TOWARDS AN OPERATIONAL DEFINITION OF SUSTAINABILITY[1]

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SECTION 1: INTRODUCTION

Sustainable Development' (SD) off late has become a catchword. It has attracted the attention of people from almost all walks of life. A vast literature has been generated ever since the publication of the Brundtland report coining the concept in 1987. Unfortunately such a growth in literature has also rendered the concept much more confusing and ambiguous. The ambiguities, both terminological and conceptual, are accompanied by disagreements in terms of facts as well as consequences. To quote a recent study, " these problems arise in part because the sustainability of the human enterprise in the broadest sense depends on technological, economic, political and cultural factors as well as on environmental ones and in part because practitioners in the different relevant fields see different parts of the picture, typically think in terms of different time scales, and often use the same words to mean different things." (Holdren *et al*, 1995, p.4)

With apologies to Prof. Samuelson[3], we would like to raise three fundamental questions about sustainability. They are:

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[3] P.A. Samuelson, in his famous book `Economics' argued:

"Any society, whether it consists of a totally collectivized communistic state, a tribe of South Sea Islanders, a capitalistic industrial nation, a Swiss Family Robinson, a Robinson Crusoe -- or, one might almost add, a colony of bees -- must somehow confront three fundamental and interdependent economic problems.

1. WHAT commodities shall be produced and in what quantities? That is, how much and which of alternative goods and services shall be produced? Food or clothing? Much food and little clothing, or vice versa? Bread and butter today, or bread and grape plantings today with bread, butter, and jam next year?

- What is sustainability?
- For whom sustainability? and
- How to achieve sustainability?

The present paper is divided into six sections. The section that follows undertakes a selected review of the literature that deals with the debate on the definitional aspect of "sustainable development". The third section deals with the issue of "Sustainability for whom?" We try to develop an operational definition of "Sustainability" in section four in our quest for the answer to the question — "How to achieve sustainability?" The next section takes up the issues of sustainable use of forests in India. Section six concludes the paper.

SECTION 2: WHAT IS SUSTAINABILITY?

What is SD? Do "Sustainability" and "Development" go side by side? Or is it just an oxymoron like "bright darkness" or "honest liar"? A typical textbook defines development as `growth with change', a fundamental change in the structure of the economy accompanied by growth in per capita real GDP. The fundamental changes involve falling share of agriculture and rising share of industry in national product, increasing share of population settling in urban areas, change in consumption pattern leading to larger proportion of income being spent on consumer durable and leisure time products and services than in basic necessities (Gillis *et al,* 1983, p.7-8). On the other hand, sustainability implies an uninterrupted continuous process or condition `that can be maintained indefinitely without progressive diminution of valued qualities inside or outside the system in which the process operates or the condition prevails' (Holdren *et al*, 1995, p.3). However, according to O'Riordan (1985) it is a `contradiction in terms'. Although, simultaneously, we find that Redclift

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2. HOW shall goods be produced? That is, by whom and with what resources and in what technological manner are they to be produced? Who hunts, who fishes? Electricity from steam or waterfall or atoms? Large - or small-scale production?

3. FOR WHOM shall goods be produced? That is, who is to enjoy and get the benefit of the goods and services provided? Or, to put the same thing in another way, how is the total of national product to be distributed among different individuals and families? A few rich and many poor? Or most people in modest comfort?

These three problems are fundamental and common to all economies, but different economic systems try to solve them differently." Samuelson (1976), p 17-18.

(1987) considers SD to be `just another development truism'. These divergences occur, as Lélé (1991, p. 609) has rightly pointed out, because we are yet to come out with an unambiguous acceptable definition of development. Whereas one group considers development in economic terms alone, there exists the other group for whom development is the achievement of a good number of socially desired phenomena.

Consequently, `sustainability' gets divorced from `development' if we consider development to be characterized by growth only in material consumption, even though accompanied by the attendant changes as referred above. SD becomes a truism if and only if we accept development to cover changes in certain social factors within its ambit. However, unfortunately, the present discussion does not have that scope to precisely identify the `social factors' *per se.* For the sake of carrying out our argument, we broadly consider changes in those factors that improve social welfare, like access to basic minimum requirements for all, ensuring proper share of the fruits of `development' to all, as relevant. Ambiguous as they may also appear to be, we have no other ways in site. The only point that is strongly emerging out of the present argument is that we are considering development to come out of its somewhat self-imposed shackles of `material growth'.

Prof. Samuelson raised the same three questions mentioned in the introductory section in respect of production to understand the process of exchange through market mechanism. In the neo-classical framework the Smithian `invisible hand' became visible in the form of markets which is claimed to generate the most efficient distributions pattern of resources. In this process the factors of production are considered to be `totally substitutable' with one another. Thus any shortfall in a particular factor, say, labour, is assumed to be met with substitution by another factor, say, capital. Thus emerged the concept of continuous production function in an input space continuum where the inputs are totally divisible as well as substitutable. So apparently, there was no need to worry about the depletion of natural resources as they could be substituted by man-made resources. Depletion of fuelwood used for generating energy is to be replaced by electricity generation. Drugs, earlier prepared from herbs collected from their natural habitats, are to be replaced by synthetic formulations. Thus extinction of medicinal herbs may not be considered to be a major concern. The `Oil crisis' of the early seventies probably raised the first ever doubt about the acceptability of the `substitutability'

assumption, although we may cite a good number of studies already published by then questioning the validity of such a concept [see particularly, Georgescu-Roegen, (1971)].

That natural resources cannot be totally substituted by man-made capital, is now an accepted truth [see, for example, Cleveland, (1991)]. So many factors are stated to be important for mankind in preventing their extinction. Mainly,

1. natural resources are subject to irreversibilities;
2. there are uncertainties about the possible impact of the extinction of any particular natural resource;
3. natural resources are considered to be preferable to man-made capital in the sense that it may increase resilience and reduce vulnerability. (Munasinghe & McNeely, 1995, p 26).

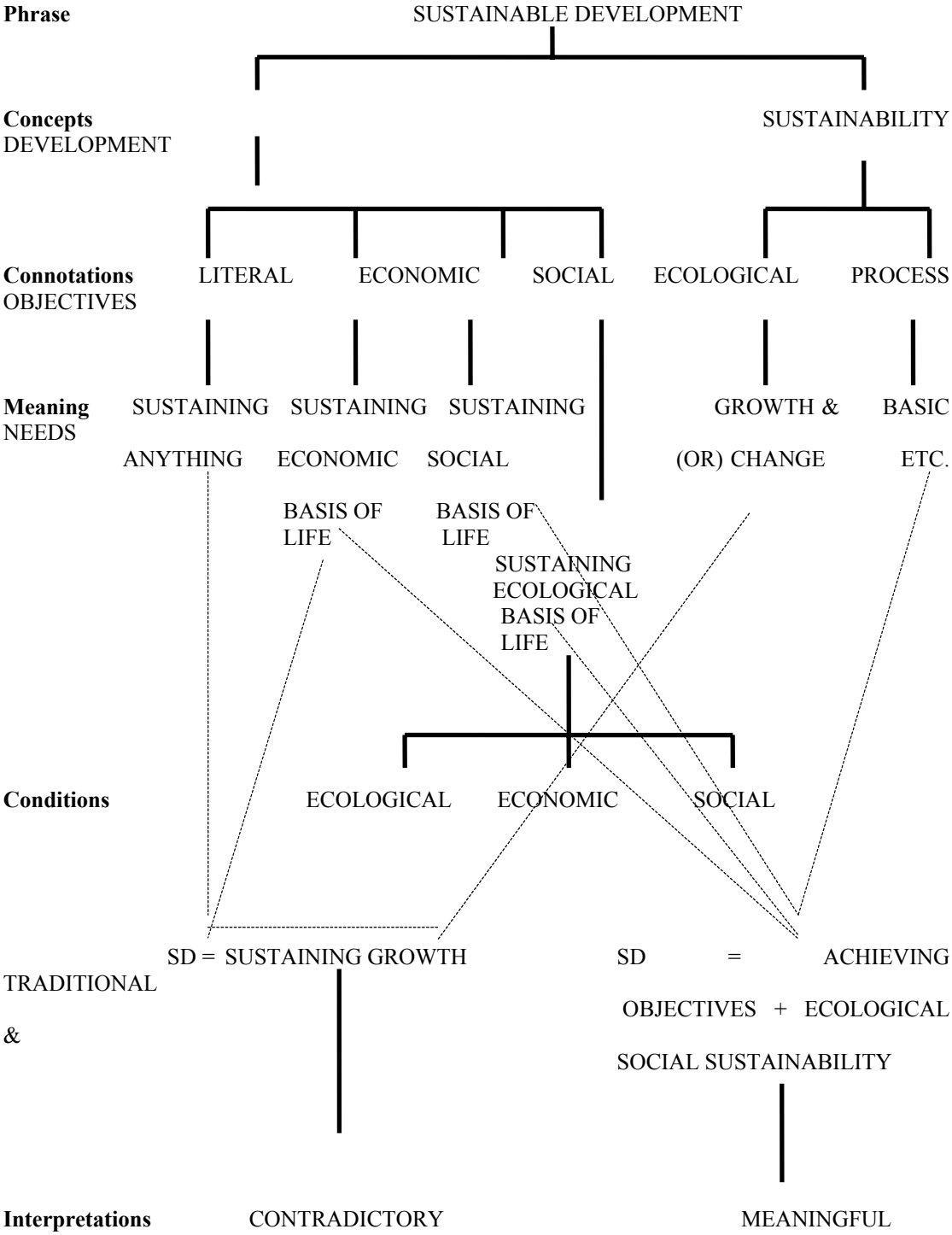
The above argument probably answers to another question that we did not raise. It may be formulated as : Why sustainability? We intentionally did not raise this question as we have already argued that there seems to be no doubt about the necessity of following a sustainable path of development. SD has become, according to Tolba, "an article of faith, a shibboleth; often used, but little explained" (Tolba, 1987). As it becomes evident from the above quote, the acceptance of this concept has been associated with an absence of proper definition of SD. The Brundtland Commission defined SD as that which "meets the needs of the present without compromising the ability of the future generations to meet their own needs": a concept that harps on the argument of guaranteeing intergenerational equity vis-à-vis availability and use of natural resources. International Union for the Conservation of Nature (IUCN) defines SD as "improving the quality of human life while living within the carrying capacity of supporting ecosystem. While the former sounds almost totally economistic, the latter looks like a definition of ecological sustainability. Lélé (1991) provides a comprehensive semantics of SD as he considers the trinity of economic, social and ecological aspects of sustainability and development (see Chart1). In course of our argument, we shall be accepting *a la* Lélé, the following definition of SD:

Sustainable development is a process of simultaneously ensuring continuation of the economic, social and ecological basis of human life.

Quite obviously, to ensure the sustenance of the trinity, the economic, social as well as the ecological conditions and requirements are to be kept in mind. So we cannot have ecological conservation even at the expense of degradation of the social or economic basis of human life or the other way round. Thus we are faced with the challenge of co-ordinating the requirements which apparently may look contradictory. Our quest for answer to the rest of the questions will clear some clouds of confusion about the relation between these three aspects of sustainability. Existing literature has carefully documented the circular relationship between ecological destruction and socio-economic deprivation. We cite a few representative arguments. The Hague Report (Pronk and Haq, 1992) observed that most of the poverty stricken population today leave in areas characterized by high bio-diversity and fragile ecosystem: 80% of Latin America, 60% of Asia and 50% of Africa. A recent World Bank study also confirms the findings of the Hague Report when it makes the following observation (World Bank,1992, referred in Munasinghe and McNeely,1995, p 22; see also Chakrabarti & Bist,1997):

- The increasing soil degradation and desertification are affecting the rural poor more than their urban counterpart.
- Approximately 1 billion people in the developing countries do not have access to clean water for drinking or bathing.
- Around 1.7 billion are without proper sanitation facilities, leading to high rates of morbidity and infant mortality.
- 5000 Philippine villagers were killed in a recent flood caused in part by the presence of deforested hillsides.

FIGURE : 1 SEMANTICS OF SUSTAINABLE DEVELOPMENT



Source : Adapted from Lélé (1991)

SECTION 3: SUSTAINABILITY FOR WHOM?

The above observation makes it amply clear that any attempt at SD should have the requirement of the deprived section of the society at its focus. The Brundtland Report (1987) mentioned of the necessity of intergenerational equity. Unfortunately, it failed to mention the other requirement, i,e., intra-generational equity. There is no denial that the development processes followed so far always have been anthropocentric, in the sense that the fulfillment of the requirements of human beings (*homo sapiens*) even at the cost of destruction of other natural resources both living and non-living has been at the centre of attention. That there exists a highly skewed distribution of resources among individuals is also acknowledged. The faith in the concept of `trickle-down' having vanished in the blue by now, intra-generational equity has to be tagged with the schemes of SD. This provides an answer, *albeit* partially to the second question that we raised earlier in this paper. We may obtain a complete answer to the query as we tackle the last question in the following paragraphs.

The answer to the last question will be highly straight forward as we have already grappled with the first two and ended up with presumably satisfactory answers. If SD is to be achieved and justice is to be meted out to the future generation then the following steps are to be taken up:

1. The paradigm of `strong substitutability' has to be replaced by that of `weak substitutability'.

2. The anthropocentric models of development are to be discarded and eco-centric models that take care of all natural resources both living and non-living, including *homo sapiens*, that is, the entire ecosystem, are to be evolved. (See, Opschoor, 1994 for an illuminating discussion on this aspect).

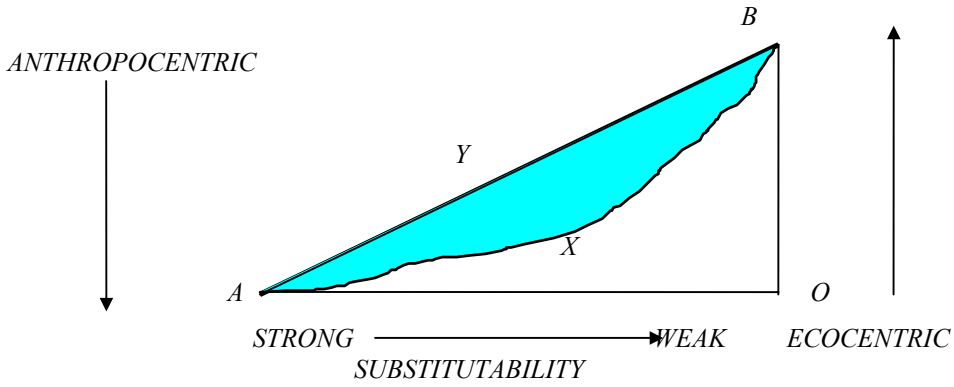
3. To ensure intergenerational equity, steps are necessary to be taken to ensure intra-generational equity as well.

SECTION4: HOW TO ACHIEVE SUSTAINABILITY?

How are these to be operationalized? To be brief, we shall have to spend considerable energies in setting up the appropriate institutions that involve every single individual in the process of development. The following diagram may help us conceptualising SD in terms of its operationalization. As is obvious, a paradigm shift in favour of SD will necessitate a movement from A to B (Figure 2). Apparently, this can be achieved by following innumerable possible paths, say X or Y lying within the

attainable set AOB. Geometrically, Y will involve the shortest distance from A to B, and hence should be the ideal. However, from the point of view of operationalization of the paradigm shift such path will be the most difficult to follow. To clarify, a movement from anthropo-centrism to eco-centricism involves setting aside certain resources for the maintenance of bio-diversity, which were so far used by human beings. The prevailing resources use pattern suggests that the marginalised section of the human society is heavily dependent on these resources. Thus this movement, if taken up initially in right earnest, may go heavily against the interest of the afore-mentioned section of the society, making the process socially unsustainable. On the other hand, if we intend to follow the path AOB to achieve sustainability, we may end up with ecological unsustainability. How then to locate the roadmap towards sustainability? What will be the mechanism to identify the path to be followed from A to B?

FIGURE 2



Available literature is replete with arguments that allocation mechanisms in respect of natural resources like water, fisheries or forestry resources are subject to both market and policy failures (Dasgupta, Partha *et al* 2000). Possibilities of market failures mark the danger of introducing pure private property regime in natural resources whereas those of policy failures point out the difficulties of putting them under pure public property regime following a hierarchical structure with 'State" at the apex of the system. Such failures raised concern highlighting the necessity to go for sustainable use of these resources so as to ensure inter-generational equality *a la* Brundtland. Sustainability as a concept gained acceptance from all quarters of life. However, an acceptable operational definition still eludes us. To a life scientist sustainability implies protection and conservation of all flora and fauna some times even at the cost of basic human rights to live. The present thrust on the development of Protected Areas in the name of protecting the wild life for eternity may be cited as a move towards this direction.

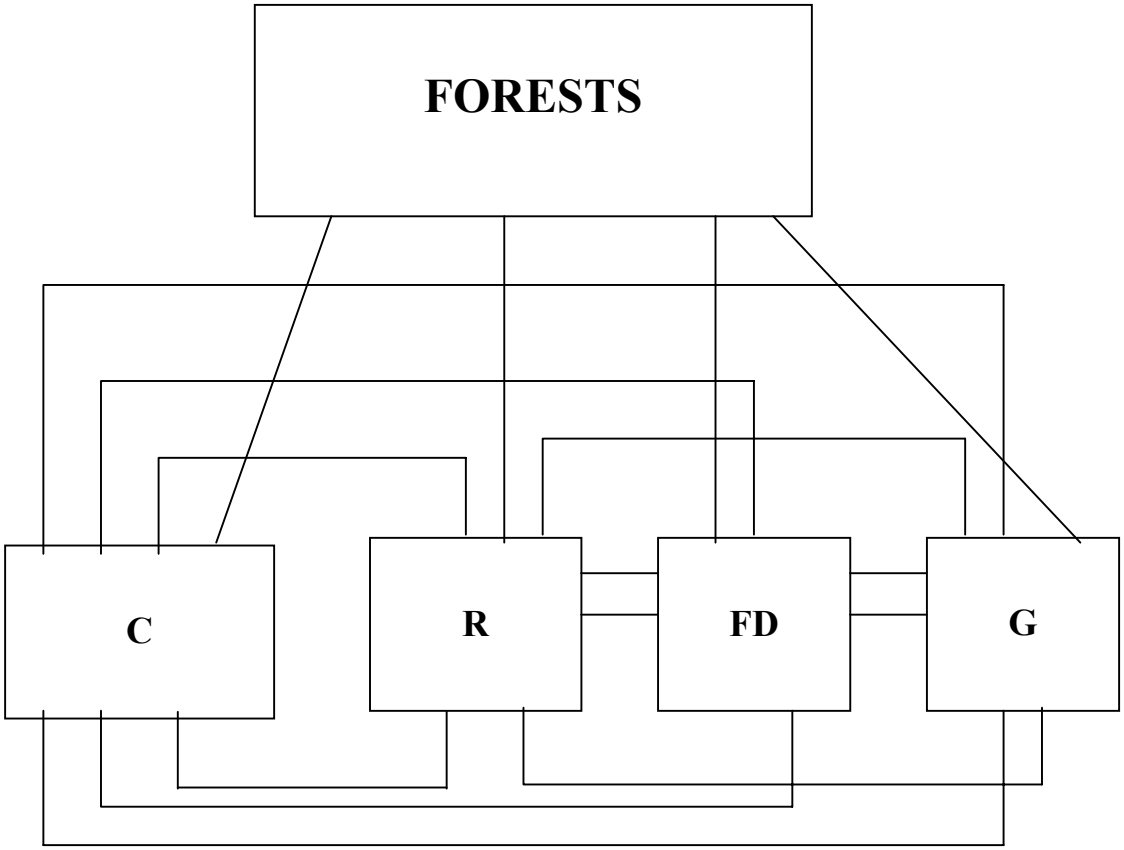
A recent judgement by the Supreme Court of India even went to the extent of forbidding the harvest of any kind of forest produce from the Protected Areas. Activists arguing in favour of the 'rights to livelihood' of the people who — either traditionally or due to lack of necessary supports from other sectors of the economy — have been harvesting forest products for their sustenance. We argue that 'sustainable' use of natural resources cannot be achieved in a mechanical manner through 'stronger' legislations or even through crafting the so-called 'participatory' institutions at the grass root level unless and until a proper property rights regime can be developed in respect of them.

Private property rights fail to take care of the externalities — both positive and negative — that affect different sections of the society. Those affected may not even be directly involved in the extraction and/or use of the resources. The positive externalities they derive should make them accountable for the protection of the resource concerned and hence shoulder some responsibilities. Simultaneously, the incidence of negative externalities should empower those affected with rights to decide about the extraction and/or use of the resources. Arguments in favour of ensuring 'State' property rights on them are to take care of the externality effects. However, such a mechanism suffer from policy failures in the face of agency problems due mainly to moral hazards and opportunistic behaviour on the part of those entrusted by the 'State' with the responsibilities and rights to extract and use the resource. The extent of destruction of forests in India during the seventies and the eighties and in some parts of the country even today amply substantiates the argument of policy failures. It is to be noted that most of the forests in India are owned by the 'State' and are under the management and control of the forest bureaucracy. The solution under such a scenario probably lies in developing a proper incentive-disincentive structure elaborating the rights and responsibilities of all the stakeholders towards the resource under consideration. Such a structure should be the basis for defining a complex property rights regime on a natural resource.

We consider the forests as a representative natural resource. We divide the society into four identifiable groups of stakeholders. They are:

- Communities dependent on forests for livelihood – totally or partially (C);
- The rest of the community (R);
- The Forest Department (FD); and
- The rest of the government (G).

The exchange relationship among these four groups is given out in the following schematic structure.



A look at the schema above reveals the exchange relationship among the four sectors of the economy. The specific inter-sector exchange relationships are elaborated below.

C receives:

- Forest resources both *de jure* and *de facto* from the forests.
- Employment from R
- Technical inputs and employment from the FD and
- Grants from G.

In return, it provides

- Protection to forests
- Labour to R
- Labour and protection services to FD and
- Tax to G.

Similarly, R receives:

- Intangible environmental benefits from the forests.
- Labour from C
- Forestry resources from the FD and
- Grants from G.

In return, it provides

- Non-forest consumption goods to C
- Revenue to FD and
- Tax to G.

On the other hand, FD receives:

- Resources from the forests.
- Labour and protection services from C
- Revenue from R and
- Grants from G.

In return, it provides

- Technical consultancy to C
- Revenue to G and
- Forestry resources to R.

Finally, G receives:

- Intangible environmental benefits from forests.
- Taxes from C and R and
- Revenue from FD.

In return, it provides

- Grants to C, R and FD.

Ensuring a sustainable use of the forest resources in particular and any resource in general necessitates a balance between the receipts and sacrifices across the stakeholders. Unsustainable use of forest resources will be a foregone conclusion in the event of any of them receiving more than what it sacrifices — a possibility only when another group of stakeholders sacrifices more than what it receives. Evidences from the Indian experiences suggest that C has been the perennial loser in the

exchange process involving the forestry resources. It is worth mentioning that many regions in the country have been experiencing agitations in demand for rights to autonomy over the last couple of decades. Incidentally, almost all these regions are rich in natural resources. While some such demands are yet to be met, some regions — Jharkhand, Chhattishgarh and Uttaranchal — were conferred statehood last year. Chakrabarti (2001) develops the relevant theoretical structure that helps understand the functional relationship between forest policies in the country and the demand for separate statehood. The main argument is that the development policies in general and the forestry policies in particular in India ensured that regions rich in natural resources were made to subsidize the development of the regions poor in natural resources through the existing mix of policy measures. In the process, the inhabitants of those resource rich regions remained resource-poor themselves. Obviously, the incentive-disincentive structure resulting out of the existing 'State property-rights regime' cannot ensure 'sustainable' use of the forestry resources. Thus the argument calling for developing a property-rights regime that, even though complex, will ensure a proper balance in the exchange process across the groups of stakeholders and hence a sustainable use of forest resources. In the following section we take up a detailed exposition on the problems of 'sustainable' management of forests in India.

SECTION5: PROPERTY RIGHTS REGIME THAT MAY GUARANTEE SUSTAINABILITY OF FOREST RESOURCES IN INDIA.

Forests are integral parts of economic and social fabric of India. The latest issue of the State of Forest Report, 1999 published by the Ministry of Environment and Forests in May, 2000 observes that the total land recorded under forests constitute around 23.28% of the total land mass of the country, even though in terms of actual forest cover, the relevant proportion stands only at 19.39%, leaving around 127960 square kilometers of recorded forest land devoid of any forest cover. It is also interesting to note simultaneously that out of the 449 districts of the country having some land covered under forests, 145 are tribal districts. These districts account for around 65% of the forest cover of the country, while only 34% of the country's geographical area are under their jurisdiction. Thereby, these districts have more than a third of their geographical area under forests, 36.6% to be specific.

Simultaneously, these forests are the sources of sustenance to 100 million forest dwellers, more than half of them being tribals as has been noted by the Mid Term Appraisal of the 9th Five year Plan, (October, 2000: P 331). The Report of the National Task Force on Sustainable Forest Management of Forest (July 2000) is more specific to argue that some 18 million tribals live in and around forests and most of them are engaged in shifting cultivation (P17).

Whom are the forests for? There are arguments that may be located at two extremes. One argument runs in favour of considering forests to belong to the nation and thus puts the onus of protecting the forests on the "State". The other argument calls for devolution of the responsibilities entirely on the communities living in and around them and dependent on these resources for their sustenance. We shall take up each of these arguments for scrutiny.

Let's first take up the 'Statist' argument. It puts the 'national interest' at the centre of all debates. It rightly identifies the importance of forests in the lives of people living miles away from forests. Deforestation in the Himalayas will undoubtedly affect those residing in Calcutta in the longer run, through siltation in the Ganga and subsequent possibilities of floods. There are dangers of 'global warming' that may even affect human beings living in other continents. Thereby arises the argument of protecting forests at any cost and the argument of putting forests under the 'State' ownership and formulating 'Acts' to prevent access to any one into the forests, barring the forest officials. It is generally believed that:

- forest people are responsible for deforestation,
- Protected Area Legislation is conserving forests,
- tree plantation is compensating for deforestation,
- Intellectual Property Rights will benefit the poor and
- 'State' control of forests benefits the poor.

However, all these arguments have been observed to be untenable. Rather it is now becoming clear through documentation at several levels that deforestation is a direct consequence of 'scientific forestry' that reduced trees to mere resources for profit earning. State policies of subsidized supply of forest resources to industrial and trading interests, increased timber extraction and poaching activities

by the *mafia raj* (see Box: 1) , denotifications of erstwhile Protected Areas for 'development' purposes as it happened in Melghat (project tiger reserve) in Maharashtra, Narayan Sarovar in Gujarat, Indravati / Sanjay Gandhi N.P.S. in Chhatisgarh / Madhya Pradesh, Great Himalayan National Park in Himachal Pradesh, poor state of regeneration through plantations allegedly marred by corrupt practices are all indicators of the attitude of the 'State' towards the forest resources under its direct control. One should not forget that around 85% of the forests in India are under direct ownership of the 'State' and most of the forests not owned by the 'State' are located in Uttaranchal and the North-Eastern states. Interestingly, the extent of degradation is less in forests owned and managed by the *Van Panchayats* in Uttaranchal compared to their counterparts under 'State' ownership. The actual forest cover in most of the North-Eastern states is considerably higher than the recorded forest cover. Interaction with the Forest officials revealed that this discrepancy may be due to the fact that many forests owned by the clans and the village communities there are yet to be recorded under any land use classification. Unfortunately, no systematic study have yet been undertaken to ascertain the extent of degradation in the community/clan owned forests compared to their counterparts owned by the 'State', even though the official documents of the Ministry of Environment and Forests have been continuously pointing towards the alarming rate of degradation of forests in the north-eastern states.

BOX: 1

- Buxa Tiger Reserve, demarcated a biodiversity hotspot in the extreme North- Eastern corner of West Bengal, lost about 10 sq. kms. of forest cover in 1998- 1999 alone, as a result of a scam where authorities issued false transit passes for illegally felled trees. Timber coming from the Tiger Reserve was shown as timber from private forests. In another important PA, Jaldapara Wildlife Sanctuary, adjoining Buxa Tiger Reserve, senior forest and police officers were found to be directly involved in illegal trade.
- In M.P, the forest minister and senior forest officers' involvement in large- scale illegal timber trade came to light in 1999; when it was found that prime Sal forests were being illegally felled with the excuse of pest control. Similar incidents have been reported from important PAs like (proposed) Rajaji National Park in U.P, Nagarhole National Park in Karnataka, Palamou or Betla Tiger Reserve in Bihar and many other forest areas of the country.
- Within a period of 13 years between 1986- 1999, poachers in various forest areas slaughtered 473 elephants. In the last 3 years, approximately 300 elephants were poached. A tigress was slaughtered and skinned inside a zoo in Hyderabad recently. According to an Ex-Director, Project Tiger, 100 were slaughtered between January and June 2000. Two elephants have been slaughtered for their tusks in Corbett National Park within a week.
- Recent studies by N.G.O.s like Wild Life Protection Society of India and Environment Protection Agency, U.K, indicate that regular and organised trade in wildlife exists in nearly all forest areas and PAs. Resent seizures of large consignments of tiger and leopard skins at Kanpur, Ghaziabad and West Bengal (mainly from Sunderbans Tiger Reserve) corroborate this argument.

Rights should always be complemented by responsibilities. In consideration of its rights on this vast extent of landmass under forests, the 'State' is also expected to shoulder the relevant responsibilities. The extent of responsibilities shouldered by the 'State' may be measured by the plan allocations made to the protection of forests and wildlife over the years. Table 1 below provides an insight into the plan allocation pattern along different sectors.

It is really painful to observe such a low allocation of resources for the protection of forests and wild life. It is even further painful to note the declining share of plan resources allocated to forestry and wild life. One should not forget, even at the cost of repetition, that land under forests account for around a fourth of the landmass of the country and around 100 million people (roughly, 10% of the population) are dependent on forests for their livelihood. It is well known that people residing in and around forests in general and those belonging to the tribal communities in particular do depend on activities related to

- Animal husbandry
- Fisheries and
- Plantations

other than being engaged in cultivation (mostly as landless labourers) to complement their earnings from collection and sell of forest products. One finds the share of allocation to all these sectors declining over the 9th plan period. On the other hand, the share of allocation is increasing rapidly for the transport and communications sectors. Such emphasis on these sectors should be considered in association with the fact that the government has virtually opened up these sectors to unrestrained investments from private investors — both domestic and foreign.

Such plan designs point exclusively to the responsibilities (!) borne by the 'Nation' as a whole to protect the forestry resources of the country. The Mid-term Appraisal of Ninth Five-Year Plan does not hesitate to mention that

"Forests are managed by states primarily with state funds supported by external donors. For the forestry sector, during the Eighth Plan (1992-97) the state plan outlay was Rs. 3500 Crores, whereas the funds received from the Ministry of E &F as centrally sponsored schemes were only about Rs. 500 Crores, or less than 20% of the total. This would be even less than 15% if one took into account the

transfer of funds from District Rural Development Agencies (DRDA) to district field agencies for forestry related works. For the Ninth Plan the state plan outlay is Rs. 6300 Crores, whereas the contribution of the Centrally sponsored schemes would not be more than Rs. 1500 Crores. Most externally aided projects in the forestry sector are negotiated with the states and external aid is reflected in the state budgets.

" Investment in forestry in India is likely to decline sharply in the next two years, however, because of a ban imposed by countries like Japan and Denmark on assistance to India. Rough estimates indicate that annual external funding in the forestry sector will decline from the present level of Rs. 844 Crores to just Rs. 300 Crores by 2002-03 unless special efforts are taken to start new projects. There is likely to be a decline in assistance from the World Bank too as no new projects have been signed after UP (1997) and Kerala (1998), nor are there any in the pipeline.

"External assistance is not without strings. DFID spends much too much on documentation. According to its own report…., DFID produced 160 consultancy reports for a small Himachal Pradesh project of Rs. 40 Crores in two districts. Many of these reports have never been read, let alone acted upon by Forest Department (FD) staff. It caused tremendous burden to the local staff. The gainers were the British Universities……." (P 332)

Table 1: Share under different development heads in total plan outlay (%)

Development Heads	**95-96**	**96-97**	**97-98**	**98-99**	**99-00**	**00-01**	**01-02**
Agriculture & allied activities of which	3.63	3.38	3.40	3.14	3.13	2.75	2.60
Animal husbandry	0.13	0.13	0.12	0.08	0.11	0.07	0.11
Fisheries	0.14	0.12	0.13	0.13	0.12	0.11	0.09
Forestry and wild life	0.29	0.26	0.26	0.28	0.32	0.26	0.26
Plantations	0.14	0.11	0.16	0.14	0.14	0.16	0.10
Rural Development	8.17	6.35	6.56	6.29	5.37	3.85	3.42
Irrigation and flood control	0.33	1.05	0.33	0.39	0.36	0.37	0.37
Energy	27.17	25.29	26.07	27.10	27.19	24.03	25.95
Industry and minerals	14.50	13.09	13.29	8.99	6.68	6.52	6.11
Transport	16.04	18.56	16.02	16.27	17.81	19.20	17.34
Communications	13.11	13.00	13.74	15.22	15.47	18.71	15.58
Science and Technology	2.06	2.37	2.42	2.7	2.97	2.94	2.77
Social services	13.98	15.20	16.97	18.55	19.66	20.23	20.65

On the other hand we observe efforts through legal and administrative measures to curtail the traditional rights of the forest users. The Supreme Court Judgement in 2000 prohibiting harvesting of forest produce from wildlife sanctuaries is a case in point**.** The proposed Bio-diversity Bill

(a) only discusses access and benefit sharing in terms of 'transfer of biological resources to agencies outside India,

(b) [refuses to recognize the] …rights and knowledge of local communities,

(c) [does not]…ensure that their consent is taken for the wider use of this knowledge, and further,

(d) [does not] ensure that they receive equitable benefits from such use (all provided for under Article 8 j of the Biodiversity Convention)',

(e) does not address ownership of resources, leaving benefit sharing issues unresolved,

(f) does not devolve any authority to local communities to create a local stake in conservation and sustainable use.

We move on to the next extreme — the battle cry of many a radical groups — that argues in favour of handing over the forests to the tribal communities who have been documented to have protected forests for centuries. This argument suffers from three basic contradictions:

1. the tribal communities are no longer homogeneous groups; class divisions are observed among them as well,
2. the communities living in and around forests and dependent on forest resources for their subsistence are not necessarily from the tribal groups alone. There are forests used by *dalits* and other disadvantageous sections of the society, although there is no denial of the fact that the proportion of tribal groups is considerably high among those dependent on forests for their livelihood and
3. even people residing far away from forests are also dependent on them, even though the degree of dependence may be less than that of those living nearby.

We should appreciate that forests have a multiplicity of stake- holders, very often pursuing conflicting interests. Some of them reside nearby forests, others living distances away. But they are all dependent on forests. Forests influence the outcome of agricultural practices, be the plots are located nearby or far away. Timber from forests is utilized all over the country. Several industries use raw materials

procured form the forests. How are then we to ensure their responsibilities to ensure forests? What will be their rights on forests in return? So far the rights to extract resources and the consequent responsibilities of protecting the resources thereof has been vested on the 'State'. Till the early eighties the 'State' earned more in revenue than what it spent for the protection and development of forests. Such surplus was transferred to the general revenue of the 'State', implying a subsidization of the development of non-forest regions at the cost of forests. The spurt in demand for 'environmental protection' since the late eighties and the subsequent near total ban on legal extraction of resources from the forests, even by the 'State', saw to it that the 'State' incurred more expenditure than the revenue generated. The gap was filled mostly out of foreign grants and aid — from both bilateral and multilateral sources, with the budgeted allocation of funds (representing the extent of responsibility shouldered by the 'State' towards forests on behalf of the 'Nation') being highly insignificant.

Given the possibilities of both policy and market failures, we require

- a complete overhauling of the forest management systems through establishment of 'social ownership' of forests. Community forest management is the only answer, but the transition from state control to community control must necessarily be a gradual process. Joint Forest Management must be seen as an intermediary stage, not an end in itself. Community institutions have been terribly weakened by the hegemony of the state over the last 200 years, and cannot within the oppressive present political, legal and social scenario withstand the power and influence of powerful, influential, wealthy people with vested interests. The institutional mechanisms for community forest management (CFM) must be a federated structure as enshrined in the spirit of the constitution. It must have the following characteristics and will differ from place to place according to the unique local realities:

- Space for negotiated settlements through dialogue. These must be mutually binding on all parties including the state, starting with the *Gram Sabha* level, then tentatively *Patti* level, *Kshetriya Panchayat* level, *Zilla Panchayat* level, state level, the Central govt. level, and finally at international level. Some possible forms are: an independent tribunal, commission or *panchayat* with legal authority to enforce the decisions taken. It should not be just an advisory body,

otherwise it will be ignored and sidelined When conflicts arise, these must be solved through dialogue and consensus at every level that is binding to all parties involved

- different interest groups at all these levels must be represented to bring credibility and transparency to the negotiation process. For example, this means that at the village level, all those who use the resources directly must have a say in decision- making irrespective of age. There must be separate representation for class, caste gender and minority groups that truly represent these disadvantaged sections of society.

- The basic mechanism of negotiated settlements must give primacy to forest people's needs. Out of each group, women must be given primacy. The rationale for this is: they are the most directly dependent on forests for survival and livelihoods. In this manner, agriculturists will come second in priority because they are not as completely dependent, and so on. The order of priorities to be given to the various stakeholders will be worked out and negotiated through broad- based consultations.

- The multi- layered institutional structures so created are to be given authority to challenge and prosecute the state, particularly the modern day *rajas*: District Magistrates and Superintendents of Police, when they misuse their position in any way including favouritism and corruption.

- Adequate allocation of funds, manpower and infrastructure to support and nurture the institution-building process needed to devolve power from the state eventually to the people dependent on forests. Chakrabarti & Datta (2001) argue that the utility of the forest dwellers can be improved through suitable changes in the fiscal policies even without hampering the interests of those residing further away from the forests.

It is now amply clear that sustainable use of forests depends heavily as to how fast the property rights on them are shifted from the 'State' to the 'society'. Then and only then we shall be able to ensure "premise control" *a la* Collin (1993) (See Datta & Chakrabarti, 1998 for details on the argument of Collin) and intra-generational equity as well. However, efforts are to be initiated to

identify the real stakeholders, understand the relationships among them, and evolve a platform to ensure dialogues among them in a democratic spirit and subsequently develop a conflict resolution mechanism to concretize the matrix of rights and responsibilities along the different groups of stakeholders. The members of the tribal communities will obviously have the first say — they being the primary users in most of the forests. Under the present situation, it is imperative that they will also not hesitate to share the rights and responsibilities with others.

SECTION 6: CONCLUSION

However, it should be understood that 'sustainable development' can never be achieved through sustainable use of a specific resource. Simultaneous and sustainable use of all resources — natural, human and produced — is a necessary condition for "Sustainable Development". Studies have shown that 'growth' in the present day world results not from positive but out of negative externalities (Bartolini & Bonnati, 1999). We probably have now realised that the question today pertains more to "How is SD to be achieved?". Such quest leads us to the search for appropriate "governance structure" for all resources — natural , man-made as well as human — that will ensure intra-generational equity. To concur with a document from UNDP (1994), inter-generational equity is not achievable in the absence of intra-generational equity. The existing "governance structures", be they at sub-national, national or international levels, are unfortunately not geared to ensure intra-generational equity. Civil wars, demands for autonomy, racial violences all over the world are all indicators of the lack of appropriate democratic governance structures at the sub-national and national levels, resulting in poverty, hunger, malnutrition and unemployment. The "Washington Consensus" or the WTO agreements shape the "governance structure" at the international level — which are by no means helping reduction in inequality across nations. The lack of consensus over the Kyoto Protocol also points towards this tendency.

To summarize we may argue that:

- Resources are of three types: natural, man-made and human.
- Each of these resources are used by multiple stakeholders often having conflicting interests on the use of the resource.

- The existing institutions determine the sacrifices to be made and reward to be obtained by the stakeholders.
- Sustainability in the use of a resource is possible if this sacrifice-reward matrix is balanced for all stakeholders.
- "Sustainable Development" requires simultaneous and sustainable use of all resources.
- "Sustainable Development" , for its evolution, is thus contingent upon an appropriate institutional framework and governance structure that enables simultaneous and sustainable use of all resources.

How to develop such a "governance structure"? In view of our failure to achieve "sustainable development" till date, it is obvious that neither a 'pure' market-determined nor a 'purely' State-determined model can lead us to the objective of simultaneous sustainable use of all the resources in the world. A "price"-determined model of distribution does not ensure the balance between the sacrifice and rewards across the stakeholders. Ditto for a "State" determined model. How do we value the sacrifices and rewards? It is to be understood that both these models consider a human being as a faceless entity. True valuations of and the subsequent act of balancing between the rewards and sacrifices are possible when each of the stakeholders can participate in the process of evaluation. We must agree that in spite of accepting "democracy" as the best from of governance, true democracy has not taken its roots in most of the societies in the world today. The situation is the most glaring in respect of the international institutions of governance. Sub-national or national institutions are no better in most of the countries, barring a handful few. The general concern for crafting institutions to ensure "people's participation" at grass root level supports my argument. However, such concern should now be extended to "democratize" the institutions at sub-national, national and more so at the international levels.

The need of the hour is to develop federated democratic institutions at all levels involving all the stakeholders who very often have conflicting interests. Such institutions will decide the rights and responsibilities of the stakeholders. One must realize that the lack of consensus even in arriving at an acceptable definition of "sustainability" results from this absence of "democratic" governance structure. Today's philosophy of development rewards "capability" and "efficiency" in a competitive

framework (!). This principle determines the relationship of one human being with another. We must not forget that the relationship between man and nature cannot be defined in a competitive framework. We have now realized that it's a relationship of dependence. Obviously, once we realize and believe in such a relationship of dependence between man and nature, we have no other choice than to accept that man and man relationship cannot be made sustainable in a competitive framework. This relationship also has to develop in a spirit of complementarity. Thus the need for realizing the expediency of a relationship of mutual dependence between the cities and the villages to ensure sustainable development for the future.

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