

GLOBAL GAINS AT LOCAL COSTS: IMPOSING PROTECTED AREAS A CASE STUDY FROM INDIA

Dr. Rucha Ghatge
Department of Economics
Nagpur University
Nagpur –440010, INDIA.
Email:ghates@nagpur.dot.net.in

INTRODUCTION

The concern for diminishing biodiversity, as a result of increasing knowledge of interdependent ecosystems and scientific research establishing the new vistas of the uses of flora and fauna, is global. As humankind has begun to understand its dependence upon healthy ecosystems for its survival, sustainable development, biodiversity conservation, maintenance of gene-pools etc. have found a prime place in the vocabulary of the environmental elite as a part of their wider concern. This has eventually resulted in the cordoning off of certain areas for preservation of natural resources – floral and faunal, in the case of developed as well as developing countries, known as Protected Areas (PAs). This major policy decision resulting from collective choice at the global level has had very different implications for developed and developing countries. While developed countries are more concerned about environmental quality which is a global public good, less developed countries can hardly afford to make land use decisions that keep such wider futuristic concerns in mind while they are presently struggling with very basic problems of poverty and starvation. In this context, the debate of ‘environment vs. development’, as well as ‘global gain at local cost’, assumes great significance.

Conservation of biodiversity, and therefore bringing more and more area under forest cover as well as preserving the existing green cover has been added to the priority list of many countries, and rightly so. Here comes the choice between ‘exclusive’ or ‘inclusive’ management. Due to the increasing awareness of the significance of conserving all living forms, and also due to increasing international pressures, developing countries are expanding the network of protected areas, which include national parks and wildlife sanctuaries. As Guha rightly points out, the root cause of depleting biodiversity is deeply imbedded in modern economic development, conservation efforts of the highly developed countries essentially surpass the political boundaries, ensuring further growth for them. He further emphasizes that, “The wholesale transfer of a movement (environmentalists’) culturally rooted in American conservation history can only result in the social uprooting of human populations in other parts of the globe.” (Guha, 1989:76). In many places, the fact that has been ignored is that “while an ‘exclusive’ management approach is generally successful in preserving areas of wilderness and scenic beauty, the ‘inclusive’ approach is obviously the model choice for PAs that include human residents and affect local livelihood in important ways” (Borrini-Feyerabend, 1996). For less developed countries like India, however, protected areas not only mean restrictive resource use, but also eviction of people who have lived there for generations. Moreover, the practice of equating nature conservation with the establishment of PAs under the Forest Department’s control leading to the exclusion of subsistence uses of living resources, is based on false premises like only the state machinery can protect biodiversity; conservation of biodiversity is no

concern of development agencies but is a monopoly of Forest Department; creation of new protected areas will enhance the prospects of protecting biodiversity; exclusion of subsistence demands is essential to biodiversity conservation; existing protected areas do effectively conserve biodiversity; and bureaucratic and technical experts know best how to conserve biodiversity (Gadgil, 1998).

CONCERN OVER EXTERNALITIES

The fact that protected areas affect various groups in society differently, needs to be recognized. It is essential to appreciate that the poor societies of poor countries who live within or close to PAs and in particular the people who derive their income from these, are the ones to bare maximum cost caused by sheer existence of Protected Area. From this point of view, the insistence of the global community to create protected areas cause unidirectional negative externalities for the locals. Several studies have been undertaken on the impact of PAs on the local population, highlighting the fact that a region once commonly used by its inhabitants for firewood and thatch collection, as well as small-scale fishing, sericulture, and honey collection, is thus legally put off-limits to these uses but open to others (Townsend, 1992). People situated in or near biologically diverse ecosystems often capture little economic benefits from conservation or sustainable resource use. In contrast, the costs incurred as result of conservation measures tend to be felt most severely at local levels, especially in the short term and the net benefits from conservation are therefore low (and occasionally negative) for the members of local communities (Wells, 1992, 1995). In the name of conservation, the already marginalized communities are further marginalized and rendered destitute. By uprooting these communities from their traditional homeland and their native socio-cultural milieu, and by destroying their (by and large) self-sufficient economy, they are exposed to outside exploitation (Jena, 1996).

PRESENT PAPER

With the ever-increasing understanding about the earth as a living network of interdependent ecosystems, there seems to be a growing consensus that the whole planet is a global common. This feeling, however, is not bereft of severe complications arising from conflicting interests of different nations placed at varying levels of development. In this paper the main issue I wish to raise is regarding the price the locals have to pay for conservation-related global concerns because the area-specific local 'collective choice' is weaker than the global 'collective choice'. While global concerns can influence the construction of constitutional choices, through various means both coercive and persuasive, local concerns rarely find expression. I have discussed this with the help of a case study of six villages located within the Tadoba-Andhari Tiger Reserve (TATR) in central India to show how the decisions of creating protected areas made at the national level, in keeping with the global concerns of biodiversity conservation, lead to marginalization of the poor. For understanding this complex situation this paper is developed on the lines of the Institutional Analysis and Design (IAD) framework, which incorporates multiple levels of analysis and multiple arenas of decision-making. In this paper I first briefly discuss definition of Protected Area, then explain the approach towards PAs in India in short, then present results of a study of Tadoba-Andhari Tiger Reserve, and finally present institutional analysis as well as economic analysis using utility-possibility frontier to test Pareto optimality conditions.

DEFINING ‘PROTECTED AREAS’

Responding to various ecological and social circumstances and ownership regimes, IUCN has developed a classification of protected areas that comprise six categories – from strict wilderness reserve to managed resource protected area. Protected area is defined by the IUCN World Commission on Protected Areas (IUCN, 1994) as:

As area of land/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means.

The Convention of biodiversity defines Protected area as: A geographically defined area that is designated or regulated and managed to achieve specific conservation objectives.

It is a well-established fact that the genesis of national park movement was in the US, and was a response to the wholesale destruction of the natural world unleashed by the Europeans across the American continent spanning over three centuries (Guha, 1989, Bishop et al. 1995). In US there were vast tracts of land available that had little human presence. These were reserved/protected as national parks to cater to the broad-based demand for outdoor recreation, and were administered by a bureaucracy answerable to wilderness enthusiasts. This concept was spread, accepted, and at times forced across nations irrespective of variations in socio-economic structures, biotic requirements, as well as feasibility, resulting in highly undesirable living conditions for some (predominantly poor) societies. Numerous national parks have since been established worldwide to protect nature, with severe consequences for neighboring communities, making park-community relations a critical issue for consideration (Fortin, Gagnon, 1999). History provides us with examples of civilization that collapsed because the forests that sustained them were destroyed. All this makes the necessity of conserving the remaining forest, as well as increasing the area under tree-cover, beyond dispute. But in the present context, the concept of ‘protected area’ has a different connotation for different people.

As Madhav Gadgil (1998) aptly puts it:

National Parks, wildlife sanctuaries, gene-pool reserves etc. are all Protected Areas (P.A.) where conservation of flora and fauna is the main objective. Protection from the ‘people’ (locals), for the people (global community), by the people (government department armed with legal Acts).

A more recent and widely accepted definition of National Parks is by IUCN given in 1994. According to IUCN, National Park is a protected area managed mainly for ecosystem protection and recreation. The precise definition is:

Natural area of land and/or sea, designated to (a) protect the ecological integrity of one or more ecosystems for present and future generations, (b) exclude exploitation or occupation inimical to the purpose of designation of the area and (c) provide a foundation for spiritual, scientific,

educational, recreational and visitor opportunities, all of which must be environmentally and culturally compatible.

PROTECTED AREAS IN INDIA

The facts that, ecologically, forests regulate local and global climate and influence the earth's energy budget, and more species of plants and animals live in forests than in any other ecosystems, are well recognized in Indian forest policy statements (1952 & 1988). Conservation of the resource, especially in environmentally strategic areas like mountains and river origins, is specifically mentioned in forest policy documents that are clearly reflected in forest-related legislation. This concern for conservation has resulted in reserving large areas of natural forests in various regions of the country under the categories of National Parks, Wildlife Sanctuaries, Reserved and Protected forests, and Closed areas (Mitra, 1999).

The Constitution of India clearly states, “ The State shall endeavor to protect and improve the environment and safeguard the forests and wildlife of the country” (Article 48A). It further states, “It shall be the duty of every citizen of India to protect and improve the natural environment including forests, lakes, rivers and wildlife, and to have compassion for living creatures” (Article 51G). The Indian Board of Wildlife (IBW) defined a national park as an “Area dedicated by the statute for all time to conserve scenery, natural and historical objects of national significance and wildlife, and where provision is made for the enjoyment of all the same by the public.” Creation of wildlife parks was one attempt on behalf of the government to protect wild species and their habitats. This is a traditional conservation model adopted by most of the developing countries, which places a lot of emphasis on custodial management, such as parks and reserves, banning most of the human activities within the boundary. In India, a little more than four per cent of the land is protected thus, protecting charismatic species, and directly affecting three million people living inside protected areas, and indirectly affecting several million from adjacent settlements. There were around 83 national parks and 447 sanctuaries in 1997 in the country.

COST TO THE LOCALS

The policy of eviction of the people from the national park areas has given rise to the park vs. people controversy all over. Laws on wildlife parks differ from country to country, but in most places these affect the lives and livelihood of local villagers adversely, as their ‘traditional’ activities suddenly become illegal. Declaration of protected areas does not actually advocate the marginalisation of those who get excluded from the area. But the fact that it is intrinsic to the whole process is often neglected. It has been observed that the average rate of species extinction, though not known with much precision, has actually increased dramatically over the past few decades. Apart from many reasons, one of the important reasons is that the protected areas are imposed on a community with no input, and no regard for the local people, thus creating conflict. While benefits flow to society at large, costs are borne by local people, whose use of the area gets restricted. While development for the society at large justifies displacement for projects, conservation of environment alone is the concern of Forest Act and Wildlife Protection Act. Displacement becomes only an unstated incident in the process, considered inevitable, and of no apparent concern (Ramanathan, 1996).

Local forest dwellers are most vulnerable to the impacts of forest destruction. Yet, these people are typically unrepresented when land-use decisions are made regarding their homelands, although the results of those decisions frequently jeopardize their cultural and economic survival. The lack of the local groups' participation in development decision making is exemplified by their conspicuous absence from the planning. Usually the decisions are imposed on them and they are the meek followers. Their misery accentuates when the decision informs them of their relocation but is delayed in the implementation. They are forced into a situation of endless waiting, uncertainty, and deprivation. Meanwhile, their counterparts in surrounding areas make progress steadily, enjoying all the benefits of governmental aid. The population that is sacrificed in the name of national or global concerns becomes stagnated for years. While concern is repeatedly expressed over the time limits on declaration of land for public purposes, and further proceedings like intention, notification, filing of objections etc., there is no time limit set for final rehabilitation to be completed. In the case of several sanctuaries in India, relocation and rehabilitation of people within the sanctuary area has not taken place for years together. Tadoba Tiger Reserve is a good representative example of such a situation. For the last 14 years, residents of six villages within the reserve have been told about their inevitable displacement and have been promised rehabilitation, yet to date not even an alternate site has been chosen for the purpose.

PRESENT STATUS OF TADOBA-ANDHARI TIGER RESERVE

Tadoba-Andhari Tiger reserve (TATR) has a long history of its formation. It is situated in Chandrapur district of Maharashtra state. The very first notification for Tadoba Sanctuary, comprising 116.55 sq. kms, was issued way back in 1931. It was converted into Tadoba National Park in 1955. The park was established in accordance with the then-policy of creating specie-specific reserves, devoid of human intervention. It was thought that at least some forest area should be preserved as a natural habitat for wildlife, specially the tiger. Existence of human beings was considered 'unnatural' and it was decided to rehabilitate the villages, which came within the national park or sanctuary area. Relocation of two such villages, which were within the Tadoba National Park, was done promptly. The two villages, namely Khatoda and Pandharpaulni, within the park area were relocated outside the boundary of the national park. Pandharpaulni was renamed Navegaon (Ramdegi), which is now facing another relocation as it is within the newly declared Tiger reserve. The problem of multiple displacements has added to the cost to be borne by the community here. Since the declaration of the park, the area has been excluded from the prescriptions of working plans. Collection of non-timber forest produce like gum, mahua flowers, thatch grass, etc. has been stopped since 1968. Subsequently collection of Tendu leaves (used for making country cigarettes) was also stopped.¹

To create a buffer area for Tadoba National Park, the Tiger Reserve area was extended as Andhari Tiger Sanctuary in February 1986, comprising 509.27 sq. kms. Since then, the relocation of six villages within the notified sanctuary area is in the offing. In the meantime, after receiving approval from the central government in 1993, the state government declared the whole area under Tadoba National Park and Andhari Wildlife Sanctuary as the Tadoba-Andhari

¹ Management Plan for Tadoba-Andhari Tiger Reserve, 1997-98 to 2006-07, by K.N. Khawarey and Mohan Karant, Tadoba National Park Division, Chandrapur, Maharashtra.

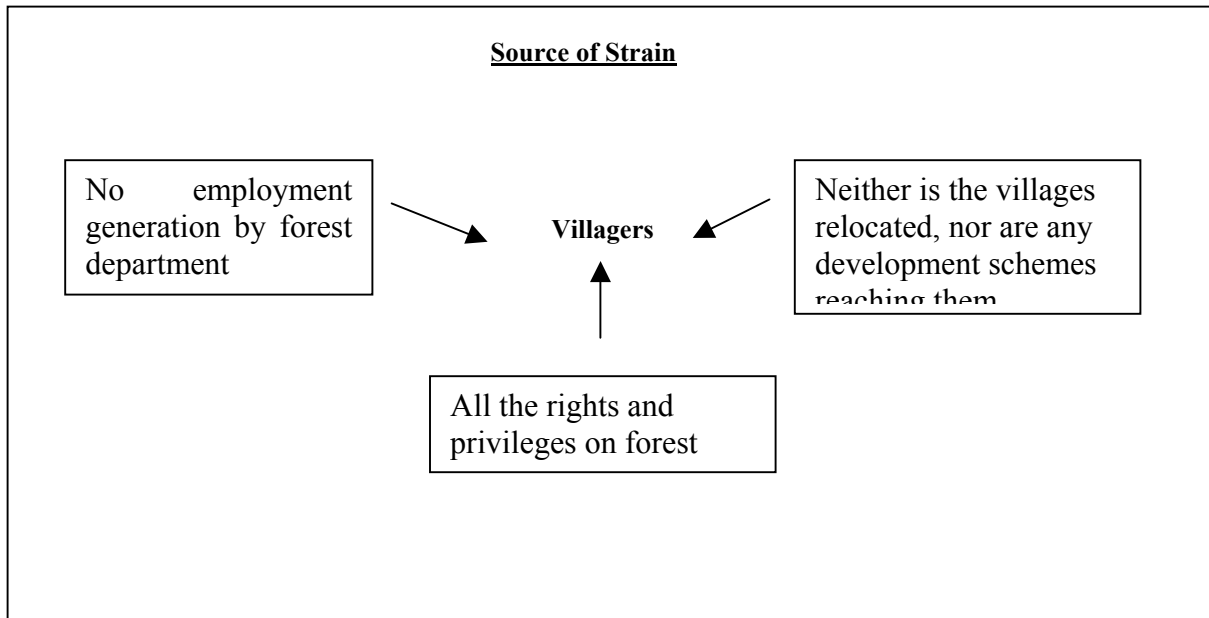
Tiger Reserve (625.40 sq.kms.) in 1995. However, all the rights and concessions to the local population have been suspended since 1990. Rights regarding collection of minor forest products including tendu leaves were suspended in 1992, which was long before the formal declaration of the Tiger Reserve. Presently grazing is regulated, and dead and fallen timber alone is allowed to be collected from the sanctuary area, excluding the erstwhile national park area. The management plan for the tiger reserve clearly mentions that, 'the local people are deprived of the rights to use the protected area to meet their requirements of firewood, grazing, and non-timber forest product (NTFP) collection, etc. which has created genuine problems for them.'

Suffocating Villages

The six villages in the reserve have been awaiting their resettlement for more than 14 years now, ever since the decision to convert the villagers' homeland into a wildlife sanctuary was conveyed to them. They were never consulted, nor convinced, but remained passive witnesses to enrichment of the surrounding green cover and their own impoverishment. The villages are Jamani, Nawegaon, Palasgaon, Rantalodhi, Botezari, and Kolsa. Almost all the six villages are inaccessible during the rainy season. None of the villages has all-weather roads or a fair price shop. Only one village Kolsa, has a post-office and a Primary Health Center. State transport service is available only for two of the six villages; and five villages receive irregular electricity supply. Though all the villages have primary schools, children either have to leave education for good, or go to far-off places for further studies after passing 4th standard. In case of all these villages, the marketplace is between 12 to 34 kms. For their purchases, from salt to a pair of bullocks, they have to travel the distance on foot. (Table 1).

These villages are threatened by their inevitable but uncertain displacement. This status quo has brought great suffering to the villagers. All developmental activities in this area have been suspended, including construction of the small culverts essential during rainy season, provision of primary health facilities, fair price shops and the like. The lone employment provider, the Forest Department, has stopped its activities since the declaration of the sanctuary adhering to the provisions of the act. In addition to this, other restrictions on collection of minor forest produce and tendu leaves have affected nutrition standards directly and indirectly because of reduced incomes. This population is also denied access to scores of schemes for rural and tribal development under which government of Maharashtra provides millions of rupees in the budget each year. The Tribal Development Department itself has more than 250 help schemes targeted towards poverty alleviation. In addition to these, Jawahar Rojgar Yojana (employment plan), Integrated Rural Development program, Indira Awas yojana (housing plan), Rural Health Programs, Animal Husbandry schemes, Primary and Adult Education programs, Agricultural and Land Development programs, etc. are available and can help these villages. But due to the inevitable dislocation, no agency is keen on taking the schemes to these villages. At present there is no common forum for coordinating the interrelated activities of all the departments (Ghate, 1998).

I had undertaken a socioeconomic study of these six villages in early 1999. Information from each and every household from all six villages was collected through a pre-structured questionnaire. Some broad observations of the study are presented here.



Demographic Features

There are a total of 527 households in the six villages. The sex ratio is 49:50 in favor of women mainly because of out-migration of male members in search of work. 56.27 percent of the population falls in the ‘working class,’ i.e. aged between 14 and 55. While more than 40 percent of the villagers are illiterate, only 1 percent of them could study beyond 4th standard. The majority of the houses in the vicinity is made with mud and has thatched roofs. Agriculture is the most dominant occupation of the area, and the heads of all households are cultivators. Yet, only 50 percent of the households own land and all of them have less than 2 hectares each. All other members work as agriculture labor as well. Most of the households own cattle. Put together, the six villages owned 611 cows, 634 bullocks, 118 sheep, 280 goats, and 24 buffaloes. These numbers gain additional significance because of the fact that all these cattle are in the forest area, which is also a protected area! (Table 2).

Income and Employment

The other major income-earning occupation is illicit bamboo poaching. Ownership of small plots of land, large numbers of landless, limited alternate opportunities of employment, restricted access to labor market, have together created a situation where locals have no choice but to go into illicit bamboo trade. The study collected information on income earned in two categories – legal (through agriculture, petty business, and labor); and illegal (mainly from bamboo poaching). It is a fact that all the households are below poverty line and there aren’t many avenues for earning an honest income. Also, there is easy availability of forest produce that has an assured market. It is also true that this resource was sustainably used by the villagers in the

past who were converted into encroachers overnight through the declaration of the tiger reserve without the locals' knowledge or consent. This action neither provided alternatives to fuel or fodder, nor did it create other avenues for earning income. This creates the background for illicit means of income. The argument can be appreciated with help of one example: collection of tendu leaves earlier fetched around RS. 12,000² every season for each family in these six villages. It was their main source of cash, necessary to buy mainly non-food items. But after the declaration of the sanctuary this activity was banned and the households can earn now not more than Rs.1,000 from that activity, if not caught by the departmental staff. Presently majority of the illegal income comes from bamboo, which is abundantly available in the surrounding forest area. And this activity is very well organized though it is very cumbersome and risky. Every day, villagers cut bamboo from the forest cut them into small pieces so that these can be smuggled out on bicycles. A bundle of 50 pieces, each piece 2-3 feet long, requires 15 full bamboo. There is lot of wastage in this method, and it fetches Rs.15 for each bundle. These bundles have to be carried to a nearby village, not less than 15 miles, where the bamboo pieces can be sold to a middleman who eventually carries them to a bigger market. Some villagers weave baskets and mats from bamboo and sell them to middlemen in adjoining villages outside the PA. For both these activities, villagers have to constantly bribe the forest staff for letting them smuggle out these products, and also earn a much lower price because of the presence of middlemen. Villagers cannot market their product themselves due to distance and lack of a transport facility.

Dependence on Forest Produce

It is well known that the people living in and around forests procure fuel, fodder, small timber, and minor forest produce from the resource. This has been the most natural phenomenon and the practice ever since humanity started cooking and tending cattle. It makes an interesting and fruitful study quantify and impute the value for forest produce used by the villagers. This was attempted in the present study by adopting a very simple methodology (shadow pricing). Value was computed by gathering information regarding the number of cattle heads owned, the amount of fodder consumed, and the price of fodder in the nearest market. Similarly, amounts of firewood, medicinal herbs, vegetables and fruits, and timber for construction and repairs of their houses etc. were computed. The value thus imputed worked out to phenomenal amount of RS. 77,55,192 per annum for all six villages put together. To understand the relative importance of this imputed value of forest produce, one has to consider the relative shares of income earned from agriculture and wages, and illicit bamboo trade, and compare that with the imputed value of forest resources consumed. The study shows that for all the households in the six villages, 25.36 percent of their annual income came from legal sources, 7.33 percent came from illicit bamboo poaching, and as high as 67.29 percent came from the consumption of forest products like fodder, fuel, medicinal herbs, wild vegetables, fruits, and nuts (Table 4).

These figures are significant for two reasons. One, this is a gross under estimation of real resources consumed which often go unevaluated; and two, none of these are taken into consideration at the time of relocating the villages. Resettlement of displaced villages does not provide for these losses. Hence, while vast areas of forests are set aside for wider uses such as biodiversity conservation, it is essentially the displaced poor who pay the price for it. Since locals' consumption of forest produce is not even estimated, neither any alternative nor

² Present conversion rate 1 US \$ = 49 Indian rupee.

compensation is provided for. It is pertinent to note that throughout this process, the ultimate sufferers have no say. They are at the receiving end of a national-level collective decision taken at the behest of global-level concerns. The compensation offered in return is decided upon unilaterally by the funding agency without any kind of negotiations between the two parties. In this sense, the global and national actors become ‘free-riders’ on the natural resources of the local communities.

THREE TIERS OF DECISION MAKING

Scholars at the Workshop in Political Theory and Policy Analysis, Indiana University, Bloomington have developed a threefold structure, differentiating operational, collective choice, and constitutional levels (or arenas) of interaction. This technique provides a means to synthesize the work of multiple participants, including those who are directly involved in the policy situation and have an interest in policy outcomes. The framework also helps elucidate the fundamental elements that can be used for analysis of outcomes and their evaluation at any three tiers of decision-making. The focus is on behavior in the action arena, which includes the action situation, and individual and groups who are routinely involved in the situation (actors). (Polski and Ostrom, 1999, McGinnis, 1999; Ostrom, Gardner, and Walker, 1994). Based on the broad Institutional Analysis and Development (IAD) framework, I have used the ‘Levels of Analysis and Outcomes’ model developed by Elinor Ostrom (1999), which discusses metaconstitutional, constitutional, collective choice, and operational situations. It illustrates how the physical world and communities affect these situations through ‘prescribing, invoking, monitoring, applying, and enforcing’, in first three situations, and through ‘provision, production, distribution, appropriation, assignment, and consumption’ in operational situations. The Institutional Analysis and Development framework takes into account multiple levels of analysis as well as multiple arenas of decision making by different actors. In the present context it is observed that different actors make decisions at their own level, and devise instruments to convert ‘collective choice’ into rules, at different levels with certain intended outcomes. At the operational level, however, the outcomes are very different due to varying incentives for global, national, and local actors. Adopting the ‘Levels of Analysis and Outcomes’ model from Ostrom (1999), the three levels of analysis are recast in the following manner. National level here refers to India and local level refers to community living within TATR.

Global level	Constitutional choice	Biodiversity convention treaty, Rio Declaration, Global Environmental Facility, Doha declaration etc.
	Collective choice	‘Exclusive’ approach for Biodiversity conservation
	Operational choice	Use of positive and negative incentives
National level	Constitutional choice	Wildlife Protection Act Biodiversity Conservation Act
	Collective choice	Declaring protected areas

	Operational choice	Enforcement of the acts
Local level	Constitutional choice	No autonomy granted
	Collective choice	Ignore law/parallel economy
	Operational choice	Illegal felling/poaching

The actors at the global level such as the World Bank, United Nations, WTO, etc., prescribe, monitor, and enforce the global-level collective choice through persuasive, and at times coercive, instruments like conditional aid or loans, sanctions, etc. At the national level, various legal provisions in the form of legislation reflect the collective choice at that level. These again prescribe, monitor, and enforce this national-level choice at the local/operational level. As collective choice at operational level, where the decisions really matter directly, is not taken into consideration, the situation at that level is far different than intended at higher levels. Taking the situation at TATR into consideration, at the international level it was felt that India is one of the major countries with rich biodiversity and hence it should provide complete protection to areas rich in forest cover. One of the measures towards this end was expanding protected areas. International agencies like the World Bank and World Wildlife Fund provided funds for development of wildlife habitat, and for reducing people's dependence on forest produce through programs like village eco-development programs. The national government too positively responded to this global concern, and accepted financial aid as well as a huge loan under the India Forestry Project, deciding to extend PAs as well as strictly implementing the constitutional enactment. But the reality at local level is a parallel economy that has emerged within TATR, where villagers are earning a substantial part of their survival income through poaching. Because the people actually living within the tiger reserve are participants neither in decision-making nor in benefit sharing, they have devised their own arrangement of earning income. The situation has been forced on these villagers where they are compelled to live under such conditions. All this is a result of a very noble concern for humanity as a whole, blindly adopted in a format prescribed by the national authorities, totally neglecting its feasibility as well as situational reality.

Ostrom (1999) has also discussed six criteria for evaluating the outcomes as well as the processes of achieving outcomes that could be undertaken under institutional analysis. The criteria are: economic efficiency, equity through fiscal equivalence, redistributive equity and accountability, conformance to general morality, and adaptability. Trying to evaluate the situation created by TATR, one is bound to say that it is a failure. Economic efficiency criterion is not really applicable here as the very purpose of a protected area is keeping it in 'isolation'. And as is clear, the area is not isolated. The two principal means of assessing equity, as mentioned, are on the basis of the equality between individuals' contributions to an effort and the benefits they derive, and secondly, on the basis of differential abilities to pay. In case of TATR, international agencies like World Bank and WWF are investing money and so is the Government of India. At the local level, the villagers of the six villages within the tiger reserve and many other villages located on the periphery, too, are bearing the cost of denial of access to the resource. It fails on the criterion of redistributive equity as well, because TATR has taken away the source of survival from the poor in exchange for a distant benefit for humanity as a whole, without providing for any immediate alternatives to compensate for the loss. The decision to reserve the area was made without consulting the local people who were to be directly affected,

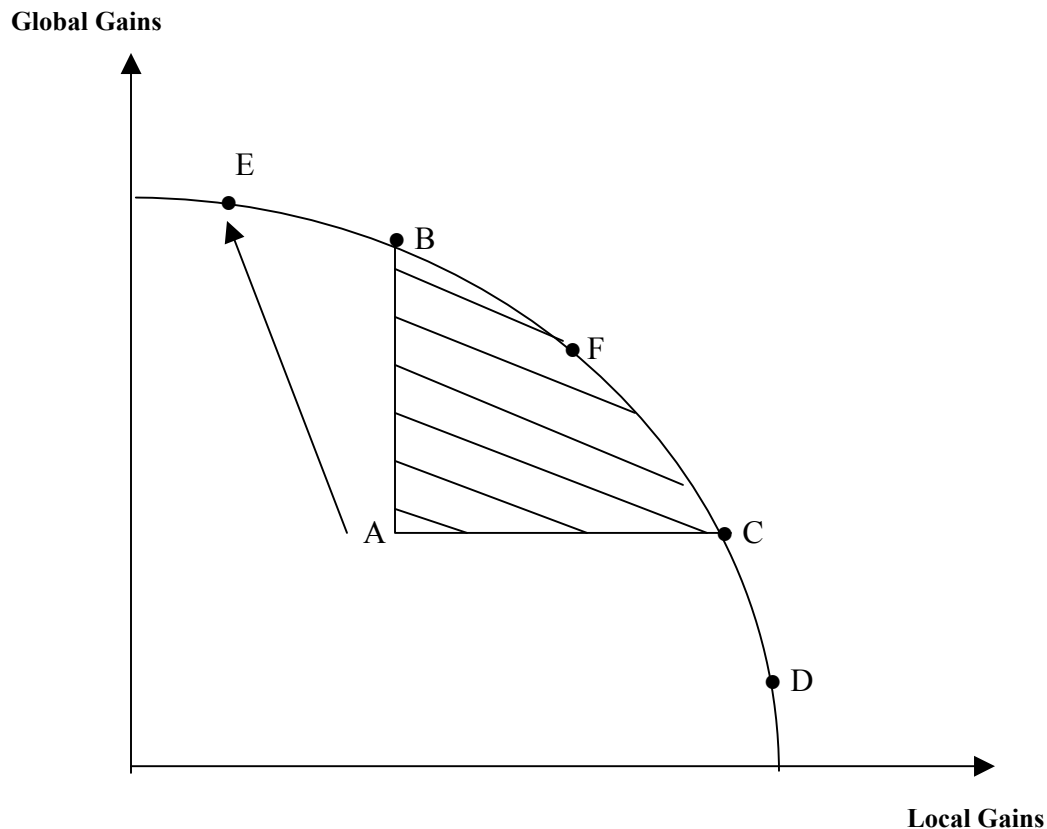
in the most undemocratic manner. And now no one is accountable for the losses felt by the affected people. This action does not stand on moral grounds as the people of Tadoba, who are to be evicted from their homes, do not even know the value of their sacrifice, nor do they know for which larger cause, in whose advantage, they are being made to pay.

THE 'GLOBAL-LOCAL' TRADE-OFF

It is obvious that solutions to environmental problems can come only through collective decision. Yet, practically 'collective decisions' could vary according to the way 'collection' or 'group' is defined. The decision that finally emerges could depend upon the negotiations between groups concerned and thus on the negotiating capacity of each group. A pure economic solution cannot be applied to this specific problem due to the critical 'diversity of interest' problem. What is good for the 'global community' is not necessarily good for the 'local community'. In reconciling these divergent interests, many times politics or varying negotiating capability may overpower pure economic considerations as is clear from the Tadoba-Andhari Tiger Reserve case presented here. The proposed solution of relocating the local population in a new surrounding and depriving them the benefits accruing from forests in which it is presently living, does not fulfill either utility criterion or equity criterion.

Using Pareto efficiency criterion, the situation can be diagrammatically presented as follows:

UTILITY POSSIBILITY FRONTIER



Presently TATR can be said to be at point A because it is neither in a situation of total conservation in the interest of global community (due to illegal felling) nor is it allowing benefits to local people through optimum legal sustainable harvesting. Area within ABC would be advantageous to both. Movement from A to B would make global community better off without adversely affecting the local community, while change from A to C is advantageous to the local community without any adverse impact on the utility of the global community. Although F would be an ideal situation, all points between B and C are Pareto efficient. But the present policy of relocation could mean movement from A to E, which is not Pareto efficient, although it is on the Utility-Possibility frontier, because it means net increase in total utility at the cost of 'local' interest. However, local community being a part of global community as well, at point E the local interests would not be zero. The decision regarding which point of the utility possibility frontier will be ultimately chosen depends upon the social welfare functions i.e. collective choice of the society at large. The contention here is that movement from A to E is possibly because of the fact that the decision making capacity of the global community, both at constitutional and collective levels, is much higher than the capacity of the local community.

CONCLUSIONS

The global concern for diminishing biodiversity and its formalization at the national level can have an unintended outcome. In developing countries like India, land-use decisions have conflicting pressures of environmental protection and developmental aspirations. Environmental protection through 'exclusive' management by keeping aside large areas devoid of people can result in eviction of people who have lived there for generations. This results in a negative externality for the locals. Because creation of protected areas for conservation of biodiversity result in unequal sharing of costs between the local population and humanity at large. Moreover, if a decision to cordon off some area from local use is forced on the people, it may well be considered as 'protected' for the sake of accounting, but in reality it may be inflicted with unreported poaching, resulting in a net loss at the global, national, and local level. Therefore, solutions to global concerns for bio diversity conservation necessarily lie at the local levels. Even if the sensibility of isolating human element from nature conservation is kept aside from the discussion, at a very practical level it has to be accepted that it is impossible to achieve conservation goals without making local people equal participants in decision-making and benefit sharing. Crafting appropriate institutions that are based on equity and efficiency is necessary for effective management of the remaining natural resources, in the interest of all humanity without imposing unequal share of costs on a few. Lack of coherence between global, national and local goals, leads to situations that are neither intended nor desirable.

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TABLE 1**ACCESSIBILITY OF VARIOUS AMENITIES AVAILABLE TO THE 6 VILLAGES WITHIN THE TIGER RESERVE**

Sr. No.	Amenity/Name of the village	Dist. in kms.					
		Navegaon	Rantalodhi	Botezari	Kolsa	Palasgaon	Jamni
1.	All weather road	12	17	12	19	02	10
2.	Post Office	12	18	12	--	10	12
3.	P H C	12	27	26	--	12	10
4.	Police Station	20	90	35	30	61	20
5.	Taluka Place	20	90	75	45	61	20
6.	Market Place	20	17	12	45	10	20
7.	Bank	20	50	30	30	32	20
8.	Middle School	12	--	12	--	12	11
9.	College	20	35	35	30	36	20
10.	Ashram School	27	45	30	--	18	38
11.	Fair price shop	07	--	--	--	--	--
12.	Telephone	20	17	35	30	32	12

Source: Ghate R. 1999. 'Socio-economic study of six villages in Tadoba-Andhari Tiger Reserve (Maharashtra, India),' a study report, SHODH: The Institute for research and development, Nagpur, India.

TABLE 2**DEMOGRAPHIC FEATURES**

Name of villages	No. of households	Percentage of female population	Percentage of working population	Percentage of illiterate population	Percentage of landless households
Navegaon	106	48.97	57.82	45.27	40.57
Rantalodhi	97	49.75	53.28	49.24	43.30
Botezari	56	52.86	52.42	39.21	54.90
Kolsa	111	50.91	55.48	38.58	45.05
Palasgaon	68	54.40	60.00	38.00	60.29
Jamni	89	50.82	58.24	31.59	43.82
Total	527	50.86	56.27	44.53	46.25

Source: Ghate R. op cit.

TABLE 3**CATTLE OWNERSHIP**

Name of villages	No. of Bullock	No. of households	No. of cows	No. of households	No. of buffaloes	No. of households	No. of goats	No. of households	No. of sheep	No. of households
Navegaon	118	57	104	64	6	3	98	56	79	45
Rantalodhi	126	54	127	57	0	0	93	40	6	3
Botezari	81	34	90	33	10	5	10	4	16	3
Kolsa	119	62	100	60	1	1	12	9	10	4
Palasgaon	69	30	66	36	1	1	07	2	00	0
Jamni	121	61	124	60	6	4	60	17	7	3
Total	634	298	611	310	24	14	280	128	118	58

Source: Ghat R. op cit.

TABLE 4

**PERCENTAGE OF LEGAL AND ILLEGAL INCOME AND IMPUTED VALUE OF FOREST PRODUCE FOR SELF-
CONSUMPTION**

Name of villages	Share of legal income	Share of illegal income	Share of imputed value of forest produce for self consumption
Navegaon	39.62	-	60.37
Rantalodhi	17.00	13.36	66.62
Botezari	7.01	14.88	73.10
Kolsa	29.58	4.51	65.90
Palasgaon	24.14	7.09	68.75
Jamni	26.36	-	73.63
Total	25.36	7.33	67.29

Source:Ghate R. op cit.

TABLE 5**COMPARATIVE SHARES OF IMPUTED VALUES OF FOREST PRODUCE FOR SELF-CONSUMPTION**

Name of villages	Total value in Rupees	Fodder	Bamboo	Fuel	Meat	Medicine	Vegetables	Fruit	Tendu leaves	Mohua flower
Navegaon	1456940	82.26	17.46	0.12	-	0.04	0.02	0.02	0.05	0.02
Rantalodhi	1557940	84.46	14.94	0.23	0.02	0.04	0.02	0.04	0.13	0.13
Botezari	1030780	79.63	19.56	0.37	0.06	0.06	0.08	0.03	0.19	0.02
Kolsa	1290440	78.78	20.64	0.28	0.05	0.05	0.05	0.02	0.12	0.02
Palasgaon	810600	68.84	30.20	0.44	0.06	0.07	0.07	0.04	0.25	0.02
Jamni	1672692	80.51	19.15	0.17	-	0.04	0.03	0.02	0.07	-
Total	7755192	79.85	19.60	0.25	0.03	0.05	0.04	0.03	0.12	0.04

Source: Ghate R. op cit.

