvement of ecosystem services, including biodiversity, hydrological services and carbon sequestration, and aim to increase forest-based livelihood incomes for three million forest dependent families. In terms of carbon sequestration, the mission aims to reach an annual CO_2 sequestration of 50 to 60 million tonnes by 2020, which will increase the share of greenhouse gas (GHG) emissions offset by India's forest and tree cover to around 6 percent as compared to 4.5 percent that would have been offset in the absence of the Mission. The ambitious Mission was on the verge of initiation with the allocation of Rs 200 crore in the Union Budget for the year 2011-12.

EMPOWERMENT OF INCLUSIVE EXPLOITATION?

The Mission aims to strengthen decentralised forest governance by involving local community



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institutions, particularly forest dwelling communities, in the field level implementation of the programme. According to the draft document, decentralised forest governance would be strengthened through Gram Sabhas (Village Assembly) as overarching institutions and thematic committees such as Joint Forest Management Committees (JFMCs), Community Forest Management Groups (CFMs–a large number in Orissa), Van Panchayats (in Uttarakhand), and Village Councils (in the Northeast) and livelihood promotion groups. The Mission would facilitate the active coordination of the Forest Department with Panchayati Raj Institutions (PRIs) and other partner agencies. According to the Mission document, the spread of Joint Forest Management across states and the implementation of The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 provided a legitimate background and space for positive interventions of the community in this kind of protection, regeneration and management of the forests under the purview of GIM.

The Mission also aims to revamp the FDAs at the State and District levels and JFMCs at the village level for providing support to secured community tenure, capacity building for adaptive forest management and livelihood support activities. With all these initiatives, the Mission would contribute to empowerment of communities and reinforce decentralised local governance of forests in the overall context of climate variability and adaptation. In this context, given increasing educated unemployed youth in rural areas, the Mission would invest in the development of a cadre of 'community-based change agents' from amongst educated community youth, to facilitate planning, implementation and monitoring of Mission activities at the local level. This incentive-oriented model for community involvement for conservation and enhancement of the forest cover engenders the ideas of 'Green Dividend', 'Green Bonus' and 'Trees for Credit', at least in the form of proposals before the MoEF during public consul-tations on the Mission which took place in different parts of the country. However, it is evident from the Mission document

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that it placed primary thrust upon so–called JFM institutions like FDAs and JFMCs to involve communities. But, JFM experiences show that the so called participatory exercises of people under the programme have been merely restricted to either patrolling activities for forest protection or regeneration of forest species. Participation in decision making regarding the modes of conservation, species choice, livelihood development and above all the quantum and mechanism of benefit sharing has neither been realised nor been encouraged in any form. Community participation was used in this 'joint' exercise as a means of directing communities to achieve preordained project targets, and the programmes failed to secure their rights in planning and decision making. Further, in the' joint' management, the forest department's agendas of timber extraction dominated the management system, with little benefit to local communities.

Therefore, the uncritical reliance of the Mission's decentralising strategy upon the JFM framework can only strengthen further the regime of 'inclusive' exploitation in forest governance. I term this as 'inclusive' because it happens under the guise of decentralised frameworks where the projected strategy of participation is often turned into a mechanism of co-option of forest dwellers under a top down agenda of management. Though the Mission document has provided a prominent role for Gram Sabhas in this model of decentralisation, experiences of Gram Sabha functioning clearly show that either they were systematically ignored or forced to agree at gun point to give up their land to multinationals, as in Jharkhand and Orissa. Further, under GIM, the forest dwelling communities would not have any choice of species to be planted. They would not have any authority to decide the quantum of benefit or the mechanism of the said benefit sharing. There is no scope for negotiation with the forest department relating to matters of facilities and privileges to be offered to them. Rather, they would have to work for the protection and plantation of forest species as carbon storage under the terms and conditions laid down by the department to promote the agenda of carbon trading under the REDD+ mechanism.

Here, the exploitation of the ecosystem people occurs fundamentally at two concurrent levels. Primarily, there is an exploitation of the indigenous knowledge, skills and local capacities in regeneration of forests to extract market values from nature while serving the ruling interest. The involvement of forest dwellers in plantation activities through participatory mechanisms would naturally contribute to the associated processes of weeding, cleaning and burning and protection from wildlife in exchange for certain nominal financial incentives to the communities. This community incentive does nothing more than ensure the flow of uninterrupted and cheap labour while bypassing the cost of individual wages for plantation, helping free foresters from the burden of management. Further, the experience from JFM shows that there is every possibility of irregularities in realising those incentives by the communities, where the department is allegedly involved in destroying community organisations by a divide and rule strategy across class, caste and political affiliation. Most importantly, the incentives are primarily linked with benefits to the forest crop enhancing carbon sink rather than with the welfare of the communities. Hence, forest dwellers would be encouraged to plant trees even in their agricultural lands instead of growing seasonal crops, potentially affecting their food production.

POSSIBLE CONSEQUENCES

The market based incentive culture of neo-liberalism through raising carbon stock under GIM is likely to distort communities' normal interaction with nature, as it would alter fundamentally their communal orientation towards subsistence in favour of an individualistic utility maximising exercise to earn more money from forests. This could not only affect their community bond but hamper their interactions with nature for livelihood. Their role in the maintenance, protection and regeneration of forests seems to be jeopardised by making them an integral part of the neoliberal web of commodifying nature. This change, though it need not mean the complete loss of harmony with nature, certainly implies a negative transformation in the attitude and orientation of forest dependent people towards natural resources.

Besides, this inclusive exploitation may lead to a complete separation of those forest dwellers from their resource base whereby they can be voluntarily displaced from their land and alienated from nature in exchange for the financial incentives provided by private companies to explore a new arena of investment under the carbon trading model of REDD+. Indeed, the Mission could facilitate the process of destroying the livelihood of millions through ongoing massive land grabs by large corporations aided and abetted by the land acquisition policies of the government. Thus, this experiment with incentivisation under a decentralised framework in the GIM is exploitative in concept and operation, cashing in on the indigenous expertise of forest people to protect and regenerate their forest resources, and ultimately facilitating the wholesale take-over of forests by multinational companies at the cost of local livelihoods.

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A pocketful of forests?

Forests are now being quantified and monetised so that they can be traded like other commodities.

Kalyani Ganapathy

Talk of a Green Economy is everywhere. As climate related anxieties take hold of the psyche of large numbers of people living across the globe, several governments have responded by way of initiatives that evaluate and monetise the services performed by ecosystems under threat such as forests and fresh water. Economists, ecologists and policy makers are trying to incorporate into national economies what might have earlier been considered 'free' and commonly accessible goods. By this, the rhetoric of state or market control over land, water and forests has been virtually extended to genes and carbon—the units by which we have come to measure diversity and conservation.

The experience of the last 30 years of forest conservation in India is instructive to understand 'neoliberal nature' where commodities are the outcome of conservation and not production (McAlwee, 2011). Starting with the legislation of 1980 that identified loss of forests to development or broadly defined "non forest" use as a key threat, the Forest (Conservation) Act (FCA) set down rules and procedures for the grant of forest clearance based on assessments and evaluations when a project needed forest land. One of the main ways of offsetting this loss was to make it mandatory for project developers to pay for afforestation over an equal area of non forest land and when that is not available, twice the area of degraded forest land. Conservation, it seemed then, was based on the premise of keeping a certain percentage of land under forest. As this form of forest conservation progressed, official data shows that over 1 million hectares of forest have been put away through forest clearance since then. Of this, over 300,000 hectares were granted clearance between 2003 and 2007 alone, which was possible as procedures for clearances have been streamlined to cut down delays, grant of clearances centralised and expert groups and technical bodies established for decision making. With such 'success' in the clearance process, compensatory afforestration efforts were challenged both materially and morally. While the

forest departments complained of funds not coming in on time, land not being available and poor monitoring of plantation sites, forest dwelling communities resisted more and more their displacement from forests, loss of access and impoverishment.

One of the most significant interventions in the arena of forest governance came from the Supreme Court in 1996. Known popularly after the name of the applicant from Tamil Nadu who is understood to have sent a post card to the court complaining of indiscriminate felling of trees, the Godavarman case (T. N. Godavarman Thirumulkpad vs Union of India and ors {WP No 202 of 1995}) has gone on since, issuing overarching orders to extending the jurisdiction of the central government and state forest department to any area or land which would attract the dictionary meaning of forests. Through the Court's order dated 26.09.2005 in this case, it also introduced the 'Net Present Value' (NPV) for the diversion of forests based on tree density and ecosystem services as a way of making forests more valuable in the process of development. NPV is understood as a value to compensate, in money terms, for the loss of tangible as well as intangible benefits flowing from forest lands due to their diversion to non-forest use. The preliminary idea was that this would either act as a deterrent to forest conversion, or as a compensation whereby the money collected could be ploughed back into conservation activities of the state forest departments. The methodology adopted ranges from charging project proponents amounts from Rs 4.38 lakh per hectare for class IV (open dense forests) to Rs 10.43 lakh per hectare for class I and II (very dense forest). The monies earned are collected by the Compensatory Afforestation Planning and Management Authority (CAMPA) and disbursed to state governments for conservation activities based on their annual plan of operations. These efforts have brought back old and much criticised ideas like Joint Forest Management and invested them with financial resources that have been collected by giving up existing forests.

Whether in the form of land, tree species or density, forests have been classified, monetised and substituted by other products of conservation such as plantations or Protected Areas (PAs). What the dual strategies of valuation and compensation that govern the mechanics of the FCA or NPV have also managed to do is convert forests into decontextualised, mobile and tradable commodities between regions. The condition of compensatory afforestation and NPV in particular meets obstacles in areas such as Kinnaur district in the northern Indian state of Himachal Pradesh. A substantial portion of the district is above the tree line and comprises high altitude cold desert areas. The forest types in this region and many alpine pasture lands of the region are not ones where high tree density can be observed. The calculation of NPV is significantly challenged in an ecosystem of this nature. During a conversation with forest officials of the region in June 2011, it was learnt that forest land is continuously being sought for the construction of border roads as well as hydro power projects, but the district does not have any land where compensatory afforestation can take place. Therefore, if any forest land is diverted in Kinnaur district, the compensatory afforestation will need to take place in another district of Himachal Pradesh, land for which is yet to be identified.

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As such policy prescriptions are carried out in ritualised, bureaucratic ways, fictional forests are being reconstituted in law and policy over and over again. While this has been the scenario at the national level, the new global approach of calculating the worth of forests by the carbon they hold is antithetical to popular imaginations of forests. The 1992 United Nations Framework Convention on Climate Change (UNFCCC) has recognised the role of forest conservation in climate mitigation. Mechanisms such as REDD and REDD+ have been arrived at through global negotiations where forests can be valued in the carbon trade market on the basis of their carbon sequestration potential. Such a contention has trapped forests, making them readily available for trade not just nationally but across borders. The global climate change negotiations and decisions allow for financial flow into countries which encourage the maintenance of such units of forests.

Forests have been a contested field for many years now, and the site around which immense mobilisation for cultural identity and political recognition has taken place. Issues of loss of access and forest related livelihoods have animated the movements for economic rights. This new turn, fueled by global climate concerns, to manage forests as carbon stocks as they are the basis of all other environmental services, begs us to investigate knowledge that reduces and abstracts forests into *fungible* units performing certain secular and universal functions that are prioritised above all else. The description of such forests is underscored by quantitative values and even though place, context and relationships may be mentioned, they seem irrelevant to the science of valuation. The forest in government records, is hardly an entity with multiple meanings that are bestowed upon it by our occasions of experience with it. It is without history, ecology or story. Instead, it is transformed into a forest of numbers.

There are innumerable examples to illustrate the effect of regulation based on such forest 'facts'. A few years ago, the Chairman of the National Hydroelectric Power Corporation (NHPC) was heard making a case for the large dam projects in the Northeastern states of India being awarded carbon credits because it would submerge old growth forests and recreate growing forests that supposedly had a much higher capacity for carbon sequestration. It is not easy to ignore this as bad science because that would merely 'fix' the same forest for its role as carbon stock. We need a new epistemology for environmental governance that rescues forests from the stock vs sequestration debate, or rather from the discourse of fungible environmental services.

The impulse to create an asset out of forests, hardly new to us, so that it will pay for its own management, conservation and governance is now premised on absurd abstractions. Such 'rituals' of commensuration, that are at the core of the idea of Green Capital have legitimised the siting of mines, dams and industrial projects in forests. Rather than methods of abstraction that separate forests from their ecological contexts and divest them of their social meanings, we need a form of governance that will allow forests to thrive for the many things they allow us to be.

Suggested readings

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The PES paradox

Selling PES in the Maloti-Drakensberg Transfrontier Park

Payments for ecosystem services (PES) interventions aim to subject ecosystem conservation to market dynamics and are often posited as win-win solutions to contemporary ecological, developmental and economic problems. While popular in mainstream policy domains, a major academic debate has erupted over whether PES can actually fulfil all (or any) of the promises it makes. Some scholars argue that PES, despite its challenges and shortcomings, is good for rural development and social equity. However, others such as Nicolas Kosoy and Esteve Corbera have referred to PES as 'commodity fetishism' implying that when nature becomes a commodity it will have negative effects on how humans relate to and value nature and can lead to social inequalities. Still others argue that PES instruments can contribute to improved environmental governance, but that they might not be universally applicable and might lead to perverse or ineffective outcomes, and hence that there should be a discussion about where they could be appropriate. Here I argue that PES can best be conceptualised as 'neoliberal conservation': the paradoxical idea that capitalist markets are the answer to their own ecological contradictions.

I first came to this conclusion based on extensive research on a conservation and development intervention in southern Africa, the Maloti-Drakensberg Transfrontier Project (MDTP). This project sought to stimulate local development, environmental conservation and international collaboration in the mountainous Maloti-Drakensberg area between Lesotho and South Africa. Amongst its many activities, the project introduced several market-based strategies to achieve its objectives, including PES. PES seemed a welcome solution to the many problems and political issues in the area. Indeed, for the first 3 years, the MDTP itself was also mired in struggles and tensions, and in this tense atmosphere the PES solution was welcome indeed. A baseline study was commissioned, in which Nicci Diederichs and Myles Mander argued:

> *"Payment for environmental services provides an incentive for directing landowners towards environment management actions that address priority environmental services, such as water security. As a payment system directly links buyers and producers of environmental services, it builds relationships between people who are economically linked and allows market based transactions to take place, reducing the need for further state regulation. Furthermore it focuses on measurable deliverables and consequently sharpens the performance of conservation actors (public, private or communal)".*

PES can best be conceptualised as 'neoliberal conservation': the paradoxical idea that capitalist markets are the answer to their own ecological contradictions.

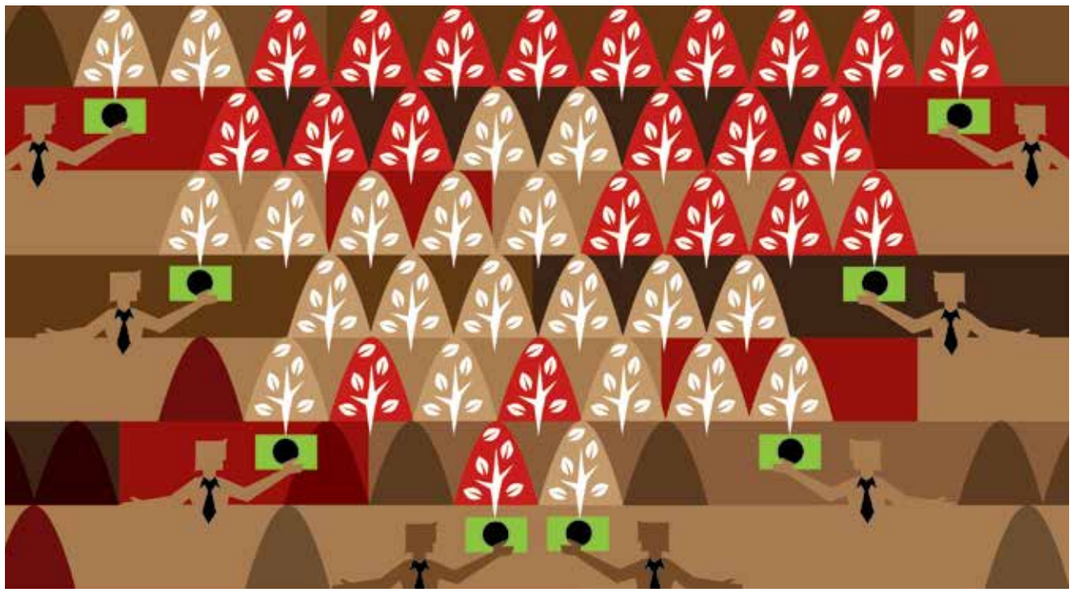
Interestingly, the study says almost nothing about the complex context and chequered history of the Maloti-Drakensberg area. Rather, in paragraphs such as the above, these are replaced by a closed (ahistorical) framework whereby social relations, individual behavior and their environmental effects are (efficiently) directed by market incentives. Moreover, the reports replaces cultural, political and social dynamics with a focus on *'relationships between people who are economically linked'* thus reducing the area and its inhabitants to a technocratic, neoliberal model that would subsequently have to be managed into reality. Indeed, the goal of the MDTP, from the start, was to set up PES as the magic bullet, as the ideal mechanism to ecological, developmental and economic concerns in the Maloti-Drakensberg. Interestingly, the same baseline study admits this by stating that:

> *"The resources available to this project (MDTCDP), both internally and externally (by means of partners), and the willingness of the MDTCDP to use economics for conservation action, generates a practical opportunity to initiate a market development process in the next three years. Furthermore, the current activities of the existing project, such as research and public education, are complementary to the development of a payment system."*

All of this sounds 'neutral', straightforward, and apolitical, exactly how markets are often depicted in general. Yet, it needs to be stressed that this scientific practice of framing institutional arrangements according to markets and market metaphors means bringing actors and ecosystems (further) into the *capitalist* mode of production. Hence, where some authors ask 'can markets do better?', the point is that 'markets' are not an instrument that can be switched on and off to see whether they 'work'. Markets change social and socio-ecological relations, and markets in a capitalist political economy change these relations according to the capitalist mode of production. In turn, the capitalist mode of production harbours particular socio-ecological contradictions in general and with specific reference to ecosystem services.

Yet, it is clear from the above quote that the resources available to the MDTP were put to use in a very specific way, namely to render the Maloti-Drakensberg area as an 'ecosystem services market' and so subject it to deepening capitalist relations and power structures. In turn, this corroborates the point that market forces are not 'natural', but need to be 'constructed' into place through what Jim Glassman refers to as 'extra-economic' means. In other words, a whole host of *political, social and scientific* tools are necessary to construct (and oversee) particular 'economic relations between people'.

In turn, these political, social and scientific tools were grounded on rather tenuous and/or one-sided arguments and evidence. While I refer the reader to the main *Conservation & Society* article



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for substantiation of this claim, what matters here is that despite the tenuous and one-sided evidence, the transfrontier project and the consultants it had contracted for the PES studies started marketing the potential for successful PES implementation in the area very early on in the project. PES was not only pushed through as a panacea for many of the area's ills, but the same consultants hired by the MDTP to set up a PES system, started marketing this system as a 'success' towards associated and likeminded, or 'epistemic' communities who were implicated in, and depended on this 'success'. This directs attention to a point which is often only alluded to in the PES literature, namely that the evidence built up in scientific constructions of PES depends on it being validated and taken up by particular epistemic communities, which are "experts sharing a belief in a common set of cause-and-effect relationships as well as common values to which policies governing these relationships will be applied."[1] In other words, scientific representations of PES in the Maloti-Drakensberg area were marketed through epistemic communities that already support and/or depend on the success of these same PES models, and as such a seemingly convincing case is set up, backed by scientific evidence.

But this goes further still: many of those involved in constructing PES markets are also those that posit them as a 'success' in policy, academic or other arenas. For example, the same consultants and researchers hired by the Maloti-Drakensberg Transfrontier Project to explore the suitability of PES in the Maloti-Drakensberg area between Lesotho and South Africa marketed their own PES constructions as successful through epistemic communities and policy arenas that already support and/or depend on the success of these same PES models. Crucially then, *the interpretation of scientific evidence also resembles a market*—if particular epistemic communities 'buy' into this evidence, it can seem to be legitimate and/or attract attention and more resources. In other words, the case of the MDTP functions in a broader 'scientific context' where likeminded epistemic communities valorise and indeed promote the paradoxical idea that capitalist markets can be the answer to their own ecological contradictions. In turn, this dynamic can become self-reinforcing in that more attention and resources are employed to further strengthen the power of the PES discourse, making it susceptible to becoming a relatively closed loop that effectively shuts out the complex socio-ecological dynamics it aims to address. An interesting—and disturbing—corroboration of this point relates directly to the *Conservation and Society* article itself. Before publication, I sent a version of the article to some of the MDTP PES consultants in order for them to respond to my criticisms, but they did not bother to give it any attention or feedback, despite several reminders from my side. The precise reason for this is of course difficult to grasp, but since I am not part of the epistemic communities that they depend on for their livelihoods, it seemed my article was not worth their attention, as the only thing it could do was rupture their carefully constructed discourse and the myth about the Maloti-Drakensberg as a 'successful' PES case.

Taking the alternative evidence from the Maloti-Drakensberg area case study, one could simply conclude that PES indeed seems a familiar progression of capitalist expansion and intensification in the area of environmental conservation. Yet, at the same time it is important to point out what seems new is that it openly acknowledged that conservation of biodiversity and ecosystems should occur through its submission to the capitalist mode of production while being completely blind to the contradictions and histories of this same mode of production. Indeed, this article shows that conservation projects and associated epistemic communities work hard to produce evidence that works to establish scientific credibility while erasing difficult and conflict-wrought histories in order to effectuate this submission. In turn, this enabled those same actors to market PES as a 'success', and so build a context that serves to attract resources and cement actors' careers within a popular paradigm. To capture these dynamics adequately, one needs to acknowledge PES and the way in which it is marketed within a global political economy that has sought to undo the restraints placed on capitalism since the 1970s and now seems to be at its zenith. PES, therefore, should be recognised first and foremost as 'neoliberal conservation'—as a response to the global neoliberal political economy that South Africa has also adopted and strengthened over the past 15 years.

Unless one takes this context into account, one risks missing the bigger picture—that the political-economic realities that cause many of the environmental and social problems frame solutions for them in the same spirit, for example through 'PES'. And as these are built into the same mechanisms, they might equally strengthen, rather than alleviate, the dynamics that cause the problems in the first place. Only by first framing PES as 'neoliberal conservation', and thereby acknowledging the broader point that capitalist markets cannot be the answer to their own ecological contradictions, can we begin to understand contemporary socio-ecological problems in their full complexity and start working on devising meaningful and constructive solutions.


Bram Buscher

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Trantor 2

New land ethic for an urbanised planet

Megha Vishwanath

In the 1940s, Isaac Asimov invented Trantor, the center of a Galactic empire where his brilliant *"Foundation"* series of novels unfold. At its height, Trantor is a planet whose originally Earth-like land surface is entirely covered in metal domes enclosing subterranean metropolises inhabited by 45 billion humans. That is over 6 times as many of us as are currently jostling for space on Earth. And, like one of our megacities writ large, Trantor is an entirely urban planet with an (eventually fatal) dependence on 20 other worlds for food.

No room for bare dirt, let alone natural spaces, within that Galactic capital! Not surprising, given that Trantor sprang from the imagination of a quintessential New Yorker, in a period of technological optimism about human potential for limitless growth to conquer the universe. Recently, as humanity nears 7 billion, we passed an urban threshold: over half of us now live in cities sprawling over the Earth's landscape. Cities whose alienated dwellers depend on food from ever distant farmlands. But we remain far from traveling to another planet, let alone establishing galactic empires. Instead, as climate change destabilises agriculture and rising oceans threaten to drown some of our most vibrant cities, we worry about sustaining even current human populations.

Meanwhile, an alternative vision of humanity is found in the writings of Asimov's contemporary Aldo Leopold who, in *"A Sand County Almanac"*, also written in the 1940s, gave us the "land ethic": a natural extension of ethics, an evolution of our moral sense of just behavior towards the rest of the natural world. He wrote:

"A land ethic changes the role of Homo sapiens from conqueror of the land-community to plain member and citizen of it. It implies respect for his fellow-members, and also respect for the community as such."

"A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise."

One can see an amplification of this land ethic in the more recent notion of "Earth Stewardship" which calls upon humans to take an active role in protecting biodiversity as the planet's only capable "stewards".

Trantor, with its eradication of nature, would be deeply unethical. Indeed most of our cities seem to lie on the wrong side of this ethical line, containing more concrete and asphalt than biotic communities. Yet cities are also centers of human culture supporting much of the integrity, stability, and beauty of human communities. Indeed, cities are where we also grow most of our naturalists, ecologists, and environmentalists these days.

Is it possible to reconcile human communities with those other biotic communities as equal citizens of Earth? We need an urban land ethic to guide our actions, find ways to preserve the integrity and beauty of the whole, human and non-human, and avoid destroying the living fabric of Earth's biosphere before we self-destruct.

Urbanisation is fundamentally changing the nature of our planet. Preserving biodiversity on this new urban planet requires going well beyond the traditional conservation approaches of protecting and restoring what we think of as "natural ecosystems", and trying to infuse or mimic such elements in the design of urban spaces. Cities already represent a new class of ecosystems shaped by the dynamic interactions between ecological and human social systems. As we project the spread of these ecosystems across the globe, we must become more proactive in not only trying to preserve components of earlier ecosystems and biotic communities that they displace, but in imagining and building whole new kinds of ecosystems that allow for a reconciliation between human wellbeing and biodiversity.

While urbanisation displaces many species, we also know that others have evolved adaptive response in behavior and physiology to not only survive but thrive under the sometimes strange and rather sustained urban selection pressures. Novel plant and animal communities have evolved in urban areas, often with active manipulation and management by human society.

Urban residential gardens and parks, for example, have become an important reservoir for populations of bees and other pollinators that provide valuable ecosystem services for farmers, but find it difficult to survive under modern intensive agriculture. Innovations such as rooftop gardens and vertical forests, other structural design elements that form the scaffolding of urban habitats, and human interventions such as supplementary feeding and watering, have the potential to offer novel habitats and niches for species that may be quite different from those in more natural ecosystems. Populations and assemblages of species that evolve under such urban conditions may well represent what the future holds for much of earth's terrestrial biodiversity. As such, human society must take a more active role in understanding and shaping these ecosystems, and assume the mantle of Earth's stewardship in the deepest sense.

As centers of human innovation, and perhaps the most active frontier of our impact on the planet, urban areas offer enormous opportunities to re-imagine and invent a different kind of future with room for humans and other species to thrive. As humanity continues to grow and build cities, our hopes of avoiding urban collapse lie in growing movements for green roofs, urban farming, alternative materials, and landscape designs that soften our hard urban edges, and offer novel habitats for even endangered species, by making cities more permeable to nature.

Even Asimov, in sequels written decades later, recognised the hubris and ecological folly of a wholly metallic urban planet, adding farm sectors open to the air, and even dirt and trees growing atop the metal domes! It is in the nature of life to colonise and adapt to new habitats, so in the long run, the evolutionary biologist in me knows that the earth will eventually reclaim all of our novel habitats as its own, even if we kill off many species and ourselves in the process. We would all be better off in the short run, however, if we allow nature and its biotic communities some more breathing room within our urban realm.We must heed Leopold and spare our planet the fate of Asimov's Trantor. Even Asimov would have agreed.

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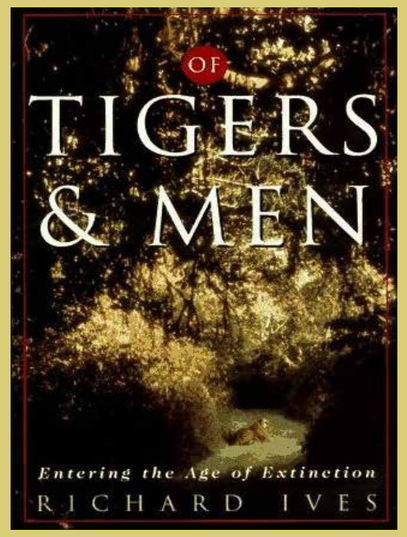
More books, fewer tigers



Of Tigers and Men: Entering the Age of Extinction
Richard Ives

ISBN: 978-0385478168
Nan A. Talese; 1st edition (January 1, 1996)

A FASCINATING TRAVEL NARRATION OF THE INEVITABLE EXTINCTION OF TIGERS BY RICHARD IVES

A book in five parts, Of Tigers & Men by Richard Ives, gathers momentum slowly. After reading two or three chapters, just before putting the book away feeling a little let-down, there is a surprise, a finale to all that seemingly unnecessary build-up, a gentle hint of reality, of the interaction between man and tiger, and his own journey as an author, a person, naturalist and tourist. Richard Ives dons all these hats in the book with ease and provides lucid descriptions from every angle.

In the prologue, he introduces not just his subject and the striped star, but also an 'informant' who makes appearances in later chapters too. He writes Part One through the lens of a tourist, with vivid portrayals of the crowded dusty cities of India, conventional trips to national parks and thrilling tiger sightings. The author quickly moves away and delves into the story of meeting one of the famous 'tiger men', Billy Arjan Singh, at his farm in Uttar Pradesh. He draws out the unclear character of Billy as it evolves in his mind, over vague dinners and ominous trips to the jungle. Even as he slowly understands this person, he is told very matter-of-factly that there is no hope for the tigers. Shocked, he hopes still, and continues travelling. In the next part of the book, he meets his 'informant' again, who remains shadowy and veiled in his conversations with the author. There are chapters here that carry almost entire reprints from a manuscript that the 'informant' is working on at the time, clearly important to Ives, but quite a tangent from the rest of the book. And yet again, he is told the same insipid fact—there is no hope for tigers.

Writing next from Indonesia, the book takes a turn to a philosophical journey of the self. Until now, Ives expressed terribly keen interest in meeting a tiger on foot, a rather "suicidal" notion as his friend wrote him in an anxious letter. But in Indonesia, he seems more worried about dying at sea, with chicken and other passengers on a crowded boat. Ives is lost in an increasingly bleak world, with rapidly vanishing tigers and a cynical co-passenger, a fellow naturalist, but an extremely foul-mouthed and bitter man. Ives recognises in this man an ideal example of one who truly believes that humans are not superior to all else in this world and also an example of how to continue living in bitter societies filled with "city-dwelling idiots". All signs of hostility disappear when this man sees a new or rare bird and drowns blissfully in the beauty of nature. Ives continues his exploration, even as it enters the 'Age of Extinction'. He ends Part Four with his dream finally coming true, seeing a tiger on foot, a magical experience that has him doubting its actuality.

All these experiences seem to have left the author disturbed, sad and 'wanting to be left alone', almost like his crazy travel partner in Indonesia. By chapter 35, he is in Nepal and seems more unclear than before, lost and confused but still on his feet, shuffling nevertheless. The book is an odyssey, a voyage of man and tiger, of Richard Ives from being a tourist to feeling like an intruder. It builds intelligibly towards the end, giving meaning to the title. While the writing is clear and simple throughout, I couldn't help but wonder if some entire chapters were even required; they seemed loose and without apparent purpose. But if one can look past this, it is great story-telling filled with vivid descriptions and occasional suspense, leaving you not with his view or opinion but leading you instead to your own.

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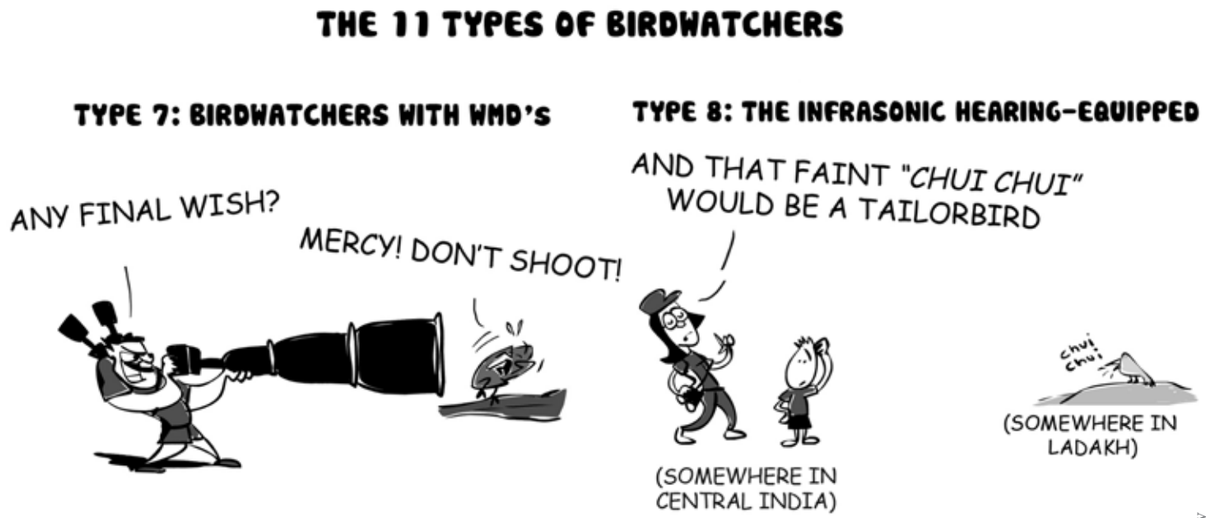

Rohan Chakravarthy