LAND USE MANAGEMENT IN ODISHA

Bikash Rath

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Regional Centre for Development Cooperation
HIG-26, K-6 Housing Scheme, Phase-II, Kalinga Vihar, Bhubaneswar-751019(India)
E-mail: rcdcbbsr@gmail.com, rcdcbbsr@bsnl.in URL: www.rcdcindia.org
Telefax: +91-674-**2475410, 2475652**

A note from the author

RCDC pursued a bio-resource governance programme during the period of 2009-11 in four tribal districts of Odisha with an objective of developing model GPs on bioresource governance. Land use being a major factor in natural resource governance, changes in land utilization, particularly forest land diversion, has been a matter of concern for these areas.

In this backdrop, RCDC intended for an in-depth analysis of the dynamics of the changes in land utilization pattern in the state with focus on forest land diversion. The work was assigned to a consultancy firm SERVICE which submitted its report in 2011. The study was carried out under the project supported by Broederlijk Delen, one of RCDC's trusted partners in development.

The undersigned however observed that one needs to go much beyond the findings of the said report so as to present a critical and comprehensive analysis of the whole situation in the state that can sensitize various stakeholders, and if possible can also influence the policy. As such he decided to take up the work himself, but various other priorities continued to affect the progress of this self-assignment. However, this delay in time was used in a constructive manner by updating the analysis with the latest development; and hence it proved to be a blessing in disguise. In fact, I am sure, land use management is not a much-discussed/debated topic despite its critical & strategic importance; and I have tried to follow my own understanding of the concept while presently my analysis leading to a conclusion. I have thus defined terms such as landscape in my own way. I have also introduced a new concept, i.e. the Land Ownership Index(LOI) which needs further research to explore its implications and significance. However, as I have been unable to devote sufficient time for editing this report, errors are likely despite my efforts; and hence readers are requested to provide their valuable feedback so as to improve this work further.

The report prepared by the consultant is annexed to this research work as a supplement. Hope various stakeholders would benefit from this analysis and the policy-makers would consider necessary changes in an effective manner for a sustainable development.

Some valuable statistics could be obtained, thanks to the Board of Revenue, Cuttack. In fact they are supposed to be the major decision making authority to guide a proper land use policy in the state, and such a copy of this report shall be shared with the Board for necessary follow up.

Last but not the least, this report is designed to contradict its own title, i.e. it actually explains a lack of land use management. This strategy has been adopted just to emphasise that something that is critically needed has but been overlooked, ignored, and neglected leading to various ecological, socio-economic, and other kinds of mess and disasters. Nature has used the recent devastation in Uttarakhand just to help us think of this issue seriously and with all sincerity. Unfortunately we are yet to wake up to this call of the hour, and hence the mercy of God seems to be the only hope as our so-called disaster preparedness ought not make us overconfident, if we can truly learn lessons from our misdeeds.

Bikash Rath

Sr. Programme Manager

E-mail: bikash.rath@rcdcindia.org; bikash1968@gmail.com

List of abbreviations

AAA	Abada Ajogya Anabadi
AJA	Abada Jogya Anabadi
CAMPA	Compensatory Afforestation Fund Management & Planning Authority
CFM	Community Forest Management
CFR	Community forest resource
CPR	Common property resource
CRZ	Coastal Regulation Zone
DSO	Director of Census Operations
EIA	Environmental Impact Assessment
FRA	Forest Rights Act
FSI	Forest Survey of India
GP	Gram Panchayat
ha	Hectare
ITDA	Integrated Tribal Development Authority
JFM	Joint Forest Management
MGNREGS	Mahatma Gandhi National Rural Employment Guarantee Scheme
MoEF	Ministry of Environment & Forest
MSSRF	MS Swaminathan Research Foundation
NSSO	National Sample Survey Organization
NREGS	National Rural Employment Guarantee Scheme
OMC	Odisha Mining Corporation
PCCF	Principal Chief Conservator of Forest
PESA	The Provision of Panchayats(Extension to Scheduled Areas)
PVTG	Particularly Vulnerable Tribal Group
RCDC	Regional Centre for Development Cooperation
RDC	Revenue District Commissioner
RF	Reserve forest
RTI	Right to Information
SAIL	Steel Authority of India Limited
SC	Scheduled Caste
SEZ	Special Economy Zone
SGVSY	Samanvit Gram Vanikaran Samridhi Yojana
ST	Scheduled Tribe
WIO	Water Initiatives Odisha

TABLE OF CONTENTS

LAND USE MANAGEMENT IN ODISHA

1. Land cover, land use, and landscape:

Land cover is normally a natural arrangement of water, forests, hills, or grasslands, etc. on land whereas land use refers to the actual use of such lands by the humans either keeping the original land cover intact or modifying it or even totally replacing it with something else. Forested lands have thus been converted into agricultural lands, hills that served as barriers to passage have been cut into tunnels or open highways, and rivers have been obstructed to create reservoirs. On the other hand, in but few cases the original land cover has been maintained as such, like the deserts. Maintaining the original land cover may involve a land use(such as grasslands for pasture) or may not(almost, such as wildlife conservation areas).

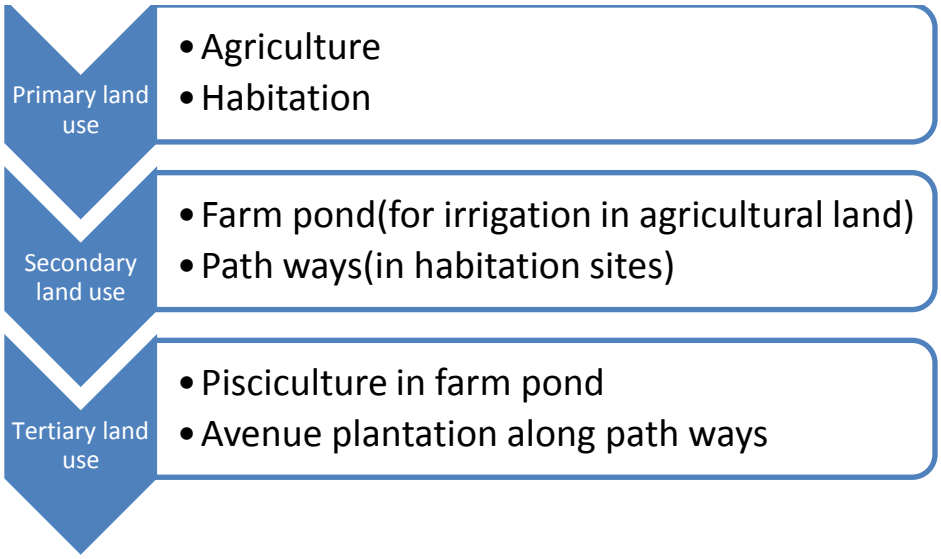
The Tikhali dam project on river Sundar in the Nuapada district. The original river flow has been modified here

Landscape is a mosaic of various types of land cover that may or may not include land use, as the case may be. The importance of landscape study lies in the fact that it provides a visual assessment of the extent to which land use changes have actually altered the land cover. This in turn provides clue to the disturbance caused to the ecosystem equilibrium of the area.

A landscape in the hilly region of Koraput district. It shows denuded hills, and stream bed converted into agricultural lands

2. Land use scale:

The scale of land use may be defined either in terms of space or time or outcome. Whereas the first two types do not need elaboration, the outcome scale can be presented through the following schematic diagram:



(Diagram 1: Outcome scale of land use)

This outcome scale is more important than the other two as it provides a clue to the internal complexity of the land use, thereby also suggesting an assessment of the intensity of its impact.

An obscure but interesting example of this complexity is the issue of short supply of local raw materials for idol making during major festive occasions such as the Durga puja. Artisans of Bhubaneswar say there whereas earlier they could arrange the raw material(clay) for this purpose from local areas such as Gangua, Dhauli, and Jharpada at about Rs.500/truckload, now thanks to the conversion of such lands to housing sites they are no more able to ensure this local supply and hence have to get their supply from distant areas which has increased the cost to Rs.6000/truckload[1].

3. Traditional land use versus modern land use:

Traditional land use practices had limited modifications in land cover, and even then also the modifications were still more or less eco-friendly. Agriculture was purely organic in nature, and agricultural expansions did not affect soil quality much that way. Private orchards of coconut or Palmyra were maintained in the coastal areas whereas in the hinterland mahua trees were a part of village sites and agricultural lands. Mango groves were maintained usually for community use.

[1] 'Miluni mati, chintare shilpi', the Dharitri, 23 August 2013

***Phoenix* spp. used to mark the boundaries of agricultural lands(left) whereas mango groves(right) were usually close to habitations. Mango groves therefore helped identify abandoned habitations. Photos from Nabarangpur district**

Modern land uses are intensive even to the tertiary level or further down, and are causing some apparently irreparable damages to the ecosystem. These include mining and industrial projects(primary) followed by creation of dumping grounds or effluent channels(secondary) that may or may not be associated with tertiary activities such as rehabilitation plantations on dumping sides or effluent treatment plants. Heavy exploitation of ground water, and complex chemical farming are threats not only to agriculture but also to local geohydrological balance as well as the biodiversity(for instance, the marked absence of common sparrow in many such areas).

4. Land use categories:

Rath(2002) has shown that the categorization of land use has changed in the state of Odisha over the last 100 years or so, as under:

Year 1901:

- Area
- Forest
- Not available for cultivation
- Culturable waste other than fallow
- Current fallow
- Net area cropped

Period 1930s:

- Area
- Forest
- Area not available for cultivation

- Culturable waste other than fallow
- Fallow
- Net area sown

Period 1960s to 1981:

- Area according to village papers
- Forest
- Not available for cultivation
- Permanent pastures & other grazing grounds
- Culturable waste other than fallow
- Misc. tree crops
- Other fallow
- Current fallow
- Net area sown
- Total area cropped

Period 1990s:

Geographical Area	Forest Area	Misc. tree	Permanent Pastures	Culturable Waste land	Land put to non-agrl. use	Barren & unculturable land	Current fallow land	Other fallow land	Net area sown	Total agri land

This shows that before 1960s, pastures and grooves/orchards had no exclusive category for themselves, and were most probably included under the category 'culturable waste other than fallow' (particularly for pastures). By 1990s a more systematic categorization had been introduced which continues till date, but it still fails to specify certain important categories such as wetlands. In fact, the present situation requires few additional categories such as area under mining, and area under industries, etc..

The land use categories have been primarily based on agricultural uses. Hence, we find more than three different categories(current fallow, other fallow, net area sown, etc.) devoted to this single sector. Total agricultural land is additional particularly in case of agricultural land use statistics.

Certain land uses lie hidden or ignored. For instance, shifting cultivation can be a hidden land use under the 'forest' category or 'waste land' category. Similarly, both cultivable and uncultivable waste lands are likely to include wetlands like swamps depending upon how the land was perceived during the survey & settlement operations.

5. Geomorphology and land use in Odisha:

Although man has effectively demonstrated that land use need not necessarily follow the geomorphology, the evolutionary history of mankind originally seemed to follow a trend in land use that was essentially determined by the geomorphology of the area or region. Great civilizations flourished around great rivers, and shifting cultivation was practised on hilly terrains. Choice of crops depended on the topography(like, upland paddy), and pastures were normally expected in the plain areas.

Odisha has been a land of rivers, hills, and forests with an attractive and long coastline. Over the years however a major land cover, i.e. forest has been reduced substantially. Hills have been denuded of forest growth, and dams have affected, alongwith other issues in catchment areas, some of the major rivers such as Mahanadi. Mining & industries have created pseudo-hills of overburdens and dumped materials, whereas agricultural lands have been used either for plantations of non-food crops or for constructing multiplexes. Expansion of high ways has destroyed the valuable avenue plantations and has also caused water logging in many areas[2].

6. Land use management in India:

Land use management may be defined as the practice that ensures maintenance of the adequate ratio as well as quality of important ecological assets while coping with the needs of changing times, for a healthy and sustainable development. Such a practice is to be based on a sound policy framework supported by necessary technical and institutional arrangements for implementation of the same. The institutional arrangements would include both research & monitoring institutions as well as governance institutions. The governance institutions in turn should have a grassroot base not only to conform to the decentralization policy but also to ensure the necessary feasibility. Last but not the least, the land use policy and management system should have necessary space for building resilience against external pressures, be it political(like China's increasing physical control over the Brahmaputra river) or geographical(such as climate change).

[2] Waterlogging has become a serious problem for the people of Sukal and Madhuban panchayats in the Satyabadi block of Puri district particularly after the road project to Puri, known as New Jagannath Sadak, was completed. The road project, instead of having adequate provision of bridges that could help drain out sufficient water, rather used pipes for the purpose which worsened the situation in the area that was already struggling with the issue after natural drainage channels(riverine) connecting to Chilika lake became buried due to a number of reasons (vide 'Jalathula Samasya Anichhi Jeevana Jantrana: Duhkha Lagi Rahichhi 31 Varsha', the Dharitri, 21-10-2013). In fact, faulty and illegal construction activities have substantially increased the vulnerability to waterlogging in many areas of the state including the capital city Bhubaneswar.

Fortunately, our country has most of such elements placed in the policy framework or implementation mechanism in one way or the other, but unfortunately they lie scattered, i.e. without mutual coherence. This is because India doesn't have a comprehensive land use policy. We say on one hand that forests are to be conserved, but with equal or greater confidence follow a system that diverts forest land for non-forest use in the name of development, even if that has resulted in a critical loss of the country's forests and biodiversity. We express our commitment for the development of agriculture, but in actual practice have allowed a large area of productive land for non-agricultural use, that too in the name of development.

Odisha, as a state of this country, is no exception. This state is yet to satisfactory resolve the issues of displacement that have been pinching since 1950s. The government discourages podu cultivation with an ecological concern, but doesn't really care to allow mining on the hills although that is more detrimental to the ecological balance having almost a permanent effect. Both bald hill plantation and hill denudation for stone quarries are pursued, and the constructive practices usually lag behind the destructive ones.

Hence, in a nutshell, one can say that there is a mockery of land use management in the country. While it is too late but still urgent to sincerely pursue a proper policy in the matter, we shall discuss in the next sections how critical is the situation in Odisha requiring such a policy.

7. Land use management in Odisha:

Like the central government the state government of Odisha also doesn't have an exclusive and comprehensive land use policy and management system. The practice of the government has been, both at central and state levels, rather to have a piecemeal approach under which different types of land cover are treated individually/separately often without a proper coordination or linkage between each other. For instance, the policy of land reforms is dealt with separately from the policy of land utilization; and forest management is hardly linked with agricultural development in a constructive manner. Such kind of approach has resulted in an inherent or even open chaos leading to complex socio-economic and ecological issues.

Certain principles however exist in the land settlement procedures that can be said to be suggesting a basic land use management policy framework. Such principles approved in September 1961[3] by the Government of Odisha can be summarised as under:

- In each village, the communal[4] land is to be reserved on the following basis:
  - Where land is available in plenty, 10% for pasturage, 5% for other communal lands including homestead, and 20% for village forests.

[3] Vide letter # 48597-R, dtd. 26-10-1961

[4] "Communal with respect to a land means a land which is used by any village community or any section thereof for a communal purpose like burying or cremating dead bodies, celebrating public festivals, holding melas or common worship and the like without any interference from anybody or paying any fees for the purpose."(Odisha Government Land Settlement Rules, 1983, Section 2-1b)

  - If however, despite plenty availability of land the village is to have an irrigation source that would irrigate substantial portions of the village land, then the proportion of reservation should be 5% pasture, 10% village forest, and 5% for other communal lands including homestead.
  - Where due to population pressure availability of uncultivable land is limited, atleast 5% for pasture and 10% for other communal purposes including homestead and forests should be reserved.
  - In estimating the percentage, lands already reserved for this purpose should be included in the percentage and for extra amounts needed to complete the desired percentage the officer shall decide which plot out of the common land and which land shall be reserved for this purpose and subject to approval of the Collector this reservation shall be final.
  - In villages where the minimum extent community lands and village forests, as indicated above, is available, no further lease shall be given.
- No encroachment or settlement in the reserved areas shall be allowed, and all encroachments in such areas shall be evicted.

These norms for reservation of government land in the rural areas went through some modifications afterwards. For instance, in January 1966 an order categorised villages as 'surveyed' and 'unsurveyed', and made the following provisions:

- In every surveyed village 5% of the 'effective area'[5] of the village shall be reserved for pasturage(gochar), and 10% for purposes of village forest and for communal and development purposes including homestead for future.
- In unsurveyed villages reservation for pasturage shall be made @one acre for every 14 inhabitants of the village. If the village is uninhabited then reservation for pasturage shall be made @one acre for every three persons having land in that village. Double the area of pasturage is to be reserved shall be reserved for purposes of village forest and for communal and development purposes including homestead for future.
- Care should be taken to ensure that the land reserved is suitable for the purpose for which reservation is made. This lands not recorded as Gochar but actually suitable and convenient for pasturage should be preferred for pasturage.

Urban land settlement was regulated originally under the Orissa State Urban Land Settlement Rules, 1959. In 1983, the Odisha Government Land Settlement Rules came into effect. These Rules defined the principles of settlement of government lands both in rural and urban areas. For instance, no government land shall be settled in urban areas for agricultural purposes(Section 6-4. These Rules also took into consideration relevant legal developments during the last two decades, such as the Forest Conservation Act, 1980.

Normally, planning for urban areas is managed by a Town Planning Authority. For larger areas more competent authorities with greater power & resources are established, such as the Bhubaneswar Development Authority(BDA). The Puri-Korank Development Authority and the

[5] Defined as 'the private agricultural land plus arable government lands available for settlement after reservation' with few exceptions, vide Enclosure to letter No.4898-R, dated 28-1-1966.

Talcher-Angul-Meramandali Development Authority represent areas that presently consist of two or more separate towns but are fast developing into a larger urban conglomerate. However, there have been allegations of inadequate/inefficient functioning of these authorities.

The land settlement procedure normally records lands other than private lands, under the following four categories[6]:

Legal category	Coverages
Abada Ajogya Anabadi (Uncultivable waste)	Rivers, nalas, hills, hillocks, stoneflats, sand-hills, lake, sea, or other natural collections of water, etc. which are not ordinarily fit for occupation of any non-agricultural or agricultural purposes and over which there is no communal right.
Rakhsita (Reserved)	Lands which are under permanent ownership of different government departments and local bodies, Basti-jogya(reserved for homestead purpose in future), Sarbasadharan jogya reserved for communal use in future), Unnata jojana jogya(reserved for developmental purpose in future), Gramya jungle, Gochar, etc
Sarbasadharan (Communal)	Land over which some communal right exists like cremation ground or burial ground, Mela ground, Melan Padia, Bhagabat Ghar, Public Path, Cattle Path, etc.
Abada Jogya Anabadi (Culturable waste)	All lands other than above(excluding private lands)

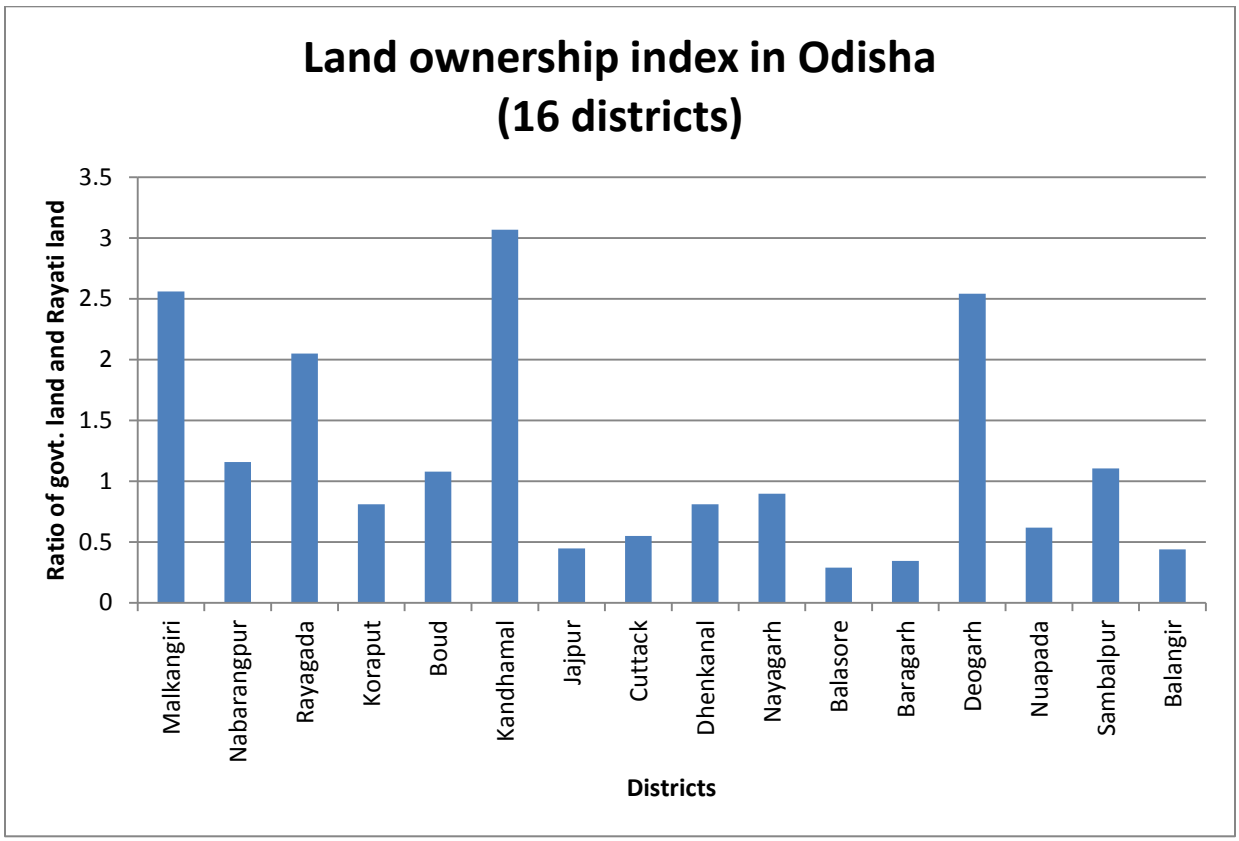
However, the question is: to what extent the principles of land settlement are actually effective for an efficient land use management? For instance, is the principle of reserving 5% of village land for pasture irrespective of the position/dependency of livestock in the village a realistic one? Similarly, if no government land can be settled in urban areas for agricultural purposes, can the authorities ensure adequate supply of vegetables for daily consumption in the town from the private lands under a growing population pressure?

In fact, these principles suggest a preliminary kind of framework for land use management chiefly based on socio-economic and economic objectives/requirements that might have been more or less not so problematic under the conditions that prevailed four or five decades ago, but now we are in a situation when even a small error in land use practice may affect generations. Converting a pond to a housing site might not have been a problem when an area had plenty of water bodies around, but now with most of these water bodies gone and only few left any more loss of water body may create serious problems of groundwater scarcity as well as water logging.

The land area under government ownership can suggest a lot of vulnerabilities through what this researcher(Bikash Rath) proposes as the '**land ownership index**'(LOI). Land ownership index is nothing but the value of the ratio of govt. land and Rayati land. The higher this index value the

[6] Vide Clause 9 of Enclosure to letter No.4898-R, dated 28-1-1966.

greater is the vulnerability for encroachment cases, and poor control of local communities over land use changes authorised by the government(such as mining leases)[7].



Based on annexure-III

The said index, as evident from the chart above, has the following range of variation in four different zones of Odisha, as under:

- Coastal Odisha: 0.28-0.44
- Central Odisha: 1.07-3.06
- Western Odisha: 0.34-1.10
- Southern tribal belt: 0.8-2.56

This suggests that in the coastal belt the index maintains a low value whereas in central and southern parts it maintains a value higher than this range, and in western part the value ranges from low to medium.

The index apparently reflects the survey principles(which are debatable, particularly in context of recognizing the tenancy rights in hilly areas), but practically indicates the topography. Hilly

[7] The concept is particularly valid under the Indian/Odisha conditions. However, in countries where norms are allowing private ownership over riverine stretches, and hill forests, etc.. the LOI may need a different interpretation and/or formulation.

terrains are likely to have a higher index than plain areas because of obvious reasons. We have taken for example two different tahasils in three districts to indicate how the LOI changes with the hilly and forested topography(tahasils marked bold), in the following table:

District	***Tahasil***	***Total govt. land***	***Total Rayati land***	***LOI***
Balasore	Balasore	10028.41	113421.52	0.088417
	Nilagiri	**30526.69**	**52725.32**	**0.578976**
Jajpur	Bari	4330.92	25893.92	0.167256
	Sukinda[8]	**56499.39**	**531.52**	**106.2978**
Cuttack	Salipur	11150.774	29839.683	0.373689
	Narasinghpur	**12949.72**	**9372.94**	**1.381607**

(based on district-wise statistics obtained from the Board of Revenue)

In the recent times the Government of Odisha however has taken some decisions that are, although not suggesting a land use policy as such, a step forward in improving the regime to check frauds in property dealing and in isolated cases, for better land use. Some of these decisions are noted below:

- ***Cabinet decision of 31st July 2013[9]:***
  - The transferor has to produce the RoR (patta) before the registering authority, at the time of registering a sale deed, to satisfy him/her that the former has right, title and interest over the property.
  - Through an amendment in Section 22-A of the Registration Act, 1908 prior sanction by the competent authority would now be necessary before any transaction related to immovable properties of five categories, viz. state government or local authorities; religious institutions covered under the Odisha Hindu Religious Endowment Act, 1951; Bhoodan Yagna and vested in the Odisha Bhoodan Yagna Samiti established under the Odisha Bhoodan and Gramdan Act, 1970; Wakfs under the superintendence of Odisha Wakf Board and those recorded in the name of Lord Jagannath, Puri.
  - An amendment in the Odisha Resettlement and Rehabilitation (R&R) Policy, 2006 would now include major grandsons irrespective of their marital status; major unmarried daughters, granddaughters and major unmarried sisters as separate families, consequent upon which they will be entitled to R & R benefits under the policy uniformly.

- The RDC(Central Division) recently directed the Tehsildars of 10 districts under his jurisdiction to take urgent measures so as to prevent the rampant illegal quarrying of 'minor minerals'(?), that too from lands recorded as 'forest'[10]. This was following a

[8] A mining area

[9] Vide 'Record of rights must for sale of land', Times of India, 1st August 2013, http://articles.timesofindia.indiatimes.com/2013-08-01/bhubaneswar/40960228_1_e-auction-state-cabinet-excise-policy

[10] 'RDC steps into curb illegal quarrying', The New Indian Express, 14 September 2013

series of allegations that a nexus between local revenue officials and the mafias was responsible for such rampant exploitation leading to environmental degradation, particularly in certain areas of the Jajpur district.

- The same RDC also directed the authorities to stop selling of 'jalashaya' land(water bodies like ponds and tanks, etc.) in the Cuttack city as the conversion(filling) of such land for housing purposes has led to increased water-logging in the city[11]. He also issued instructions to undo such illegal conversions already made[12].

- Brick kilns banned on river beds, as per a decision of the Odisha government in June 2013, as an immediate learning from the Uttarakhand disaster.

In the meantime at national level, while the central government has not done anything for ensuring a land use plan and policy mechanism for the country and has instead focused on the the Land Acquisition, Rehabilitation and Resettlement Bill, 2013(which, of course, has its own importance) the National Green Tribunal has issued two historic orders, i.e. ban on sand mining on river beds[13] and on earth mining for brick-making and roads[14], without proper environmental clearance.

7.1 Wetlands:

Odisha is naturally blessed with a vast wetland area that is both ecologically and socio-economically important. Remote Sensing data analysis has suggested that the total area of wetlands in the state is 34820525 ha of which Puri district has the highest area of wetland, i.e. 117523.75 hect, (34% of total wetlands of the state). The wetlands consist of two categories i.e. inland wetlands and coastal wetlands. There are 100 numbers of inland wetlands and 104 numbers of coastal wetlands in our state, which are natural. They comprise of 14001.75 hector and 183144.75 hector respectively. Besides there are 134 numbers of inland wetlands and 7 numbers of coastal wetlands, which are man-made spreading over an area of 148771.75 hector and 2287 hector respectively[15].

Many rivers, particularly small rivers/rivulets have gradually dried up and reduced in their size because of natural reasons or anthropogenic interventions. Huluhulia, that used to flow near Puri, is now reduced to a swampy channel. River Prachi has also lost its original size and flow. Dams

[11] 'Ban on water body sale', the Telegraph, 10 August 2013. http://www.telegraphindia.com/1130810/jsp/odisha/story_17213989.jsp#.UkaudoZgeAo

[12] 'Jalashaya punaruddhara adesha karjyakari kara', the Dharitri, 5 October 2013

[13] 'No sand mining without Ministry's approval, rules Green Tribunal', The Hindu, 5 August 2013, http://www.thehindu.com/sci-tech/energy-and-environment/no-sand-mining-without-ministrys-approval-rules-green-tribunal/article4991904.ece

[14] 'Nationwide ban on earth mining for bricks and roads: National Green Tribunal', The Economic Times, 30 September 2013, http://articles.economictimes.indiatimes.com/2013-09-28/news/42481586_1_environment-clearance-moef-ngt

[15] Quoted in Pati, Bikash Kumar. The Cry of Wetlands in Orissa. Odisha Diary, 16-8-2010. http://www.orissadiary.com/ShowOriyaColumn.asp?id=20594

and other anthropogenic interventions have reduced many of the riverine wetlands[16] by substantially reducing the flow of water though at the same time the dams have created their own wetlands attracting migratory birds in some cases(e.g., the Hirakud reservoir).

The substantial reduction in the state's wetland area during the last 60-70 years can be authenticated with the following example:

Name of the wetland	**Nature of wetland**	**Area in hectare (pre-independence times)[17]**	**Area in hectare (recent)[18]**	**%age of loss in area**
Chilika	Brackish water lake(coastal)	435232.56	89023[19]	79.54588
Anshupa	Fresh water lake(inland)	647.66	230	64.48754

While natural factors such as climate change and low rainfall are partly accountable for the reduction in the wetland area, the major factor however seems to be anthropogenic, thanks to a faulty and ineffective policy. Urbanization and extension of habitation has converted small and medium local wetlands into dry lands for construction purpose. For instance, the Advocate Committee reported to the Odisha High Court in 2012 that as many as 66 ponds in the Cuttack city have either been converted into some other land use or encroached[20]. As per the revenue records the city of Cuttack had as many as 1466 water bodies, but 1044 of them have been converted into residential plots[21]. In Bhubaneswar city itself a substantial conversion of the natural wetland area has been made. As a result, issues like water logging during the rainy season and reduction in the ground water level have been emerging obviously.

The conversions are often legalized in an illegal way, thanks to the corrupt practices of some revenue officials who help to change the *kisam*(category/type) from waterbody/pond to such land

[16] Dams reduce the flow of water substantially that may affect the riverine wetlands.

[17] Vide Purnachandra Odia Bhashakosha(lexicon-cum-encyclopedia), originally published during 1930s and now e-published by Srujanika, Bhubaneswar in 2006. The Bhashakosha provides the following estimates about the area of these two lakes: Chilika- 84 miles NS and 20 miles EW, Anshupa- length 2.5 miles and width 1 mile. Of course these figures are approximate, but not vague and hence comparable.

[18] Based on National Wetland Atlas: Orissa, published by Space Applications Centre, ISRO, Ahmedabad in 2010. This assessment is different from the older assessments in the sense that whereas the older surveys measured the wetland area in a comprehensive manner, the Wetland Atlas tried to strictly focus on the exact wetland part and not its associated areas. Despite this difference however the older data is still comparable with the latest data as the inference is suggestive even if not very accurate as per the present standards.

[19] The wetland area fluctuates, in terms of its water spread, between the pre-monsoon and post-monsoon periods.

[20] The Dharitri, 7-7-12. It may be mentioned here that the High Court had issued a stay order on illegal conversion of water bodies.

[21] The Samaj, 1-6-2013.

type that can be used for house building, etc.. The Wetlands (Conservation and Management) Rules, 2010 came too late, but even the effective implementation of the same has been found lacking.

Invasive weeds and eutrophication are becoming a major problem for many wetlands such as this one near Lahunipada in the Sundargarh district.

The natural dynamics of water bodies, when adversely affected due to land use changes, may lead to both external and internal impacts. An interesting example is said to be declining population of the popular fish Hilsa(Illishi) in the rivers of Jajpur district which is allegedly caused primarily due to water pollution and obstruction of the smooth journey of this fish by the barrages on the rivers[22].

7.2 Forest:

Odisha used to be a forested province during the pre-independence period. Even the coastal tracts were thickly forested, some by tidal and swampy forests(mangroves) and some by

[22] Vide 'Hilsa fish now rare sight in jajpur market', the Pioneer, 30 August 2013. The Hilsa is said to have peculiar breeding habits for which a smooth journey between the coastal saline water and inland fresh water is essential.

terrestrial forests. Most of the forest areas were under various feudal rulers. Their policy was to encourage reclamation of forest land for agricultural expansion around village sites and at the same time preservation for the reserved forest areas for commercial purpose as well as hunting. Although in most cases a proper scientific management of these feudal forest areas was lacking, still the preservation was more or less effective under strict regime.

After independence, when the princely states merged with Odisha and the Estates were abolished, all these forests came under the direct management of the state government. The Reserved Forests of princely states were brought directly under the control of the Forest Department whereas other forests remained under the ownership of the Revenue Department. There was a differential attitude among these two departments towards forest conservation and management. While the Forest Department took forest conservation and management as its identity and hence tried more or less to strictly secure the same, the Revenue Department saw its interest fulfilled in allowing non-forest use of the forest lands, either for agriculture or otherwise. While the Forest Department also used to give leases in the forests for timber cutting and harvest of non-timber forest products, the damage was more intense in case of Revenue Department leases as the latter had no norms, unlike the former, to protect the resource base. As such, vast areas of mangrove forests, that belonged to Estates such as Kanika and Kujang, have been lost along the Odisha coast.

There are two major forest tenures under the Odisha Forest Act, 1972. These are: Reserve Forest and Protected Forest(Demarcated Protected Forest or DPF that are often proposed for reservation/PRF, and Un-demarcated Protected Forest or UDPF). A third tenure, Village Forest, can be any land declared as such by the state government; but this is not a mainstream tenure. Other special tenures are the Protected Areas. The Forest Department has full control over the Reserve Forest and National Parks whereas in the Protected Forests and sanctuaries a dual control(Forest- and Revenue Departments) is likely till the forest settlement process is over. The Revenue Department has some lands of forest characteristic (called jungle kisam), and has a provision for gramya jungle (village forest) within the village boundaries. This gramya jungle may be different from the village forest to be declared under the Odisha Forest Act in the sense that the latter may be outside the village boundary also. Unclassed forest is not exactly a legal tenure in itself, and rather refers to lands under the ownership of the Forest Department which are used for non-forest uses.

The Forest Conservation Act, 1980 is applicable for all kinds of forest land, whatever the ownership may be. Unfortunately the actual use of this Act has been less for forest conservation and more for legalization of deforestation activities.

As per the State of Forest Report(Odisha): 2011 the recorded forest area of the state is 58136 sq. km. (37.34% of the total area of the state) of which Reserve Forests share 45.29%, Protected Forests 26.70%, and unclassed forest 28.01%. There is an overlapping of the 9110.78 sq. km. Protected Areas(National Parks and sanctuaries) which also include some revenue lands yet to be fully settled for their rights.

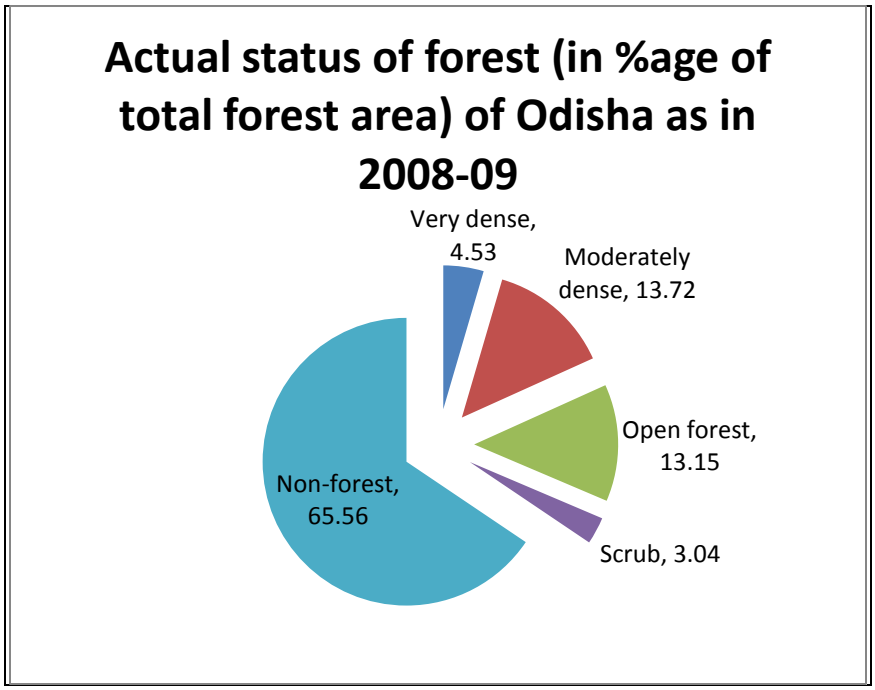
The category-wise recorded forest land is as under(in sq.km.):

RF	DPF/PRF	UDPF	Other forest/ revenue forest	Unclassed forest	Total	Private forest[23]	Deemed forest (DLCF)[24]
26329.12	11685.68	3838.78	16261.34	20.55	58316	12.29	2838.87

(Source: PCCF-Odisha 2013, Highlights of Odisha Forestry Sector 2012-13)

However, the actual forest cover is substantially less than that claimed as per records. As the satellite data of 2008-09 suggests, 48903 sq. km. of the state (i.e. 31.41% of the total area) is interpreted as 'forest' of which only 18.25% is good forest(very dense + moderately dense). What is remarkable is that maximum area(65.56%) of this interpreted 'forest' is actually non-forest. This exposes the fallacy of forest conservation in the state.

In fact, the remote sensing analysis also reveals that over the time the area under good forest has been decreasing while the open forest area is increasing.



(Based on State of Forest Report: 2011, Forest Survey of India)

[23] Singh, K.D. et al (undated) in their report 'Trends in forest ownership, forest resource tenure and institutional arrangements: are they contributing to better forest management and poverty reduction? A case study from Orissa, India' (http://www.fao.org/forestry/10567-0a649c4fa70889be2cec4bf65d51071c.pdf) have indicated this to be plantations raised by paper mills/industries in their own lands.

[24] "In Orissa, substantial areas included in the mining leases as non forest land have subsequently been identified as DLC forest (deemed forest / forest like areas) by the Expert Committee constituted by the State Government pursuant to the SC order dated 12.12.1996."('Odisha mining scam: government at fault for allowing illegal mining' expressindia.com, 28-4-2010, http://expressindia.indianexpress.com/latest-news/orissa-mining-scam-govt-at-fault-for-allowing-illegal-mining/612411/)

The FSI report indicates that type-wise the state is dominated by tropical deciduous forests with the dry deciduous forests sharing 57.87% and moist deciduous forests 39.88% of the forest area. Mangroves and semi-evergreen forests each share less than 1%.

In 1972-75, the mangrove cover was 234 sq. km.[25] which was reduced to 199 sq. km. during 1987, but is now claimed to have increased upto 221 sq. km. during 2008-09[26]. These mangroves are now confined to three major regions: Mahanadi river delta, Devi river delta, and the Bhitarkanika area. The Atlas of Mangrove Wetlands of India, published in 2004, mentions in its Odisha part that out of the total mangrove forest area of 215 sq. km. the Bhitarkanika mangroves consisted of 202 sq. km.(93.95%). The next major share is of the Mahanadi delta where the forest blocks of Bahar- and Bhitar Kharinasi, Kantilo, Kasaridia, Hetamundia, Hukitola, Kendrapatia, and Jambu reportedly contained 30.62 sq. km. of mangrove forest in the total area of 84.35 sq. km.. In the Devi river delta the major mangrove forest block was Bandar, followed by Boruan and Salio[27]. The mangroves of Chilika area have almost been lost except for few small patches like that of the Shipakuda.

It is understood that the major loss to mangrove cover happened by 1960s in different phases. The zamindar of Burdwan in West Bengal purchased the Kujang Estate in 1940s, and allegedly disposed of about 120 sq. km. mangrove forest area for expansion of agriculture by the migrants from Midnapur. The next major loss was in 1960s when for constructing the Paradeep port about 25 sq. km. of such forest was cleared. The Mahanadi delta was originally supposed to have about 200 sq. km. of mangrove forest which has now been confined to almost 15% of this area only[28]. The Bhitarkanika forests have also been badly affected by encroachments, mostly be the outsider Bengali communities; and prawn farming enclosures(*gherries*) have emerged as the most preferred land use by these people both in the Bhitarkanika and Kujang areas as well as in the in other parts of the Odisha coast[29].

Mangroves act as natural protection against the cyclonic surge, and after the super-cyclone of 1999 their importance was greatly realized. As such, policy decisions were taken to protect and develop the mangrove areas; but in practice not much seems to have been done. While it is good to know that there have been some successful cases of mangrove plantation, mostly by the Forest

[25] Quoted in Rath, Bikash(2002). People-Forest-State: A Statistical Review of the Triangular Relationship in Orissa(mimeo), 2002, Vasundhara, Bhubaneswar.

[26] State of Forest Report(Odisha):2011

[27] MS Swaminathan Research Foundation(MSSRF), 2004. The Atlas of Mangrove Wetlands of India. Part-III(Odisha).

[28] Rediff on the Net. Depleted mangrove cover makes Orissa coast vulnerable to killer storms. 16-11-1999. http://www.rediff.co.in/news/1999/nov/16storm.htm

[29] In October 2013 the Gahiramatha Range Office in the Bhitarkanika sanctuary area was set on fire by the locals(who are actually Bengali encroachers) because of restriction on cultivating forest land(about 300 acres) and the ban on fishing in the sanctuary water, though the plea was the death of an old man in boar attack('Jangala Jamire Chasa Band O Machha Dharare Katakana Lankakandara Karana', the Sambad, 19-10-2013). This is but one of the many instances suggesting the intensity of the migrant impact on the local ecosystem.

Department and few by the local communities[30]; and this alongwith natural regeneration has helped increase the mangrove cover in some areas[31]; it is also true that mangroves belong to a fragile ecosystem where old block may disappear while new blocks may appear. However, a comprehensive implementation programme to identify all potential natural regeneration and/or plantation sites along the coast with a follow up to actually development those sites through necessary protection and various technical interventions, is yet to be adopted sincerely and effectively.

The major loss in terrestrial forest cover and density was mostly due to the non-forest use because the state has a considerable forest area that has the coppicing capacity[32] and hence natural regeneration can restore the degraded patches in such areas if protected adequately. In fact, this has been the secret of successful community forest protection in the state. On the other hand, non-forest use, particularly industrial, mining and other such uses that do not provide scope for a natural regeneration; cause a permanent damage to forests unlike timber cutting. And, the government diverted about 1993.47 sq. km. of forest for this purpose[33] by October 1980. Interestingly, after the Forest Conservation Act came, we have lost approx. 401.01[34] sq. km. forest under its provision which is an irony. It would not be surprising therefore if we conclude that the Forest Conservation Act has been used less for forest conservation itself and more for generating revenue against the provision for conservation when deforestation is required for non-forestry purposes.

While the Forest Department allowed or had to allow a big chunk of the valuable forest land for non-forestry use in the name of development without any consolidated expression of anguish or helplessness in the matter, it appeared to be the biggest obstacle when it came to recognizing the rights of traditional forest dwelling communities over the forest resources under their traditional access. Several government and non-government documents substantiated the apprehension and claim that mostly during the colonial period the forest reservation in many areas took place without a proper compliance of the forest settlement process. Even where the process was apparently proper, because of inadequate/faulty survey & settlement operations the rights of the people could not be properly recorded and hence could not be eligible for settlement. In view of this historic injustice the Scheduled Tribe and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 was enacted in India so as to undo the injustice and help the traditional forest dwellers claim back their land and rights even in Reserve Forest areas and Protected Areas. This Act is applicable for claims(both individual and community) on forest land that is

[30] For instance, the successful effort of the Phaharajpur village community in the Rajnagar block of Kendrapada district. For more details, see Rath, Bikash(2012). Community Initiatives in Mangrove Conservation. Community Forestry. Vol.26, October 2012. RCDC

[31] For instance, the Bhitarkanika mangrove cover is claimed to have increased from 13617 ha in 1985 to 14178 ha in 2005, as per MSSRF(2004).

[32] For instance, sal (*Shorea robusta*) forests constitute about 43% of the total forest cover in the state, vide Anonymous(2011). Forest Wealth of Orissa. ENVIS Newsletter, Vol.25, April-June 2011. Centre for Environmental Studies. http://www.cesorissa.org/PDF/Newsletter25.pdf

[33] Upto October 1980: 199347.87 ha (government sources quoted in Rath,2002).

[34] The Forest Conservation Act was effective from 25th October 1980 and since then 40101.2078 ha forest land has been diverted in Odisha till 1st January 2013(PCCF-Odisha, 2013. Highlights of Odisha Forestry Sector 2012-13).

either under the Revenue Department or the Forest Department. Now, whereas individual claims on revenue forest lands have been relatively quickly settled, those on Forest Department lands, particularly the claims for community forest resource (CFR) rights have faced difficulty, thanks to the attitude of the latter. The following table shows the status as on 30th April 2013:

Claim type	Total area claimed(acre) that received the approval of Gram sabha	No. of families involved	Total area approved by District Level Committee	Total area of titles distributed so far
Individual claims	682444.37	432217	532513.02	500775.24
Community claims	250054.73	68448	225332.84	64331.02

(Source: Government of Odisha: ST & SC Department website, http://www.stscodisha.gov.in/pdf/FRA_Jan_13_Ind_Com.pdf)

As per the above table the total area claimed is 932499.1 acre (3729.9964 sq. km.) whereas that approved is 757845.86 acre(3031.3834 sq. km.). The claims correspond to 6.41% of the total forest area(recorded) of the state.

Now, the question is about the use of these forest lands claimed. While it is already known that the individual claims normally correspond to non-forest use(usually agriculture), community claims are of various kinds: some may be for schools, hospitals and other such institutions or otherwise useful community access areas whereas some are for forests. Claims for forest use(CFR) are not meant for non-forest use. Moreover, the CFR right doesn't give full right or ownership over the forests, which means that the communities cannot just cut down the forest at their will. In fact, the CFR entitlements are abided by certain norms ensuring proper protection and management of forest and biodiversity. So far the non-forest use is concerned, a total 37.74 ha forest land has been diverted under FRA for 73 projects of community welfare[35].

Individual entitlements under the Forest Rights Act have received support not only to sustain the agricultural use of the land in a better way(such as land development activity with a linkage with the MGNREGS), but also to further convert the land use for livelihood benefits, such as digging ponds. This ultra-conversion of FRA land has raised some concern[36] because the preference to combine livelihood and ecology would normally be horticultural plantations or agro-forestry practices. However, the welfare approach of the government has been more to secure a better livelihood for the beneficiary and not the ecology.

[35] PCCF-Odisha, 2013

[36] The concern is not exactly about the FRA land, but forest land. In 2011, for example, excavation of a pond in a forest land (sal forest type) in the Manoharpur village of Pankapal GP, Dangadi block, Jajpur district under the NREGS became controversial, vide the Dharitri, 14-9-2011.

A forest land developed for agriculture under MGNREGS in the Balangir district[37]

But the still greater concern is the misuse of the Forest Rights Act. The Act has marked 13th December 2005 as the cut off date for the eligibility of the claims of forest rights. However, either because of ignorance about this date or instigated otherwise some people have been found making fresh clearances in forests so as to claim their rights under FRA. Even vested interest groups have been involved in some cases to instigate such illegal destructions[38]. However, such instances appear to be rather isolated in nature and not of a large scale.

[37] Such land development helps increase the water retention capacity of the land thereby supporting water-intensive crops in a land that was previously used for upland crops.

[38] In March 2013 forceful encroachments by outsiders(tribal) in the forests of Daragodisila-Kaduobahali area of Kolimati GP in the Anandapur block of Keonjhar district led to violent conflicts with the local villagers. The encroachers started their endeavour to settle down in that area since 2008, and were assured by a broker that if they paid money their encroachment would be regularized. They reportedly paid Rs.8 lakhs to the broker though this was totally unlawful. The local villagers could not allow this encroachment and hence the conflict.(The Parjyabekshak, 22-3-13)

Afforestation and plantation activity in the degraded areas as well as for gap filling has been a major activity for the Forest Department. This includes compensatory plantation activities under the CAMPA fund[39]. However, in many areas either the plantations have not been carried out sincerely or have been a total failure. For instance, in the heavily mined Koida area in the Sundargarh district mining activities have allegedly destroyed about 10000 ha forest during the last 50 years, but against that green belt not even in 500 acre land has been created, thanks to the nexus between the mining companies and the government authorities[40]. As of plantations under CAMPA, the guidelines allow also use of the fund for non-plantation activities as a result of which a good amount seems to be spent on infrastructure building and other such purposes though ideally the money, which was paid by the non-forest users against the diversion of forest land for their purpose, should be mean for compensatory afforestation only or atleast primarily[41].

During the last few years intense Maoist operations have led to extreme laxity in forest management by the Forest Department which is already struggling with a poor development of its core staff strength while the government has been keen on developing the creamy layer in the Department. Forest guards, Foresters, and Rangers are the people who actually implement the forest protection and management, and are hence most vulnerable to the attach of Maoists and smugglers who take advantage of the forest areas. It is thus not surprising that in many forest divisions infested by Maoists these staffs prefer rather to avoid their field activities. The added woe is that the Departmental staff preferred to continue their strike(against the government apathy) and to ignore intense forest fire in many forest areas of the state, which led to massive destruction. One can therefore briefly conclude that the government management of forests is in mess.

Under such circumstances, community forest management emerged as a great hope. By the end of 1990's about 1869 sq. km. forest area in the state was under the community forest protection without any government support[42]. The government started the Joint Forest Management programme involving the local communities in forest protection and management, but it did not recognize people's role to be primary which, alongwith some other limitations, made it a weak programme. However, during the recent past substantial investments in the JFM programme through the Forest Development Agency have helped the Department lure some communities to get involved in JFM. In 2011, the JFM resolution was revised so as to conform to some basic mandate of PESA Act and FRA; and the Department's control in decision making as well as

[39] Against the diversion of 40101.2078 ha forest land, the plantations(afforestation) stipulated to be raised were in total 46792.257 ha. The state Forest Department claims to have achieved plantations in 39475.75 ha (13516.24 ha degraded forest land and 25959.51 ha non-forest land) by early 2013(PCCF-Odisha, 2013).

[40] The Sambad, 12-11-2012

[41] In some cases the CAMPA fund has been used for other activities but not afforestation or forest regeneration. For instance, in the Sunabeda Wildlife Division, Nuapada during 2009-12(information received under RTI Act by an RCDC staff).

[42] "xxx according to a Directorate of Social Forestry survey, there were 2 509 CFM groups/villages in 1999, informally covering a total area of 186 900 ha throughout the state."- Singh, K.D. et al (undated). Trends in forest ownership, forest resource tenure and institutional arrangements: are they contributing to better forest management and poverty reduction? A case study from Orissa, India. http://www.fao.org/forestry/10567-0a649c4fa70889be2cec4bf65d51071c.pdf)

utilization of funds was discontinued as a policy decision. Now, a good many areas of the state are supposed to be under JFM.

About 5.11% of the state's geographical area comes under the Protected Areas(National Park, Sanctuaries, etc.)[43]. This includes wetland sanctuaries such as Bhitarkanika and Nalabana, and the marine sanctuary of Gahiramatha.

7.3 Miscellaneous tree cover:

The miscellaneous tree cover usually implies to a concentration of trees in or around habitation areas and outside forests. This normally includes the traditional mango groves, coconut orchards, palm trees and other such species of popular interest and use. Establishment of mango groves was considered to be a pious activity, and hence the feudal rulers and landlords used to promote such establishments for common access. This provided shade round the year, acted as a meeting place or recreation ground for village community, and provided its services for a long time. The recent/modern times however do not much inherit this value system, and old groves are rather preferred to be cleared for some better cash crop or other land use. Particularly, those on commons are more vulnerable. Coconut groves however are still surviving as these are mostly on private lands and their commercial value seems sustainable. In contrast, palm trees may not seem to be quite appealing to the present mindset and are hence vulnerable.

The statistical information available in the government records on the extent of miscellaneous tree cover in the state doesn't seem to be quite reliable; rather some of the statistics seems to be vague and even figures of adjustment.

For instance, in 1963-64 the state was claimed to have about 501000 ha under this land use which increased to 616000 ha during 1971-72, but decreased to 423000 ha during 1980-81. Figures for Koraput district for the period 1970-71 to 1990-91 suggested a perfect consistency, i.e. 52000 ha during every assessment year. However, Dhenkanal district was claimed to have 10000 ha under miscellaneous tree cover during 1972-73 which reportedly increased by four times during 1980-81. During the same period, Puri district recorded an increase from 24000 ha to 27000 ha. Balangir district also recorded an increase in this land use during the period 1977-78 and 1990-91[44].

During the last few decades cash crop plantations have been promoted in the state in many areas. These include cashew, rubber, coffee, oil palm, pulpwood species(Eucalyptus and exotic Acacia) and medicinal plants. Of these cashew and Eucalyptus are relatively widespread whereas coffee and rubber are confined to certain pockets. Other horticultural crops such as mango are also

[43] Vide the Forest Survey of India report(2011), p. 132

[44] Various sources quoted in Rath(2002).

being promoted. Biofuel crop Jatropha was extensively introduced few years ago, but because of its controversial nature it could not sustain for long.

Cashew taking over natural forest cover in a village of Gajapati district

Eucalyptus in agricultural land near Barang

Rubber plantation promoted by the ITDA in the Khunta-1 block of Mayurbhanj district near Shimilipal. Interestingly, adjacent to this area is the village Mahali basa where more than 30 household of the PVTG Mankadia community have been residing without any land ownership[45], thereby suffering variously; but ITDA did not care to allot some land for their purpose. This shows the fallacy of tribal welfare initiatives.

The Horticulture Department claimed an increase in the area under plantation of fruit crops from 227200 ha in 2003-04 to 318700 ha in 2010-11[46]. Of these, mango cultivation is said to be covering near about 2 lakh hectares[47]. Cashew plantation is said to be covering about 30690 ha of which Koraput district has the largest share(more than 6600 ha)[48]. Oil palm cultivation could not spread so extensively, and by 2010-11 it covered 5269 ha[49]. 3549 ha(2011-12)[50] In contrast

[45] As seen by the author on 8 October'13. He has reported the matter to the ST & SC Department of Odisha government for urgent action.

[46] Quoted in 'Relevance of farm forestry and agro-forestry activities in Odisha', unpublished draft, RCDC

[47] See, 'King of fruit from Orissa to rule over Delhi', The Indian Express, 20-4-2012. http://www.indianexpress.com/news/king-of-fruit-from-orissa-to-rule-over-delhi/939177/1

[48] SPREAD(2009). Fruits of struggle. http://www.spread.org.in/documents/Fruits_of_struggle.pdf

[49] Government of Odisha(undated). Status of Oil Palm in Orissa. http://www.orissa.gov.in/dhc/Download/StatusofOilPalminOrissa.pdf

[50] Database on Coffee (Part-I), Coffee Board. http://www.indiacoffee.org/userfiles/DtbseMar13-1.pdf

the area us rubber plantation is low, and 1170 acres of such plantation are reportedly existing in Mayurbhanj and Gajapati districts[51]. The state government has a plan to cover 45000 acre and 40000 acre respectively under rubber and coffee plantations by the year 2022 as it believes that this will provide substantial economic benefit to the tribals[52].

Linear tree cover also formed an important part of the state as avenue plantations. Many old roads used to have mature and well-established trees of indigenous species along their sides. Some of these species were mango and neem, etc.. Avenue plantation was also considered to be a part of our ancient value system, and hence feudal rulers also focused on the same. Eucalyptus and exotic Acacia were introduced later. Unfortunately, in the name of road expansion considerable part of this ecologically valuable old stock has been cleared ruthlessly without adequate compensatory plantation along the expanded sides. A report said that during 2000-2012, expansion of the National Highway from Cuttack to Khurdha claimed 740 trees whereas that from Khandagiri to Cuttack claimed 1673 trees during 2003-12. Besides, within the Bhubaneswar city itself road projects led to the cutting of 3800 trees between 2005 to 2010. Most of these trees were grand old but live and still serving the humanity, and these belonged to a diverse group of more than 25 different indigenous species such as *Ficus religiosa*, *Ficus benghalensis*, *Terminalia arjuna*, *Tamarindus indica*, etc.. Against this loss(partly), compensatory afforestation/plantation of team and exotic Acacia were reportedly carried out by the Khurdha Forest Division in 29 ha land of the Jaimangal RF; but the expanded road sides remained without trees[53].

[51] Orissa government plans rubber, coffee farming in tribal areas. Odisha Diary, 6-5-2013. http://www.orissadiary.com/CurrentNews.asp?id=41097. However, in addition to these areas in the ITDAs there are some small scale plantations in other areas too, like in Dhenkanal district.

[52] 'Tribals can now cash in on coffee and rubber plants', The New Indian Express, 8-5-2013

[53]

Old value avenue plantation of Mango trees (Jeypore-Koraput Highway)

Modern value avenue plantation of Eucalyptus (Baripada-Bangiriposhi road)

The Forest Survey of India assessed for the 'tree cover' outside recorded forest area[54] in its 2011 report that mentions 4301 sq. km. under such cover in Odisha which is 2.76% of the state's geographical area. This suggests a decrease against the previous assessment (4435 sq. km.) of the 2009 report.

7.4 Agricultural land:

In 1950-51, the total agricultural land in the state seems to be around 66.67 lakh hectares[55] which was reduced to 60.44 lakh hectares by 2011[56]. The loss was chiefly due to conversion of agricultural land for non-agricultural use. During the period 1980-2000, about 5 lakh hectare agricultural land had been converted for non-agricultural use[57]. In fact, a study of last records[58] suggests that by 2011 about 10 lakh hectares had been converted this way.

The government allowed conversion of 92000 ha agricultural land for industrial use during 2006-07 to 2010-11[59]. The Comptroller & Auditor General pointed out that 9662.45 ha of private

[54] Tree patches of less than 1 ha outside the recorded forest lands, and including block, linear and scattered trees not interpreted as 'forest' in the satellite imagery. Tree cover forms a part of 'trees outside forest'(TOF). TOF considers all block, linear and scattered trees outside recorded forest lands irrespective of their patch size, and those with size 1 ha or more are interpreted as 'forest' while those less than 1 ha in size are categorized as 'tree cover'(vide State of Forest Report: 2011, Chapter-4).

[55] Net area sown-13980085 acre, fallow-2483954 acre; total 16464039 acre; as per the Statistical Abstract of Orissa, 1957, Volume 1A, quoted in Rath, Bikash. People-Forest-State: A Statistical Review of the Triangular Relationship in Orissa(mimeo), 2002, Vasundhara, Bhubaneswar.

[56] The Sambad, 13-9-2012

[57] The Dharitri, 2-11-2000

[58] Vide the Samaya, 3-11-2000. By 1990 the converted area was 7.5 lakh hectare which rose to 9 lakh hectare by 2000.

[59] The Sambad, 13-9-2012

agricultural land were acquired in 13 districts of the state without the prior approval of the Agriculture Department[60]. It was further pointed out that the state used a substantial area(about 239401.60 ha out of the total treatment area of 418501 ha) of agricultural land for watershed projects violating the norms(which specify implementation of such projects in degraded and non-forest land), during the period 2000-01 to 2012-13[61].

Brick kilns, both temporary and permanent, are not only consuming productive soil but are also causing other environmental impacts, particularly when operational on a highly commercial scale as an industry. This photo is from Nabarangpur district where the socio-environmental impacts of kilns must be less than that of the maize cultivation..

[60] The New Indian Express, 13-9-12

[61] The plea of the concerned Project Directors was that due to non-availability of waste land and other such eligible land, agricultural land was to be used, vide 'State used agri land for watershed projects: CAG', the New Indian Express, 19-10-2013.

The government reported the following status of agricultural land by the end of 2010[62]:

Agricultural land in lakh hectare	Current use/issues
45	Rice cultivation
5	Lost fertility due to podu & deforestation
26	Affected by heavy soil erosion
3	Affected by water logging
4	Affected by salinity

As the above table suggests the available agricultural lands may still be not much useful or productive due to a number of reasons. While poor soil fertility is a concern for the state, soil erosion as well as contamination is an added woe. Industrial effluents and mining waste have drastically affected the agricultural lands in some areas. The media reports have provided a number of such examples, such as the sand inundation in the agricultural lands of Patuakudar village in the Keonjhar district caused due to the construction of tailing pond and intake well of the Essar Steel company in the Baitarani river[63], extensive crop damage due to the effluents of the local factory of Mangalam Timbers Ltd. in and around the Sanakusumi village of Nabarangpur district[64], loss of agricultural productivity due to the pollution of Jindal Stainless in the Kalinganagar area of Jajpur district[65], and the ash pond disasters like the case of NALCO that put extensive agricultural land under the slurry of industrial ash. Lack of irrigation, want of agricultural labour, and elephant menace are some of the other factors that have either increased the area of agricultural fallow or have been used for commercial plantations in some areas. It is a concern that while the irrigation potential in the state increased from 27.11 lakh ha in 2006-07 to 30.36 lakh ha in 2010-11, only 20.85 lakh ha (68.67%) of such land was actually used for agriculture; i.e. optimum use of the irrigation potential was not attempted[66].

Total degraded lands in the state resulting from soil erosion have been estimated to be 37.22 lakh ha (24% of total gross area). The worst affected districts are Koraput, Phulbani, Kalahandi, Gajapati, and Nabarangpur[67].

Still greater is the concern of rapidly changing cropping pattern. Indigenous food crops are being fast replaced by non-food cash crops like cotton. Hybrid maize cultivation in Nabarangpur

[62] Based on the Anupam Bharat, 2-1-2011.

[63] The Anupam Bharat, 26-7-2012

[64] The Sambad, 12-8-2012

[65] The Dharitri, 17-7-12

[66] The Sambad, 13-9-12

[67] ICAR & NAAS, GoI (2010). Degraded and wastelands of India: Status and spatial distribution, quoted in the Project Design Document 'Arranging CERs through CDM over Mango/Cashew/Indian Gooseberry plantations' submitted by Orissa Horticulture Development Society in March 2013.

district doesn't help in local food security as the harvest is basically supplied to other states. In Koraput district, where scarcity of plain land is a concern, lemon grass cultivation in extensive areas of available plain land has been a man-made irony of fate. Corporates and other vested interest groups/individuals have been able to lure local land owners to allow their agricultural lands for non-agricultural uses such as pulpwood plantations.

A vast area by the side of Dompada-Kusunda road has been used for Eucalyptus plantation, instead of agricultural development because of many local issues such as lack of irrigation, dearth of agricultural labour, and elephant menace. Eucalyptus doesn't require much responsibility or investment or regular interventions, and gives a good return after 4-5 years. Speaking otherwise, the pulpwood companies could take advantage of a situation that resulted because an aggressive agricultural policy was not pursued by the state to address such local issues to safeguard the agricultural productivity.

It thus natural to apprehend that the food security in the state is being increasingly uncertain under such situations. Unfortunately the government has no effective policy to address this issue.

7.5 Pasture:

Rapid deterioration of the permanent pastures, recorded as 'gochar' land during the survey & settlement operations has been a matter of concern because of various adverse implications. First of all, the sustenance of an indigenous livestock-based livelihood becomes very much vulnerable

because the healthy survival of this type of livestock essentially and significantly depends on external grazing. When pasture lands are converted for other land use, either by encroachment or otherwise[68]; or because of poor management lose the natural vegetation cover; then this vulnerability appears. For instance, in Keonjhar district where about 60% of the rural population depended on animal husbandry scarcity of gochar land has created a lot of trouble for them and has also affected the milk production in the district. Interestingly this scarcity has become an acute problem during the last 10 years or so, thanks to encroachments and non-grazing land use of gochar[69]. In Sundargarh district this scarcity forced people to sell out their cattle[70]. For poor people affording the costly cattle feed being not quite feasible, natural grazing was a major support for their livestock; but even that is at stake. Moreover, lack of grazing area makes the cattle stray and as one can see in many areas of Bhubaneswar itself, such cattle spend their evening hours on the road itself causing serious risk of accidents.

A secondary importance lies in the fact that the gochar supports diverse vegetation category which may vary from sparse to shrubby, and from a mere grassy land to a good forest. Such vegetations also present a biodiversity in themselves. In most cases however, gochar is recognized with a sparce vegetation and a good forest growth on such land, like the one seen in the Maral village of Balangir district that could be possible thanks to natural regeneration of sal under community protection is rare.

The boundary of Maral gochar forest(left) and inside the community-protected gochar forest(right)

[68] For instance, the decision of the government to allow construction of seed preservation godown in the gochar land of Balighat near Kanasa in the Puri district that was protested by the public(*The Sambad*, 18-4-2002).
[69] The Anupam Bharat, 19-7-2012
[70] The Prameya, 14-7-2012

The government data suggested that area under permanent pasture has seen a reducing trend as per the following example:

Year	Area in lakh hectares
1980	8.5
1990	7.2
2000	5

Recently, the Revenue Minister said in the Assembly that of the total 1217849.239 acre (493228.94 hectare or 4.93 lakh ha) gochar land 24054.658(1.97%) is under encroachment. While the Minister also said that steps were being taken against such encroachments under the Odisha Prevention of Land Encroachment Act, what was striking was his confession that the government had not intimated the relevant details or maps to the Gram sabha[71].

As per the above report of the Minister, maximum gochar land in the state lies in the Khurdha district (245369 acre) whereas Nabarangpur and Puri districts have less than 20000 acre area under gochar.

Thus, the first issue is official conversion of gochar land for other purposes that has caused a significant reduction in the area; the second issue is other land use of gochar land under encroachment; and then the third issue is proper protection, management and development of the existing assets of gochar. There are reasons to believe that the government is not sincere in addressing such issues. Rather, other commercial land use in such lands seems to the hidden priority. As such, the latest decision that came from the state government says that gochar land that merges in an urban landscape can now be used for other purposes[72].

[71] The Samaj, 22-3-13
[72] The Dharitri, 30-4-2013

Fallow lands such as this in the Brahmanigaon village near Barang/Bhubaneswar may form temporary pastures, but the recorded as well as intended land use is quite different. Many such agricultural lands are now intended to be converted for non-agricultural use such as construction of housing complexes. The natural biodiversity of permanent pastures are often absent in such lands.

The Supreme Court gave a ruling in 2011 that the minimum proportion of 5% land to be reserved for gochar in a village area (which is a general rule in the survey & settlement procedure) has to be maintained and that the gochar land cannot be converted to any non-grazing land use. The Court however said, in case gochar land is to be acquired for urgent community needs like school and hospital, then equal area of land is to be compensated for that so as to maintain the 5% share[73]. The revenue officials however do not seem to be adhering to this ruling strictly, as happened in the Dhenkanal district where the gochar land, alongwith some productive agricultural land, was allowed to be acquired for a private power plant in the Mangalpur-Kamalanga-Senapatiberena area. A public interest litigation was filed against the same following which the Odisha High Court stayed the acquisition(The Samaj, 6-2-2013).

7.6 Waste lands:

The term 'waste land' denotes actually a temporary status of otherwise useful land as unused or 'waste'. Revenue records have two major categories of waste lands: culturable waste(Abada Jogya Anabadi) and uncultivable waste (Abada Ajogya Anabadi). Such areas form a major part of the rural landscape, and area used as commons.

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[73] The Times of India. No diversion of grazing land for building: SC. 16-01-2011.

http://articles.timesofindia.indiatimes.com/2011-01-16/india/28379551_1_land-diversion-village-land-gochar

Revenue records suggested that by 2005 the total area of wasteland in the state was about 23 lakh hectare, i.e. 23000 sq. km. (14.77% of the total geographical area), and that Kalahandi, Nuapada, Balangir, and Bargarh were the districts having maximum area under such lands. The media reported that the special project for wasteland development that was launched in 1980s had but poor results due to lack of proper coordination, etc..(The Prajatantra, 16-9-2005).

Integrated Wasteland Development Project(IWDP) has been implemented in India in several phases. This cement guard wall has been constructed in a village of Mayurbhanj district under this project.

While the revenue records suggest a reduction in the waste land area as per the legal boundary, satellite-data-based wasteland atlas[74] of the state has suggested the following changes during 2003 and 2005-06:

[74] Accessed at http://dolr.nic.in/wasteland2010/orissa.pdf on 2-5-13. The satellite interpretation of wasteland is likely to exclude many wetlands that are otherwise part of the wastelands as per the survey & settlement procedures.

- **Decreased(in area) sub-categories:**
  - Gullied and/or ravinous land-Deep
  - Land with dense shrub
  - Waterlogged and marshy land(seasonal)
  - Abandoned shifting cultivation area
  - Underutilized/degraded notified forest land: scrub dominated
  - Underutilized/degraded notified forest land: agriculture
  - Degraded land under plantation crop
  - Riverine sand
  - Coastal sand
  - Mining wastelands
  - Barren rocky area

Of these, degraded land under plantation crops saw a heavy reduction in area: from 135.68 sq.km. in 2003 to only 1.88 sq. km. in 2005-06. It is not clear if this apparently unbelievable drastic reduction is because of the rotational cutting of plantation crops such as that of Eucalyptus. Significant reduction in the coastal sand area[75] and not so insignificant reduction in the riverine sands might have been because of erosion and heavy exploitation of sand for construction and other purposes. But remarkable reduction in mining wastelands is controversial though such a reduction is not impossible.

However, the depiction that gullied and/or ravinous land(deep) became totally zero in 2005-06 as against 8.01 sq. km. in 2003 raises a question about the accuracy of the data and change analysis.

- **Increased(in area) sub-categories:**
  - Gullied and/or ravinous land-Medium
  - Land with open scrub
  - Waterlogged and Marshy land-Permanent
  - Land affected by salinity/alkalinity-Moderate
  - Land affected by salinity/alkalinity-Strong
  - Shifting cultivation area-Current Jhum
  - Industrial wastelands

Increase in open scrub areas at the cost of dense scrub area is not surprising, but increase in current shifting cultivation area from 636.26 sq.km. in 2003 to 1023.83 sq.km. in 2005-06 is a

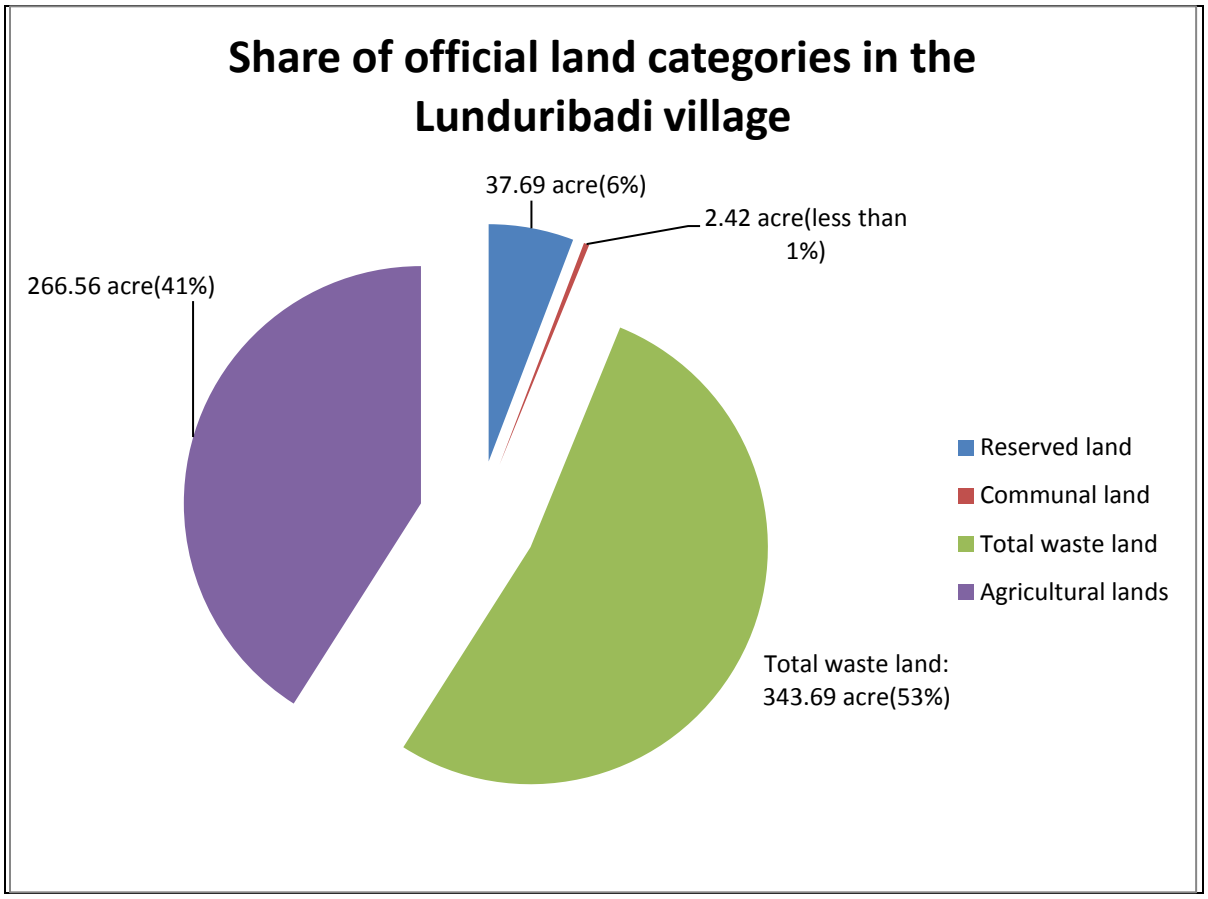
[75] *The Dharitri* reported on 12th September 2012 how the natural sand dunes along the coastal tract of Puri district are disappearing under extensive and illegal exploitation of sand. The local Forest Department office roughly estimated 900 to 1050 numbers of sand dunes from Arakuda to Balikuda, and apprehended a loss of around 200 dunes during the last 15 years because of such exploitation. Although this violates the CRZ(Coastal Regulation Zone) norms, the government doesn't seem to be keen enough to address the issue.

matter of concern. Increase in the area of industrial waste land is obvious, thanks to the rapid industrialization policy of the government.

A gullied land

Industrial waste land(Rourkela Steel Plant's dumping side)

However, the overall picture suggests that the total waste land area in the state, as per satellite interpretation, decreased from 18952.75 sq. km. in 2003 to 16648.27 in 2005-06, i.e. by 12.15%. Total wasteland area remained at 10.69% of the total geographical area of the state. This average picture unintentionally downplays the regional imbalances that have assumed a critical status in the tribal countries having hilly and undulating terrains. As the Atlas itself mentions, the wasteland area is minimum(1.37%) in the Bhadrak district and maximum(25.02%) in the Gajapati district. It is obvious that in the advanced coastal areas such as the Bhadrak district the land development activity has been quite intensive and also feasible thereby leaving not much area as waste land, whereas in hilly districts where this feasibility is less extent of plain land cultivation and habitation is also less. Besides, the survey & settlement procedures of the government have caused most of the land above 10 degree slope to be recorded as government land (such as shifting cultivation lands) or 'waste'. As such, the localised share of such wastelands may be significantly high in many such areas as can be seen from the following example of Lunduribadi village in the Turiguda Gram Panchayat of Rayagada district:



(based on the Record of Rights, Lunduribadi[76])

It is thus obvious that although depicted as 'wasteland' a considerable part of such areas may actually be under agricultural use or otherwise. This is because such lands are one of the most feasible areas for encroachment under adverse socio-economic compulsions.

[76] The village area includes the following legal (broad) categories of land: reserved land, communal land, uncultivable waste(331.86 acres), cultivable waste(11.83 acres), and private patta lands of plain land agriculture. The uncultivable waste comprises mainly of the hills and hilly lands used for shifting cultivation but not recorded as agricultural lands. Total village area is 650.36 acres. Data collection by RCDC.

This apparently waste land in a village area of Nuapada district has been used to grow jatropha though, needless to say, there was ample scope to develop this land through irrigation(from the river source) for food crops.

8. Mining & quarrying:

Mining and/or quarrying does not imply to an exclusive land use category in itself, as it may use any specific land(forest land, agricultural land, cultivable waste, etc.) for its purpose. However, it essentially degrades the quality of the concerned land to a dangerous extent, in addition to a serious impact on the local socio-cultural and socio-ecological environment.

A compilation prepared by Vasundhara suggests that by the end of 2005, total 605 mining leases had been granted over an area of 99931.55 Ha out of which 335 were working covering an area of 72076.914 Ha[77]. This means that less than 1% of the geographical area of the state was under mining by 2005. Keonjhar followed by Sundargarh was the district with highest mining area whereas Nayagarh was the district with the lowest mining area. Angul stood third in the list.

[77] Vasundhara(2006), Status Paper on Mining Leases in Orissa.
http://www.freewebs.com/epgorissa/M%20I%20Update/Status%20Paper%20on%20Mining%20Leases.pdf

However, the situation has changed in the meantime. Extensive areas are being brought under coal mining in Angul though the total area may still not amount to more than 1% of the state area. What is however a matter of concern is that mining is one of those land uses which may be confined in their operations within the specified area but the impacts thereof may be far-reaching. Like, a mining on hill top may stop the flow of a perennial stream affecting the downstream ecology and livelihood. Similarly, underground mining makes the surface land use unstable.

Quarrying is of a lesser scale than mining and is usually confined to what they call 'minor minerals'. The term minor mineral actually implies to the commercial aspect of the mineral and not the ecological aspect. Hence, quarrying of a so-called minor mineral may still have a several impact on local ecology. What is unfortunate is that while 'mining' is controlled by the Department of Steel & Mines under certain principles that atleast in pen & paper have to consider the environmental impact, quarrying is normally controlled by the Revenue Department that is concerned with the revenue with hardly any attention to the environmental cost.

However, following a Supreme Court judgement the Revenue Department has made environmental impact assessment report for mining of minor minerals mandatory in the state. There are reportedly about 6000 minor mineral sairats in the state out of which 861 were applied for lease by mid-May 2013. As the EIA reports were pending in most cases, leases could not be granted thereby causing loss of revenue for the state exchequer; and hence the state government attempted to expedite the process of EIA clearance[78]. This creates a concern since EIA seems to be a secondary matter and rather a hindrance in this case, and government's attitude seems to be to overcome this hindrance for financial gains.

Rehabilitation of the abandoned mining sites and/or dumped overburdens has been one of the key concerns of environmentalists. Although scientific methods for a green rehabilitation are available these are often not sincerely adopted. Tata Steel is said to have adopted well one such method known as the Vetiver System in its Joda East mines where vetiver plants are grown in the affected areas which absorb the contaminants in mining effluents, and also help in soil conservation[79].

9. Land under encroachment:

As on 30th June 2004, the total area of government land under encroachment was 189133.043 acre[80] which by 30th April 2009 was reportedly reduced to 81514.136 acres (district-wise details furnished in annexure-I) which the government was unable to get back. Interestingly, the

[78] 'Laghu Khanija Dravya Sairat Pain Abedana Upare Paribesha Prabhab Report Debaku Paramarsha', the Samaj, 18 May 2013
[79] See, 'Paribesh Samrakshan Pain Tata Steelra Vetiver Pranali', the Pragatibadi, 3 September 2013
[80] As reported in the Samay, 1-4-2005

maximum encroachments did not follow any particular geographical regionality, as evident from the following table:

District	Geographical area in sq.km.	Area in acre[81]	Area under encroachment (acre)	share in the total encroached area (%age)	share in the total geographical area(%age)
Cuttack	6375	1574070.4	9819.043	12.04582	0.623799
Sundargarh	3932	970861.92	9732.131	11.93919	1.002422
Bolangir	8206	2026168.1	6421.393	7.877643	0.316923
Dhenkanal	9712	2398019.1	5562.568	6.824053	0.231965
Angul	6575	1623453	4435.77	5.441719	0.273231
Ganjam	4452	1099256.7	4363.376	5.352907	0.396939

The Revenue Minister of Odisha admitted that out of total 9,454.801 acre of land under encroachment, the government retrieved 2516.015 acre 'so far'[82]. This implies that while the government settled a part of the encroached land under the Odisha Government Land Settlement Act in favour of the poor, and evicted some parties not eligible for any favour; encroachments made by the influential people in nexus with the concerned authorities were difficult to be cleared. The famous Sipasarubali case of Puri was a recent example of this:

> As per the settlement in 1927, Government had 2,823 acre of land there including several sand dunes and coastal forests. However, some influential persons later acquired the land through forged documents. By 1977 settlement, almost all of the Government land was acquired by the encroachers. In 1996, the then Collector had lodged a complaint with the Consolidation Officer and sought cancellation of private ownership over the land. After much dillydallying, the hearing on the Government land was started by the Consolidation authorities in December 2011[83].

After strong public protests followed by government action, total 1,717.79 acre of land at the mauza has been returned to Government's possession as on 24 April 2013.

The Revenue Minister also gave some specific details on the encroachment of gochar land in the state. In March 2013, he said that of the total 24054.658 acre gochar land under encroachment, 6220 acre lies in Sundargarh district and 5493 acre in the Bargarh district. Lowest recorded

[81] Conversion factor: 1 sq.km.= 246.913 acres

[82] Zee News. Orissa government admits land under encroachment. 17-12-2011. http://zeenews.india.com/news/orissa/orissa-govt-admits-land-under-encroachment_747493.html

[83] Orissa Post. Sipasarubali forest: Govt to reacquire 138 acre of land. 25-4-2013.

http://www.orissapost.com/sipasarubali-forest-govt-to-reacquire-138-acre-of-land/

encroachment was reportedly in the Malkangiri district(18 acre)[84]. One month later, another report said that of the total 831091.251 acre (336591.95 ha i.e. 3.36 lakh hectares) of gochar land in 18 districts of the state, 11571.16 acre (1.39%) have been encroached[85]. This means as per revenue records the land still remains as gochar, but the actual land use may be quite different because of encroachment.

Apart from this some of the claims for settlement of encroached lands as per the provisions of various government laws such as the Forest Rights Act, favouring the poor and marginalized, are still pending.

As regards encroachment of forest land in particular, a recent estimate indicates that 78505.07 hectare(31794.553 acre) forest land in the state is under encroachment. As of the district-wise status(details in annexure-II), the maximum encroachment of forest land has been in the Nabarangpur district(34935.53 ha) followed by Nuapada(7241.16 ha), Malkangiri(5977.92 ha), Balangir(5118.46 ha), Sundargarh(3771.36), and Keonjhar(3140.58 ha), as reported in the Samaj, dated 19 March 2013. Now, this helps explain that apparent independence of the encroachment status from geographical regionality was but a partial truth as that corresponded to the revenue lands. In tribal districts, where forest lands dominate and the likelihood of encroachment has been more due to insufficient patta lands(revenue lands), the encroachments in forest land has been obviously greater, more or less. However, in Nabarangpur district the extensive encroachment is supposed to be triggered by the vested interest groups who want to promote maize cultivation.

[84] The Samaj, 22-3-13

[85] The Dharitri, 13-4-2013

Even Bhoodan land encroached!

The Bhoodan (land donation) movement was launched by the social activist late Acharya Binoba Bhave who requested the land lords to donate some of their land for distribution to the poor and landless. Because of his graceful influence around 5 million acres of land in the country, received as donation, was put under government custody as 'Bhoodan land'. In 2012 however the Union Minister for Rural Development expressed concern that records of around 2.4 million acres of such land in various states were 'missing' and that only about half of the total Bhoodan land were actually distributed to the eligible. In other words, the Minister sensed a great fraud in the allocation of bhoodan lands(Jairam sees 'scam beyond parallel' in 'missing' Bhoodan land, *The Pioneer*, 21-9-12) .

In Odisha, the government claimed that the total area of Bhoodan land was 638706.50 acre of which 579984.21 acre have been distributed(*The Samaya, 26-3-2010*). However, observer Damodar Das claimed that the actual area of Bhoodan land acquired was much larger, i.e. 1350530 acre 95 decimal of which 778315 acre 10 decimal has been distributed (vide his article 'Bhoodan Andolanaku Loke Bhuli Galeni' published in the Pragatibadi, 5-11-2001) . Why then this mismatch in figures? Does it correspond to the scam the Union Minister was referring to?

The government admitted only a limited encroachment of such land in the Jatani block near Bhubaneswar where about 171 acre Bhoodan land was encroached and subsequently used for construction of buildings. The government said it will take strong action against such encroachments(Orissa to evacuate encroachers from Bhhodan land: says Revenue Minister, Orissa Diary, 25-3-2010, http://www.orissadiary.com/CurrentNews.asp?id=17479. However, the reality may be quite otherwise thanks to the insincerity of the authorities and corrupt practices of the revenue officials.

10. Fragile landscapes:

Certain landscapes are fragile in nature because of their inherent natural dynamics. These include the sea coasts, river banks, and mud flats. However, anthropogenic interventions may also make some landscapes fragile, like mining(opencast and underground). Underground mining can lead to instability in the land making to vulnerable to collapse. Opencast mining can lead to landslides.

Marine regression and transgression have been noticed along the Odisha coast since long. With the loss of mangrove cover the vulnerability to transgression has increased. Further, under the

impact of climate change threats of submergence have increased for some small islands of the state.

Sand dunes serve as natural repositories of fresh water(from rain water) in the coastal areas, but Casuarina plantations have been claimed to have adversely affected their natural dynamics. In fact, this exotic species has been claimed to be disadvantageous not only in comparison with the indigenous vegetations best suitable for the sand dunes, but also in respect of making the sandy stretches an ideal rookery for the Olive Ridleys[86].

Riverine erosion of Mahanadi has grasped a considerable part of this gochar land in Brahmani village near Barang

Landscapes that are naturally unstable or otherwise sensitive to any anthropogenic modification require a highly careful management. This is because while nature has the capacity to properly

[86] Anonymous(undated). Status of biology, ecology, migration and mortality of Olive Ridley turtles found along Orissa coast, India- a resume. chittabehera.com/CoastalEcology/Turtle%20Report%20to%20NIO,%20

restore/adjust an ecosystem balance in case it makes any modification, man doesn't have that capacity and the so-called environmental impact assessments, however precise it may be, is still incompatible with nature's delicate, integrated, and comprehensive understanding of the ecosystem as well as its capacity to restore the ecosystem balance. For instance, the opening of new mouth in Chilika lagoon with an objective to restore the natural equilibrium of the lagoon with the sea, is claimed to have adversely affected the beach-line stability in Odisha and is said to be the reason behind the surprising incidents of marine transgression in Puri town and in Astaranga[87].

Satabhaya(Kendrapada), Pentho(Kendrapada),and Podampeta(Ganjam) mark some of the vulnerable points of high marine transgression along the 480 km coastline of Odisha. Of these, Satabhaya, which originally consisted by seven villages, has lost five villages in the sea[88].

Marine transgression at Pentho in the Kendrapada district has threatened the existence of the village. This photo shows a part of the village road swallowed in the sea.

[87] The Wildlife Society of Odisha has cited several technical observations to support this claim, vide 'Puri beach erosion may be caused by Chilika's mouth', Orissa Diary, 12 September 2007, http://www.orissadiary.com/Shownews.asp?id=4249; and The Samaj, Sunday magazine, June 9-15. However, there are counter-observations too that provide evidences of several positive impacts of the opening, such as a substantial increase in the aquatic wealth(fish in particular) of Chilika(vide, for example, 'Impact of opening of Chilika mouth- an overview', undated, cat-das.blogspot.com/2013/01/impact-of-opening-of-chilika-mouth.html). It seems that while the positive impacts relate to the immediate benefit on a local scale, the allegations of negative impact relate to the long term impacts on a regional scale; and it would be pertinent to have a comprehensive review of both so as to assess the net impact on a larger scale and on long term basis. It is worth-mentioning here that even a local level adverse impact has been apprehended or experienced, vide for example the threat caused to four villages of Chilika after the new opening, at One India News, 'New Mouth Opening in Chilika Worries Villagers', 4 August 2008, http://news.oneindia.in/2008/08/04/new-mouth-opening-in-chilka-lake-worries-villagers-1217860365.html.

[88] Gan Majhire Samudra, The Samaj, Sunday magazine, June 9-15

Poor protective measures of river embankments have been a matter of local concern since long. And this is despite huge investments on the part of the government. Needless to say, this suggests misappropriation of funds and insincere attention to the work itself. For instance, five villages in the Shirlo panchayat of Kishan nagar block are about to be swallowed by river Mahanadi due to such lackadaisical attitude of the authorities[89].

The eco-sensitive nature of the coast line is protected as per the Coastal Zone Regulation(CRZ) under which there are restrictions on specific activities that can alter the land use in the coastal zones. However, the Regulation has not been imposed strictly which is why several cases of violation have been reported in the state:

> "While Puri and Ganjam have been the most problematic districts as far as the CRZ violations are concerned, cases have also been reported from Bhadrak and Balasore. In Chilika, which has been placed under CRZ-I, the biggest threat is prawn culture. It, however, continues despite occasional demolition drives carried out by the administration to destroy the culture ponds."(Mishra, 2011)

The impact of the cyclonic storm Phailin in October 2013 has reportedly intensified the erosion of the Odisha coastline to such an extent that about 350 km of the stretch has been affected by this. The critical erosion of this coastline, that was said to be confined to about 5.93% of the total stretch, has now been extended to about 25% of the stretch. Rapid erosion is occurring in about 45% of the stretch, which is very threatening[90]. Therefore a sincere and proper management of the coastline has become urgent.

11. Urbanization:

As per the Census of 1991, 2449.3 sq.km. (1.57%) of the total state area was urban as against the total urban population of 4232455(13.43% of the total population)[91]. Interestingly, the population share(urban) that was merely about 3% in 1941[92], increased upto 16.69%[93] in 2011.

The number of towns has increased from 39 in 1951 to 138 in 2001[94], but it is relieving to note that the total urban area still remains insignificant(3351.6 sq. km. in 2011[95], i.e. 2.15% of the

[89] 'Nadibandha Dhasuchhi, Mahanadire Lina Heba Panchati Gan !', the Samaj, 20-5-2013

[90] 'Bipadare 350 kimi belabhumi', the Sambad, 21-10-2013

[91] Vide Table-1 of DSO(1991)

[92] http://www.cmao.nic.in/urbaninfo.htm

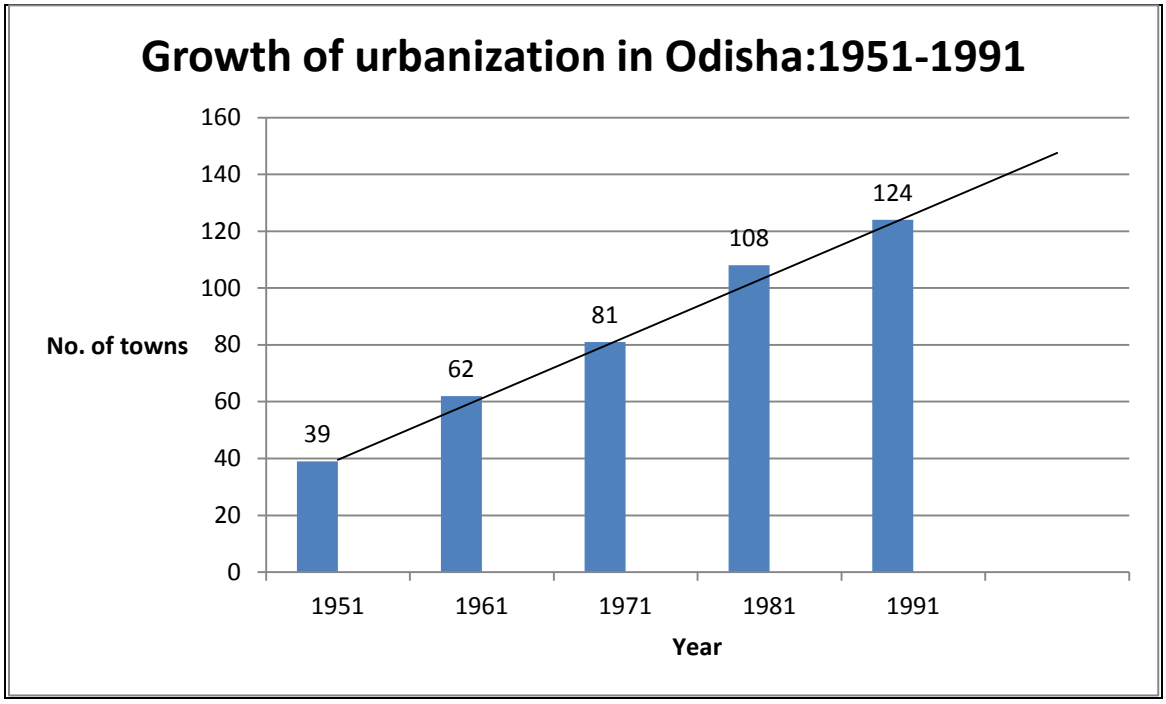
[93] http://www.census2011.co.in/census/state/orissa.html

[94] http://www.cmao.nic.in/urbaninfo.htm

[95] http://www.censusindia.gov.in/2011census/hlo/pca/PCA_pdf/PCA-CRC-2100.pdf

total geographical area of Odisha which is lower than the India average of 3.1%[96]) in the state although in terms of environmental impacts, socio-economic impacts, political- and other impacts many of the urban units exert a regional influence.

The oldest towns of the state include Cuttack, Sambalpur, Puri, Kendrapada, Jajpur, Berhampur, Baleswar, and Baripada where municipalities existed even during the colonial period. Industrial towns like Rourkela emerged mostly after independence.



(Based on Census data quoted in Rath, 2002)

Growth of urbanization: increase in the area(sq.km) of select towns

Town/city	1903	1934-35	1991
Cuttack	11.1327	51.78	153
Baleswar	9.0615	16.8285	19.4
Kendrapada	6.4725	10.20066	10.8
Jajpur	5.178	10.356	11.7

[Based on Rout(1988) for the years 1903 and 1934-35, and DSO(1991) for the year 1991. Only the core municipality area of the two has been taken into consideration for 1991 and not the whole urban agglomerate. Statistics for 1903 and 1934-35 originally available in square miles and converted into sq.km. using factor 2.589]

[96] Based on http://www.censusindia.gov.in/2011census/hlo/pca/pca_pdf/PCA-CRC-0000.pdf

The city of Bhubaneswar existed during the British period as a pilgrimage centre as well as health resort without any urban status. In 1948, when it was decided to be the capital of Odisha, internationally known architect Otto H Koenigsberger designed the city for a population of 40,000 over an area of 16.48 sq.km.. However, it has now become one of the fastest growing cities in the country and the municipality area covered 124.7 sq.km. in 1991 with a population of 411542[97].

With the satellite areas growing around the cities the urban agglomerate would cover a much greater area than the core municipal area. For instance, Bhubaneswar Development Authority envisages that by 2030 it will cover an area of 419.1 sq. km.[98].

Growth of urban population(select towns)

City/town	1934-35	1991	Approx. growth
Cuttack	65263	402390	6 times
Balaswer	17836	86116	5 times
Puri	37568	124835	3 times
Kendrapada	12620	35009	3 times
Jajpur	10680	27310	2.5 times

It is evident from the above tables that the growth of urbanization has followed a differential trend in different parts of the state; while it has recorded a substantial increase in terms of both the space (area) and population in case of few towns/cities like Cuttack, Bhubaneswar, Sambalpur and Rourkela, in some other cases like the Jajpur town the growth seems to be more or less normal.

While the growth of urbanization also gave rise to highly modified landscapes created by man, formation of slums was an essential part of this growth. For many who wanted to transform their rural lives into urban ones the slums acted like transit homes. Originally supposed to be of temporary nature and illegal status, the slums in some of the major cities gradually established themselves almost permanently (such as the Salia sahi of Bhubaneswar) and the authorities could no more ignore such areas. Hence, various welfare and developmental activities were extended to such areas, and even building housing projects for the slum population has been planned. Still however the slums normally represent a highly unplanned patch of habitation that neither resemble a rural one nor an urban one, and rather refer to an unhygienic place with but few exceptions.

[97] Orissa Post(2013). Foundation Day of Bhubaneswar:Vision 2030. 13th April 2013. http://www.orissapost.com/foundation-day-of-bhubaneswar-vision-2030/

[98] Ibid

The Government of India in its Ministry of Housing & Urban Poverty Alleviation constituted a committee to look into the matter of slums. This committee estimated that in Odisha the slum population in 2001 was 25.41% of the total urban population, and that the slum population in the state would increase from about 14 lakhs in 2001 to about 19.48 lakhs in 2017[99].

The slums can be termed as floating annexes to the urban areas having a number of vulnerabilities in terms of land use and landscape. Unfortunately most of the major decision making on slums is influenced by political interest as the slum dwellers highly look forward to various legal entitlements and for this purpose depend on the political leaders who in turn are keenly interested to use them as their vote banks, even if there is an issue of threats to the local and national security(like in case of illegal migrants from Bangladesh settled down in the slums of Bhubaneswar).

The Odisha government has aimed at making the urban areas slum-free by 2020[100].

12. Traditional and community land use management:

Traditional land use management, often practiced collectively at community level, has its many facets. The tribal communities had a tradition of allocating common land for hill cultivation purpose based on certain community regime. In western Odisha water management was done through a very adaptive water harvesting system known as Muda, Kata, Bandh, and Sagar, etc. which, being ignored thanks to modern practices, has resulted in water crisis. And community forestry is quite wide-spread and well-established in this state and a part of the valuable forest resource has remained intact because of this. However, except for some broad approach to the issue the conventional system doesn't much seem to be comprehensive and holistic enough.

13. Conclusion:

The situation is chaotic and alarming in respect of land use trends and inequilibriums not only in Odisha but also in the country. The recent torrential flood in Uttarakhand accompanied by landslides once again proved to be an ecological disaster resulting from highly imbalanced land use. Such disasters happen because there is no national/state policy on sustainable land use management. The government prioritizes land uses either for corporate growth or for vote, and other vital considerations become but secondary. As such we find the Government of Odisha recently announcing establishment of Land Banks for industries so as to make the land acquisition process very convenient for the industrial investors. Almost at the same time the government also decided that gochar land merging into urbal areas would now be allowed for non-grazing purposes. In the first announcement the serious implications of industrial land use was totally sidelined whereas in the second case the fact that even urban areas need pastures for

[99] Report of the Committee on Slum Statistics/Census, tables 2A and 2C. http://mhupa.gov.in/W_new/Slum_Report_NBO.pdf

[100] '2020 suddha sahararu basti hatiba', the Prameya, 1 October 2013

the livestock on which the urban population depends for the daily need for milk and milk products was completely ignored.

Recently the city of Cuttack saw a number of demolitions of many big religious shrines on the ground that these were constructed illegally on the government land. Some of these temples were constructed on gochar land, river embankments, and other such environmentally or socio-ecologically sensitive/important lands under the officially possession of the government. The demolition drive destroyed properties for which a huge investment of public money had been made. To avoid public rage, the administration got a Court order in its favour and also employed police force. While the government has every right for such an action, and the real culprits are those who invested the public money for unauthorised constructions; the more fundamental question is how come the administration allowed these constructions? Such big temples and complexes took years for their completion and were not created overnight, so the government had every scope to stop the construction when it began. Why was this not done, and why did the administration remain lenient in the matter for years thereby encouraging more such unauthorised constructions? These questions in fact expose the other side of the story that just tells us that even if there is a policy, there would be government officials who would just ignore the same for a good bribe or other favour or sometimes under a political pressure; and by the time things are tried to be rectified it is too late.

Land is precious, and land use must be a strategic concept for the country considering the increasing population pressure, environmental degradation, climate change, and natural disasters. It is too late to adopt a comprehensive policy and practice in this respect. However, our policymakers and strategists can learn a good lesion from a small local practice of Odisha that shows how every part of the land can be used in the best possible way according to its potential. In many areas of the state one can see the growth of bacha(*Acorus calamus*, an important medicinal plant) very close to the tube wells where the waste water accumulates. This helps prevent creation of an unhealthy marshy ground that could have otherwise been formed by the waste water flowing from the tube well, and at the same time makes best use of this ground for growing a medicinal plant that has many uses in the indigenous tradition and can grow in waterlogged areas[101].

[101] Some very interesting details on the plant are shared by herbalist Jim Macdonald at http://www.herbcraft.org/calamus.html.

Bacha plants growing near a tubewell.

Last but not the least land use management is a concept that has to integrate in itself environmentalists, sociologists, geologists, landscape ecologists, civil engineers, agriculturists, economists who strongly believe in inclusive growth, and military strategists. The objective should be how to withstand the pressure of growing development needs for a sustainable future. However, neither the government nor the civil society has made it a priority agenda so far, and things have been discussed in isolation to each other. This has led to the dangerous situation that the country faces now, we must act now before it becomes totally out of control.

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ANNEXURE-I

District-wise area under encroachment

District	Area under encroachment(acre)
Cuttack	9819.043
Khurdha	1941.74
Jagatsinghpur	1234.15
Jajpur	1124.634
Kendrapada	2394.937
Puri	1736.743
Balaswer	2177.672
Bhadrak	610.47
Dhenkanal	5562.568
Angul	4435.77
Ganjam	4363.376
Sundargarh	9732.131
Sambalpur	2400.37
Bargarh	3721.74
Deogarh	1088.52
Jharsuguda	2389.468
Bolangir	6421.393
Sonpur	1525.07
Kalahandi	1147.357
Nuapada	1252.437
Boud	478.595
Koraput	1450.91
Malkangiri	519.201
Rayagada	2667.7
Nabarangpur	1199.73
Keonjhar	1310.227
Nayagarh	1719.29
Gajapati	971.306
Kandhamal	481.338
Mayurbhanj	5627.25
Total	**81505.136**

(Based on the Dharitri, 3-8-2009. However, the district totals do not match with the cumulative figure provided.)

Annexure-II

Forest land encroachment in Odisha

District	Encroachment in hectare
Nabarangpur	34935.53
Sundargarh	3771.36
Nuapada	7241.16
Rayagada	2389.96
Nayagarh	1545.61
Mayurbhanj	2797.21
Malkangiri	5977.92
Koraput	2998.41
Kandhamal	1475.04
Keonjhar	3140.58
Kalahandi	1307.23
Balangir	5118.46
Ganjam	977.75
Sambalpur	822.29
Baleswar	281.54
Angul	658.08
Khordha	172.02
Boud	276.68
Bargarh	293.12
Jagatsinghpur	518.53
Jajpur	423.25
Gajapati	506.65
Dhenkanal	557.93
Deogarh	165.67
Cuttack	86.49
Jharsuguda	59.34
Bhadrak	11.66
Sonepur	5.45
Puri	0
Kendrapada	0
Total	**78514.92**

(Based on the Samaj, 19-3-2013, Rourkela edition, p.5. However, the district totals do not match with the cumulative figure provided, i.e. 78505.07 ha. This may be because of erroneous printing of some district figures. However, mentioning Puri and Kendrapada district figures to be zero seems controversial particularly as the Forest Department has been trying to evict the people of Vekta-Bagapatia villages near the Bhitarkanika sanctuary with a claim that this is a forest land. More important is that fact the many areas in and around the sanctuary are said to have been now under the encroachment of prawn mafias.)

Annexure-III

Land area(in acres) under government and private ownership as per legal status

District	AJA	AAA	Rakshit	Sarbasadharan	Total govt. land	Rayati	Ratio of govt. land and Rayati land
Dhenkanal	173774.215	52267.194	109798.54	18591.164	354431.113	437477.286	0.81017032
Nayagarh	46554.88	86324.05	130878.48	19662.13	283419.54	315643.78	0.897909473
Baragarh	55392.34	30701.86	205941.64	32097.52	324133.36	939358.02	0.345058384
Deogarh	158353.91	24547.99	124349.53	4722.09	311973.52	122777.91	2.54095806
Balasore	51194.833	32465.6	109270.43	17189.475	210120.338	727309.863	0.288900713
Nuapada	58749.264	32545.55	131728	15262	238284.814	385661	0.6178608
Kandhamal	228775.4	429501.97	244816.59	19863.46	922957.42	300920.94	3.067109321
Malkangiri	148392.33	164382.08	395157.2	40027.51	747959.12	292106.42	2.56057063
Jajpur	121436.72	32884.216	51938.54	11278.7	217538.176	487065.375	0.446630344
Cuttack	26224.573	72748.004	56618.003	9804.82	165395.4	301372.141	0.548807861
Sambalpur	210675.932	48175.44	243670.08	30621.33	533142.782	482672.776	1.104563606
Nabarangpur	122151.38	127528.31	162501.29	21983.17	434164.15	375079.91	1.157524406
Balangir	44468.849	60099.361	240571.712	31982.698	377122.62	858457.557	0.43930258
Rayagada	161651.009	532012.712	101153.816	33868.54	828686.077	404159.996	2.050391145
Koraput	62782.52	345068.828	91378.485	27237.776	526467.609	649848.44	0.810139067
Boud	45063.65	49078.73	83738.8	15880.43	193761.61	179635.09	1.078640092
Total (16 districts)	**1715641.81**	**2120331.895**	**2483511.14**	**350072.813**	**6669557.649**	**7259546.504**	**0.918729241**

(Source: District-wise statistics available with the Board of Revenue, Odisha)

SUPPLEMENT

A SITUATIONAL ANALYSIS OF CHANGE IN LAND UTILIZATION PATTERN IN ODISHA[102]

1. Backdrop

Land, an essential asset to achieve economic growth and social equity especially in developing countries like India, holds a significant place in the life and livelihood of common man. Utilisation of land is a not only linked with physical and biological systems and processes but also societal processes and behaviour. Land is mostly utilised for producing food stuffs, developing industrial sector, constructing roads, laying down communication lines and constructing dwellings and public institutions, etc. Entire superstructure of a nation is created on land resources.

During colonial era, India had a bitter experience of the land being used as a tool in the hands British as a result of which the economic independence was lost and social processes shattered. The British deliberately changed the land utilization pattern and ownership in order to acquire land at low prices for mines, plantations etc. The introduction of the institution of private property delegitimized community ownership systems of tribal societies. The *zamindari* system was popularized. Even after independence India inherited a semi-feudal agrarian system. The landlord and tenant relationship was in vogue. The ownership and control of land was highly concentrated with few landlords. The tenants were to pay rent either in cash or kind. The said arrangement was a de-motivation factor for the sharecropper or the tenant farmer to develop farmland for increased production. The real cultivator was not having tenural security. A high proportion of the output was to be paid in rents. These are factors which dissuade the farmer for investing in land developments and high cost inputs required for improve productivity. As a result, agricultural productivity suffered and oppression of tenants resulted in a progressive deterioration of their plight.

The post independence period witnessed a change in dealing with land related issues. With a national objective of alleviation of poverty, enhancement of land productivity and equitable distribution of the land was taken up. Land reform was also taken up as priority agenda for accelerating economic growth. In the first three decades after independence, a substantial budgetary allocation was made for the implementation of land reforms. The measures like the abolition of intermediaries, protection to tenants, rationalization of different tenure systems, and

[102] This is the report submitted by SERVICE, a consultancy firm that worked for RCDC to study the issue of land utilization. -RCDC

the imposition of ceiling on land holdings was adopted. Though the effort registered sporadic success with an immediate effect, it was not able to get rid of the issues. It still persists in variable degrees even after six decades of independence. As per the findings of different studies, the landed elite and their powerful nexus with the political-bureaucratic system have successfully been able to turn the land reforms into their way. As a result, we are today at a juncture where land, mostly for the educated elite, and who also happen to be the powerful decision-makers, has become more a matter for industrialization, housing, investment and infrastructure building. In the battle, the land as a basis of livelihood – for subsistence, survival, social justice and human dignity is becoming a misnomer.

In Odisha, the proportion of area under cultivation to total cultivable area has been reduced from 86% in mid nineties to 82% in the year 2010. Taking into account the total land resources including hills, mountains, lakes, rivers and lands of all description, the availability of land per head in Odisha comes to only 0.37 hectare in 2011. Population growth poses immense pressure on arable land and other biological resources. Over exploitation of land resources is causing environmental degradation. Environmental degradation in the form of soil erosion, deforestation etc is alarming in developing countries like India. The process of technological progress and development in India is having a major impact on the land use. The key factors responsible for change in land use are changing techniques of production, industrialization, urbanization, changing life styles, rising aspirations, and change in consumption pattern, etc..

1.1 Objective of the study

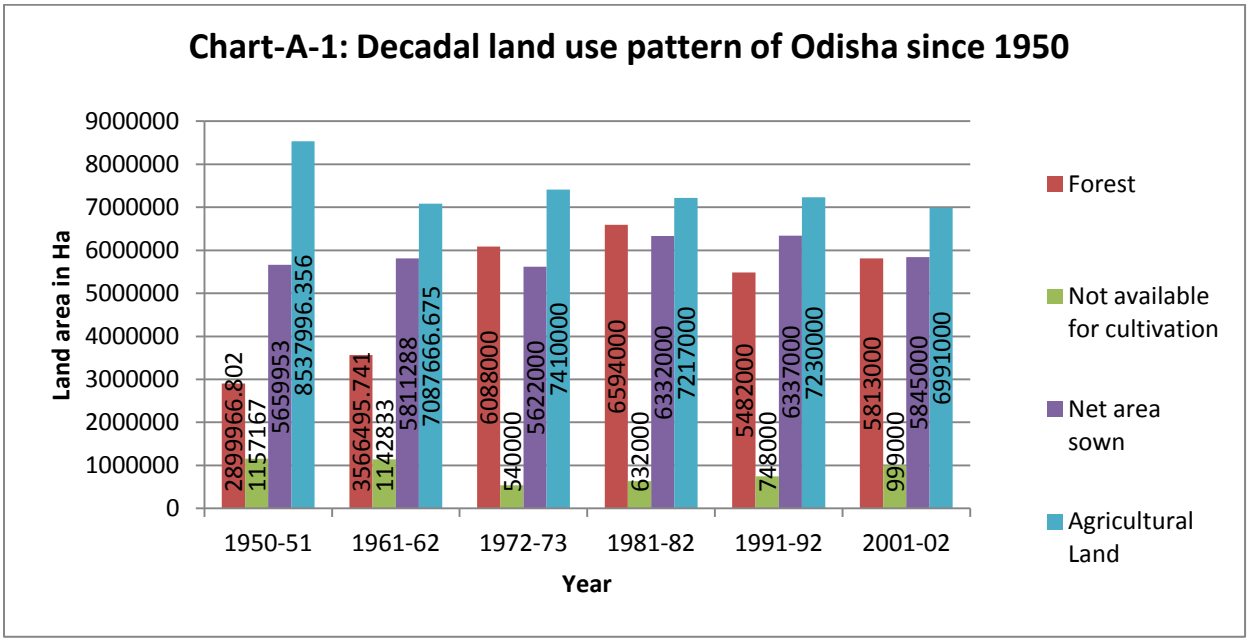
a. To analyse overall change in land utilization pattern, its possible causes and justifications, and related impact on environment and livelihood.
b. To critically assess the same in context of forest land diversion with a special emphasis on FRA, reforestation and CAMPA programmes.
c. To gauge the nature and extent of land diverted for other purposes due to MGNREGS, mining and plantation, etc.
d. To assess the Forest Rights Act, 2006 in context of change in land utilization pattern

1.2 Methods of study

Apart from the desk research, it has been attempted to collect case studies from the field to support the information base.

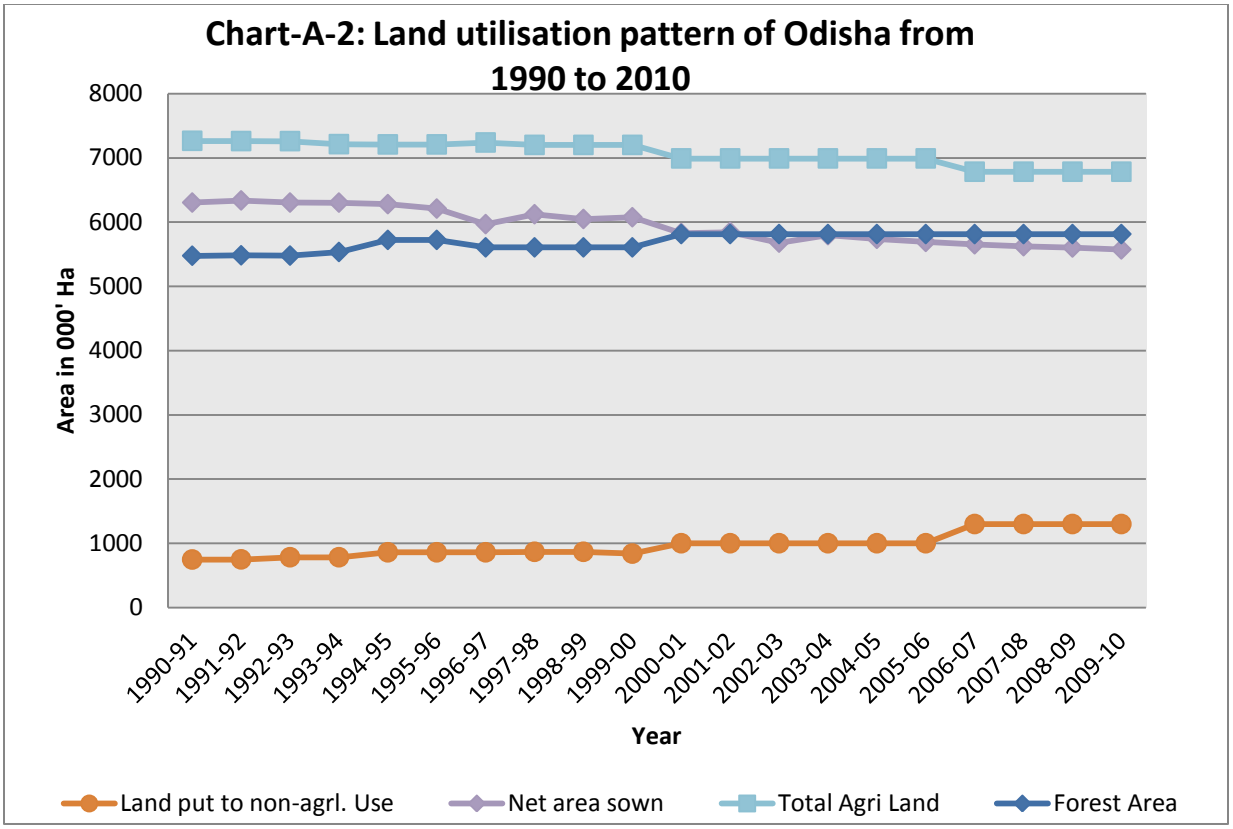
2. Land utilisation - status and trend in Odisha

In the post independence era, there has been a marked change in the land utilization pattern for several reasons. The graph below depicts the decadal trend in land utilisation pattern[103] after 1950. It shows a continuous declining trend of availability of land for agriculture excepting a 5% increase registered in the sixties. Agriculture land has been declined from 8537996 ha in 1950 to 6991000 ha in 2001 which is around 18 percent. Net area sown has declined to 5845000 ha in 2001 from 6337000 ha in 1991. Forest area registered a parabolic growth in last five decades. The area under forest increased up to 1981, then shows a declining trend. Area not available for cultivation has been declined up to 1972 and then increased continuously. Area not available for cultivation and forest area increased since 1991 and agriculture area decreased. In this period there is a major policy shift by the government for trade liberalization and new industrial policy with privatization and globalization.



However, there are major changes in the land utilization pattern after 1990s. Chart- A-2 shows that forest area increased up to 1995, then decreased and again increased in 2000 and remained stable till 2009. The net area sown decreased from 6303 thousand ha in 1993 to 6279 thousand ha in 2004. This is because there is an increase in area available for non agriculture use to 858 thousand ha in 1994 from 781 thousand ha in 1993.

[103] For convenience some of the related categories have been merged into one broad category in this chart, like the agricultural land includes in itself the current fallow, cultivable waste, and cultivated land(gross cropped area).



There was gradual decline in net area sown due to various causes but the measure change is due to increase in non agricultural use of land and decrease in agricultural land. Again, when land put to non-agricultural use increased to 999 thousand ha in 2000 from 838 thousand ha in 1999, there was an impact on net area sown as the area reduced from 6075 thousand ha in 1999 to 5829 ha in 2000. Agriculture land gradually decreased but it drastically reduced up to 6991 ha in 2000 from 7201 thousand ha in 1999. Net are sown also became affected in 2006 drastically when agriculture land decreased to 6784 thousand ha in 2006 from 6991 thousand ha in 2005 and sudden increase in area available for non agriculture purposes to 1298 thousand ha in 2006 from 999 thousand ha in the year 2005. This nearly 30% increase in the land put to non agriculture use may be attributed to industrialization, urbanization and a sudden shoot up in infrastructure like road and railways.

Table-A-1. Land utilization pattern in Odisha from 1990 to 2009 (area in 000' Ha)

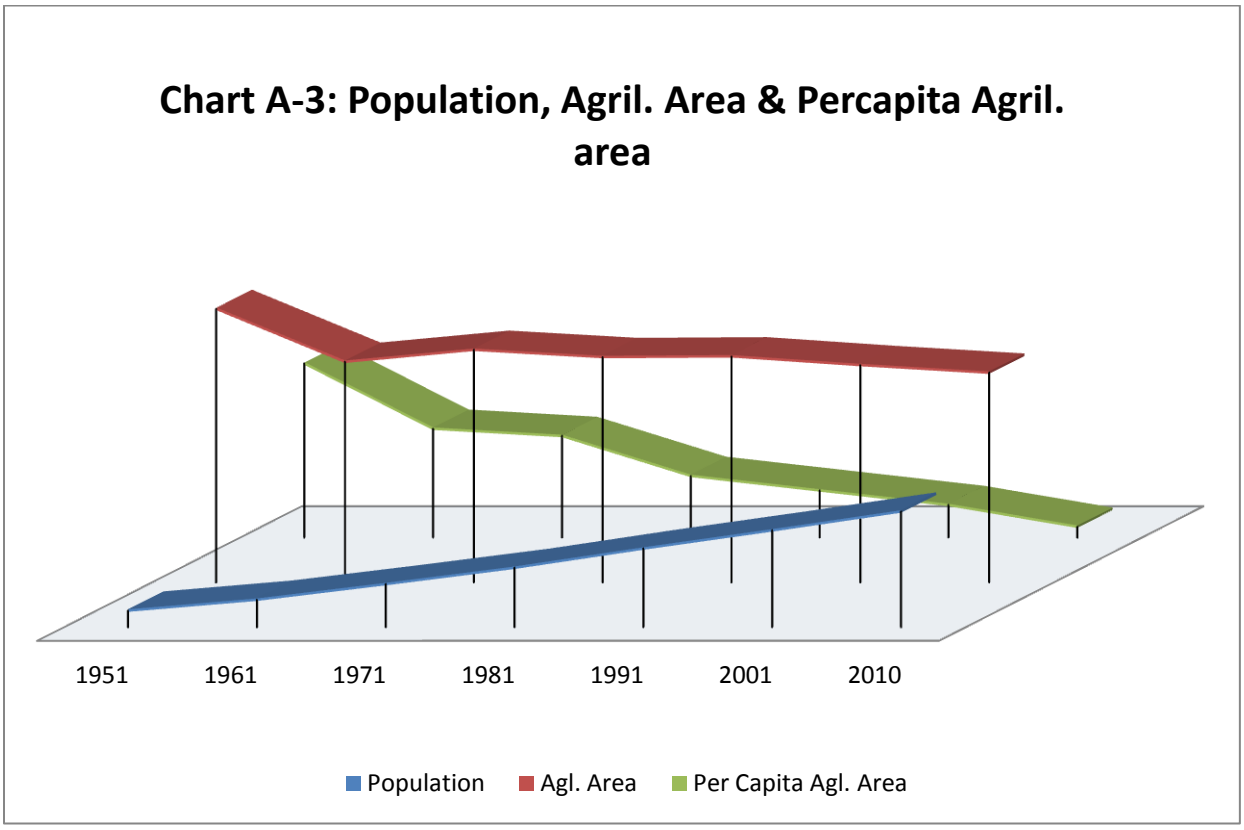
Year	Geographical area	Forest area	Misc. tree	Permanent pastures	Culturable Waste land	Land put to non-agricultural use	Barren & unculturable land	Current fallow land	Other fallow land	Net area sown	Total agricultural land
1990-91	15571	5476	859	726	597	746	499	150	214	6304	7265
1991-92	15571	5482	855	726	572	748	499	168	184	6337	7261
1992-93	15571	5478	857	663	538	781	532	215	203	6304	7260
1993-94	15571	5534	867	635	487	781	541	180	243	6303	7213
1994-95	15571	5722	715	514	435	858	553	197	298	6279	7209
1995-96	15571	5722	715	514	435	858	553	241	323	6210	7209
1996-97	15571	5606	764	534	445	858	570	483	343	5968	7239
1997-98	15571	5606	774	534	445	866	590	298	336	6122	7201
1998-99	15571	5606	774	534	445	866	590	372	336	6048	7201
1999-00	15571	5606	774	534	445	838	618	345	336	6075	7201
2000-01	15571	5813	482	443	392	999	843	430	340	5829	6991

2001-02	15571	5813	482	443	392	999	843	320	434	5845	6991
2002-03	15571	5813	482	443	392	999	843	485	434	5680	6991
2003-04	15571	5813	482	443	392	999	843	369	434	5796	6991
2004-05	15571	5813	482	443	392	999	843	426	434	5739	6991
2005-06	15571	5813	482	443	392	999	843	474	434	5691	6991
2006-07	15571	5813	342	499	375	1298	840	526	229	5654	6784
2007-08	15571	5813	342	494	375	1298	840	556	229	5624	6784
2008-09	15571	5813	342	494	375	1298	840	576	229	5604	6784
2009-10	15571	5813	342	494	375	1298	840	606	229	5574	6784

Source: Directorate of Agriculture and Food Production , Odisha

2.1 Diversion of agriculture land

Odisha's economy has remained mainly agrarian. Agriculture and allied sub-sectors that contributed more than 70 percent of the Gross State Domestic Product (GSDP) in the 1950s dominate the economy. The State economy has been diversifying at a slow pace. As per 'quick estimates', this sector which includes animal husbandry, fisheries and forestry contributed 18.44 percent of GSD as against 14.60 percent at national level in 2009-10. However, this sector provides employment directly or indirectly to more than 60 percent of the State's workforce. In this sense, the agriculture sector is still the mainstay of Odisha's economy. Unfortunately, the availability of the most important resource to the sector i.e. land resource is declining very fast. As multiple demands for land increase, less land is devoted to agriculture and allied sub-sectors.



Growth of population and reduction in area under agriculture is posing a serious threat to the food security of the state. While there has been a threefold increase in population since 1951, the agriculture land has been reduced by 20 percent. It is important to note here that the per capita land holding has been reduced by 70 percent over a period of 60 years from the year 1951 to 2010. The situation is alarming as it may lead to deficiency of food grain to feed such a vast population. Though there has been an increase in the area sown more than once and yield rate, there is an ardent need to enhance the productivity of land in a sustainable way to tackle the food crisis in future. Otherwise, there is every possibility that the dependency syndrome on neighbouring states for agriculture produce will be increasingly high.

Table A-2. Change in per capita agriculture land

Year	Population	Agriculture land (in Hectare)	Per capita agriculture land (in Hectare)
1951	14,645,946	8537996	0.58
1961	17,598,846	7087667	0.40
1971	21,944,615	7410000	0.38
1981	26,370,271	7217000	0.27
1991	31,659,736	7230000	0.23
2001	36,706,970	6991000	0.19
2010	41,947,358	6784000	0.16

Source: Office of the Census and Registrar General, Govt. of India; and Directorate of Agriculture and Food Production, Govt. of Odisha

Rapid industrialisation and mining has got a severe detrimental impact on land use in general and agriculture land use in particular in Odisha. The report of WIO claims that in just 13 years, from 1991-92 to 2004-05, severely degraded land in the state has increased by 136 percent, barren land has increased by 69 percent and land converted to non-agricultural uses has increased by 34 percent. This is about 7 percent of Odisha's total geographical area. By 2004-05, as high as 17.5 percent of Odisha has turned barren or unsuitable for agriculture. In mining and industrial districts like Rayagada and Jharsuguda agriculture lands are already shrinking very fast. In Rayagada district the area under un-productive land is nearly 174 percent higher than that of cultivable land. Such lands amount as high as two third of Jharsuguda's total cultivable area. "Development emphases of the State Government have narrowed down to industrialization only without any attention given to land and agriculture, which sustain close to 90 percent of rural population." Congregation of polluting and heavy water and mineral consuming industries will further aggravate land degradation in the state.[104]This speaks the grievousness of the issue.

An estimation shows that in the year 2009-10 a total area of 95960 hectares is given for mining lease out of which 14676.63 hectares are forest land. Hence, rest 81,283.37 acres are agriculture

[104] Vide the study findings of Water Initiatives Orissa(WIO) 'Orissa in india to turn desert in 150 years!' at www.civicus.org/new/media/WaterInitiativesOrissa.doc -RCDC

area or common property resources. It can be safely assumed that more than 90 percent of this is agriculture land.

The amendment to the section 8A of the Orissa Land Reforms Act facilitated conversion of agricultural land for non-agricultural purpose. The amendment prescribes for 50 percent and 100 percent conversion fee for those who have done the conversion before and after 1993 respectively. This easier method to convert agricultural land into non-agricultural purpose could only end up promoting industrialization at the cost of farming. Such apprehensions seem to have a strong basis as the move for industrialization and the said legal changes have come almost during the same time.

2.2. Forest land diversion

A considerable part of India's forests and forest land has been diverted for 'development' and infrastructure projects such as mines, power plants, dams, roads, industries, sports and tourism facilities, and ports. Since 1980, when the Forest Conservation Act centralised the process of allowing (or rejecting) such diversion, about 1.2 million hectares have been given for such purposes, and prior to this, from 1951 to 1980, about 4.24 million hectares were diverted.

Given that most forest areas in India have been inhabited or used by people, this scale of forest diversion could only have meant displacement and dispossession at a mass scale. Development projects are said to have caused the physical displacement of about 60 million people between 1946 and 2004[105]; and a substantial part of these people are supposed to be tribals and other disadvantageous communities.

Odisha, mesmerized by the 'growth syndrome', strives for double digit economic growth; and land has been allowed to be acquired here quite liberally in the name of development primarily for dams, industrial projects, mining, environmental protection, urban development and other infrastructure projects.

Planning Commission estimates suggest that 21.3 million people were displaced by development projects between 1951 and 1990 alone. Of these, 8.54 million (40%) belonged to Scheduled Tribes constituting only 8% of the total population. Only 2.1 million (25%) of them are reported to have been rehabilitated. The rest were left to fend for themselves.[106]In Odisha the major

[105] Walter Fernandes quoted in Hoshour, C.(2010). Multiplying Displacement Impacts: Development as Usual in a Changing Global Climate. http://www.accountabilityproject.org/downloads/KateHoshourPaper.pdf

[106] Address given by Shri Dilip Singh Bhuria, Chairman, National Commission for Scheduled Castes & Scheduled Tribes, Government of India, at the National Meeting on Community Forestry Issues organised by the World Bank, Manesar, Haryana, November 8-9, 2001.

developmental projects have come up in Scheduled Areas[107] as paradoxically these areas happen to be rich in minerals and natural resources and hence the poor tribals/forest dependents are the worst affected of the developmental process. An estimate of displacement by development projects is that of 1.5 million people being displaced by development projects between 1951 and 1995, of which 42% were tribals. As per this estimate, less than 25% of the displaced tribals were ever resettled even partially(Kumar et al, 2005).

Insensitive and bureaucratic conservation programmes have emerged as threat for the people who have been traditionally residing in and depending on those land and natural resources. Reckless forest Plantation and declaration of protected areas have created a major problem as the rights of all inhabitants in and around these areas in the forest and forest land is being extinguished, affecting their livelihoods and sometimes leading to displacements.

A rough estimate of the area acquired and villages affected due to the developmental and conservation projects in Odisha is around 1215679 ha and 2170 villages respectively.[108] Large-scale mining and industrial projects are the important cause of displacement. As much as 1019.47 sq. km. of land has been leased out for mining in Odisha, with most of them in Scheduled Areas.

In most of the cases the oustees of the developmental, conservation, urban development and infrastructure projects have been forcibly uprooted from their ancestral land with meagre cash compensation or even left to their fate without any compensation. These tribals/ non tribals displaced by different projects (such as dams, mines, industry etc.) who have not received rehabilitation and have managed to eke out a living in forestlands are now treated as 'encroachers'[109].

The bitter experiences of the past projects which have led to destitution of a large number of tribals and destruction of their livelihoods base and their culture have invoked the local people to show strong resistance against the mining and developmental projects in their area (examples are: Lanjigarh, Kalinganagar, and Kashipur, etc). Another important reason of the strong resistance is that although most of the land in the area proposed to be acquired being categorized as government land, most of the land is under cultivation by the tribals. More important, since large areas of land cultivated by scheduled tribes are not legally settled in their names (due to

[107] The major dams taken up in Scheduled areas are the Machkund, Salandi, Balimela, Upper Kolab, Indrawati, Mandira etc. Similarly the major industrial projects taken up in Scheduled Areas have been the Rourkela Steel Plant, NALCO's Alumina refinery at Damanjodi, HAL(Sunabeda), and Vedanta Alumina(Lanjigarh), etc.. More such industrial projects are in the piperline in the Scheduled Areas.

[108] The data about land acquired, villages affected and the number of people displaced or affected by various development projects hasn't been compiled properly till date. The data as provided may be taken as the lowest estimate and it doesn't include people affected by minor irrigation projects, infrastructure projects such as roads etc.

[109] This is chiefly because many such areas have been not surveyed for recording the tenancy rights. -RCDC

faulty survey and settlement), they receive no compensation when such land is taken up for development projects. Thus in Lanjigarh, while acquiring land from Vedanta, the local tribals cultivating government land were simply evicted without any compensation, destroying their livelihoods.

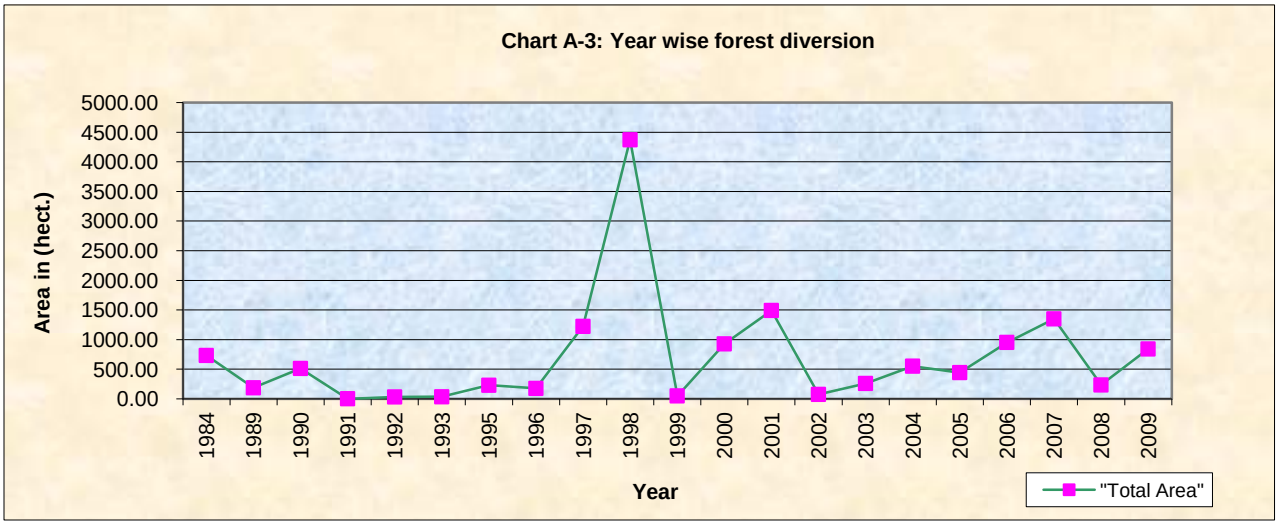
Odisha possesses some of the most valuable mineral reserves in the world, mostly in the areas that are ecologically fragile. Districts like Keonjhar, Sundergarh, Mayurbhanja, Rayagada and Koraput are found to be rich in mineral resources. These areas are home to a sizeable tribal population (more than 50% of the tribal population of the State); those are totally dependent on forests and agriculture for their livelihoods and survival. It has been found out that in minerals like Iron, Bauxite and Manganese, 70% of the total leased out area are largely concentrated in tribal pockets which also happen to be the most backward areas of the state.

The current resource extractive development paradigm adopted by the state has led to the marginalization of these poor people due to alienation of natural resources from them. Researchers estimate that approximately 2 million people have been directly affected in varying degrees, 0.5 million of which have been physically displaced losing their original habitat & livelihood. Tribals constitute the largest portion of displaced population. Shrinking of natural habitats due to the existing developmental paradigm has disrupted the socio-economic and cultural life of tribals making them vulnerable to external pressures, which may result in their extinction if proper and early action/care in their rehabilitation is not initiated at war footing level by the government. The extent of agricultural lands losing productivity due to impact of mining is estimated to be 5 km surrounding the mine. Keonjhar, a tribal district, has reportedly lost about 2 lakh hectares of paddy land due to ongoing mining activities. The local economies that primarily circled around agriculture, forest produces and traditional occupations are on the verge of collapse. Absence of proper benefit-sharing mechanisms has led to the concentration of benefits from mineral resources in a few hands. The worst victims of this entire muddle have been the tribals and dalits. The tribal peoples are critically dependent on natural resources like forest, water for their sustenance which is at stake due to the proposed upcoming developmental projects to be commenced in this area.

In this backdrop and particularly the situation arising after the declaration of new industrial & mineral policy of state government and proposed environmental law by Central government, there is an urgent need for strict enforcement of environment protection and conservation laws in order to protect the livelihood and environment of peoples living in and around the mines and industrial areas.

A number of development activities in different sectors like irrigation, mining, industries, railways and roads etc are in progress which involves diversion of forest land for non forestry purpose. For diversion of forest land for different non-forest purpose, prior approval of Government of India under Section 2 of the Forest Conservation Act, 1980 is mandatory. Since inception of the Forest (Conservation) Act, 1980, 350 nos. of projects belonging to Irrigation,

Industry, Mining, Transmission Line, roads, railways and defence sectors have been cleared by Government of India under provisions of Forest (Conservation) Act, 1980 diverting 36959.72



ha of forest area in total till 2009-2010.

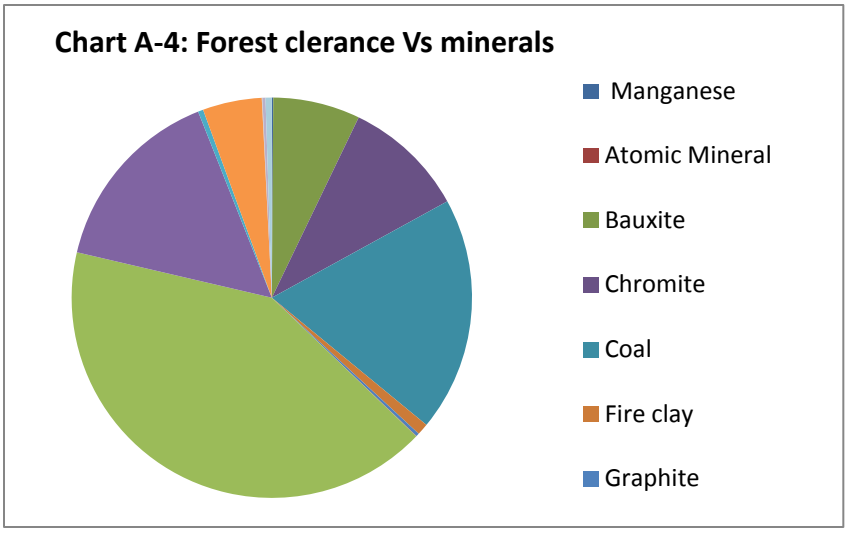
Diversion of forest lands for industrial, commercial and other projects has been increasing rapidly over the past decade; the annual rate of diversion between 2002 and 2008 was 50% higher than that between 1980 and 2002[110]. The acceleration in diversion reflects increased pressure from industry, especially mining companies, for access to minerals and forest land. Forty five mining projects have been given in principle or final clearance in just October and November 2008, and 74 more are pending. Many of India's protected areas, wildlife corridors and community forests have been greatly harmed by forest diversion for extremely destructive activities.

*Forest diversion for mining***:** As per the information obtained under RTI Act from Department of Forest, Government of Odisha, till June 2009 an area of 14676.63 Ha has been diverted for various types of mining activities. The information indicates that maximum forest area has been diverted for iron ore mining (6087.18 Ha) followed by coal mining (2781.45 Ha), iron & manganese mining (2252.49 Ha), chromite mining (1446.86 Ha), bauxite mining (1032.15 Ha) and manganese (700.89 Ha).It has been found out that for rest of the minerals a relative lesser forest land has been diverted.

Year wise diversion of forest for mines activities: A comparison of forest diversion by mining in between 1990-99 & 2000-09 shows that there has been increased in diversion of forest land. The data shows that an increase of 496 Ha (7.47%) forest diverted in 2000-2009 (till June) in comparison with 1990-1999. Year-wise maximum of forest has been diverted during the year 1998 (4371.989 Ha), followed by 2001 (1491.685 Ha), 2007 (1349.951 Ha) and 1997 (1222.947 Ha).

[110] Economic Survey 2009-10

Out of the total 4371.989 Ha of forest land diverted in 1998, around 3989.535 Ha of forest land involves iron and iron & manganese minerals. 20 projects were alone found from Keonjhar district and all minerals belong to either iron or iron & manganese. Similarly in 2001, 9 projects were cleared out of which, the *Sayabali –Balita Iron Mines in Thakurani RF of Sri S.L.Sarada & M.L.Sarada* involve around 865.276 ha, which is found to be second largest patch of forest diversion after the *Bolani mines* of SAIL. Out of the total forest diverted in 2007, 79.24% forest has been diverted only for iron and iron & manganese mines in Keonjhar, Sundargarh and Mayurbhanja district. Similarly out of the total forest diverted in 2009 (till June), 90.39% involve coal mines & mostly confined to Angul district.



Analysis of data suggests that there are totally 70 parties who applied for iron, iron & manganese, and manganese(exclusive) through diversion of forest land for mining purpose. Out of it, 59 parties are private parties and rest are government owned agency like OMC, SAIL.

District wise forest clearance: The data states that out of total land diverted for non forest activity , around more than half land (51.16%) belongs to Keonjhar district followed by Sundergarh (13. 81%), Angul (10.13%), Jajpur (7.92%), and Koraput (7.03%).

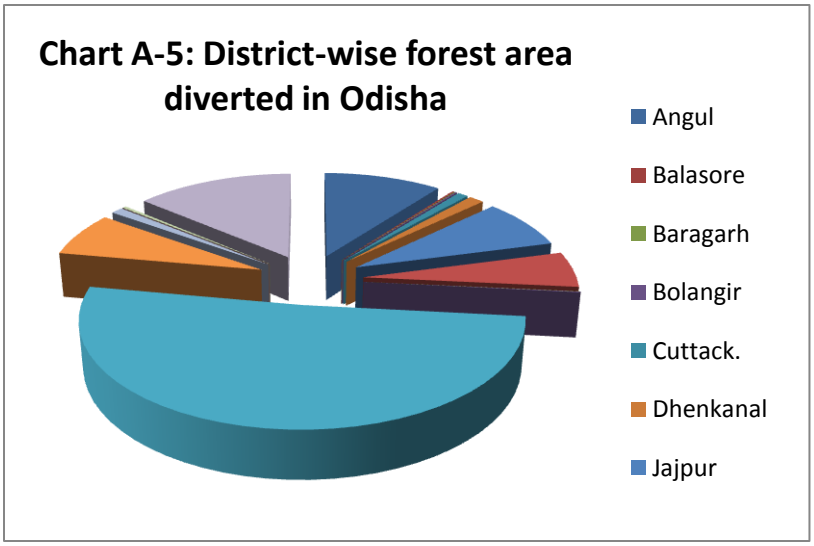


Table A-3: Forest land diverted for non forest use

Year	Total Forest area (in Hectare) in Odisha	Diverted to non forest use (in Hectare)	Present forest area (in Hectare)
1982	5,996 ,000		
Till 1999		24124.20	
2000-01		1219.06	
2001-02		1711.74	
2002-03		508.18	
2003-04		1493.71	
2004-05		1274.39	
2005-06		2207.23	
2006-07		886.21	
2007-08		1802.58	
2008-09		723.74	
2009-10		1008.68	
Total		**36959.72**	**5956340.28**
5,813,623 Hectare as per Government Record			

(Source: Office of the PCCF, Bhubnaneswar, Odisha)

Table A-4: Year wise project and diversion of forest land in Odisha

Sl. No.	Year	No. of projects	Area diverted for non-forest use(in Hectare)
1.	1982	1	3.43
2.	1983	4	124.02
3.	1984	18	2000.89
4.	1985	5	517.38
5.	1986	3	770.08
6.	1987	5	952.90
7.	1988	9	975.63
8.	1989	13	1737.38
9.	1990	24	2714.92
10.	1991	5	3.17
11.	1992	7	508.84
12.	1993	8	4729.25
13.	1994	3	788.92
14.	1995	6	317.94
15.	1996	12	1354.61
16.	1997	14	1902.49
17.	1998 & 1999	53	4722.35
18.	2000-01	27	1219.06
19.	2001-02	20	1711.74
20.	2002-03	15	508.18
21.	2003-04	23	1493.71
Total		**275**	**29056.89**

Source: Office of the PCCF, Odisha

It is evident from the above matrix that more than one third of the total forest land diversion for non forest use has been occurred in the last decade.

2.3. Diversion of CPR

Common property resources constitute all such resources which are meant for common use of the villagers. A large part of the country's natural resources was freely available to the rural population in ancient India. These resources were largely under the control of the local communities. Gradually, with the extension of state control over these resources, resulting in decay of the community management system, CPRs available in the villagers declined substantially over the years.

Till the end of the nineteenth century systems of community management of CPRs had existed in different forms in many parts of the country. Today, in almost all parts of the country, the villagers have legal right of access only on some specific categories of land like 'pasture and grazing lands' and 'village forests', which are under the jurisdiction of the village or Gram panchayat. All other categories of land not under private ownership like barren and uncultivable land, culturable waste and land put to non-agricultural uses belong to State.

Trends in the decline of commons have been recorded by several studies. (Jodha 1986, Iyengar 1988, Brara 1987, Chopra et al. 1990) The NSSO data of 1999 estimates a decline of 0.38% per annum in commons at all India level. Decrease in commons has intensified the conflict over resource use. Several studies indicate this phenomenon, with the poor families usually at the losing end, either by denial of access to these resources (mainly because of privatization of commons by a few) or by diversion of commons to alternate uses. Privatization of common resources and their use for alternative purposes, under the pretext of their being degraded, are the major contributing factors to their decrease. (Iyenger 1989; McKean 1992; Beck, 1994; Iyenger, 1997; Beck 1998; Beck & Ghosh 2000; Cavendish 2000)

The estimates on availability of common property land resources obtained using *de jure* approach is given in the matrix below. Common property land resources, as per this approach, include the categories of land like community pasture and grazing grounds, village forests and woodlots and village sites, on which the villagers have legal usufructuary rights.

Table A-5: Availability of common property land resources in rural India and Odisha

Item	***India***	***Odisha***
Percentage of common property land resources in total geographical area	15	9
Common property land resources per household (ha)	0.31	0.18
Common property land resources per capita(ha)	0.06	0.035

These also include all other land formally held by the *panchayat* or a community of the village. In fact, all *panchayat* land, even when given on lease to an individual or to any organisation, was considered as common property.

The restrictive definition of CPRs in the *de jure* approach excludes all government forests and revenue land which in practice may actually be used as common property. Yet it is seen that common property land resources form a substantial part (15%) of the total geographical area in India[111]. The irony is that while the proportion of CPR in Odisha is below one tenth of the total Geographical area it is much less in comparison to the national figure. However, in last two decades Odisha has witnessed a sharp decline in the permanent pasture and cultivable waste. While the former has registered a negative growth from 726 thousand hectares in the year 1990 to 494 thousand hectares in the year 2010, the latter has reduced from 597000 hectares to 375 hectares in the said period.

Management of CPR: Traditionally, common property regimes have contributed substantially to village economies by providing a source for fodder, fuel wood, small timber and employment in local products derived from raw material. At the same time, it has also proved to be a stable form of resource management.

In a developing economy poverty and natural resource dependency arise out of a skewed distribution of resources. CPRs provides a hedge against uncertainties and assured at least subsistence by sharing risks. Alienation and involuntary migration from common property resources is the inevitable outcomes. In fact, the equity implications of such systems of resource management are immense since the poorest members of society obtain a share of their sustenance from the public domain. Therefore, an enhancement of the sustainability of livelihood on common-property resources would work in the interest of equity.

However, the combination of population growth, technological change, and political forces has often destabilized existing common property regimes. Consequently, without necessarily giving adequate thought to the actual reasons, the institution of common property has often been accused of resource mismanagement. Imposition of private property rights has been instituted as a remedial measure. But enforcement of private property rights from outside the group or village is not a sufficient condition for optimal resource utilization. It may lead to adoption of patterns of land use incompatible with local needs or place land use in the hands of those with fewer incentives for efficient equitable local management, such as absentee owners.

The crisis in CPRs today is a part of the larger crises of farming systems and rural livelihoods, that have led to large scale resource extraction (water, fuel wood, timber and non-

[111] This estimate is based on the data on area of CPR land collected in the survey and the geographical area of the surveyed villages given in the Primary Census Abstract (PCA), 1991.

timber forest products (NTFPs), mining, grazing etc.), without consideration of resource regeneration and equity. The crisis is also a manifestation of institutional apathy. Effective formal and informal institutions have not been crafted to protect, develop and manage common lands. Results of Joint Forest Management (JFM) have been at best mixed, in terms of providing communities access to limited NTFP. Panchayati Raj Institutions have on the whole shown limited capacity to manage and develop common lands, prioritize MGNREGA and other developmental funds for CPRs. At times, these have also come into conflict with community-led initiatives, both traditional and facilitated by external agencies.[112]

Factors contributing to encroachment range from policy failure, expansion of agriculture based livelihoods in tribal areas and elsewhere as a means of enclosing more land for private use, usurpation of land by the elites sometimes in the name of and through the allocation of common lands to the landless and by the government, the corporate and public sector, builders and realtors. Encroachment of CPRs can come with or without a change in land use but often as a result of power dynamics leads to exclusion of the poor from accessing these land resources, or from seeking an improvement in the same through community initiatives. Usurpation of commons by the elite (local and external) and coming in the form of state policy favouring the diversion of commons to other uses (mining, SEZs, dams, etc.) or the privatization by local landlords, realty developers and mining interests.

The unprecedented growth of mines and industry is the major reason behind reduction of CPR in Odisha. The increased pressure on the land due to overgrazing has also become a cause of concern as the common land is shrinking and the population of bovine and small ruminants increasing steadily. The situation may further worsen wherein grazing land may be re designated as commercial land and local forests may be turned to conservation forests.

Meanwhile, the access of those tribal and forest dwellers or rural poor who traditionally depended upon the communal land has been curtailed. The worst affected have been the women whose daily lives have been severely stressed by the additional load of daily livelihood activities of food, fodder, fuel wood and water collection.

3. Major factors responsible for change in land use

3.1 Mining

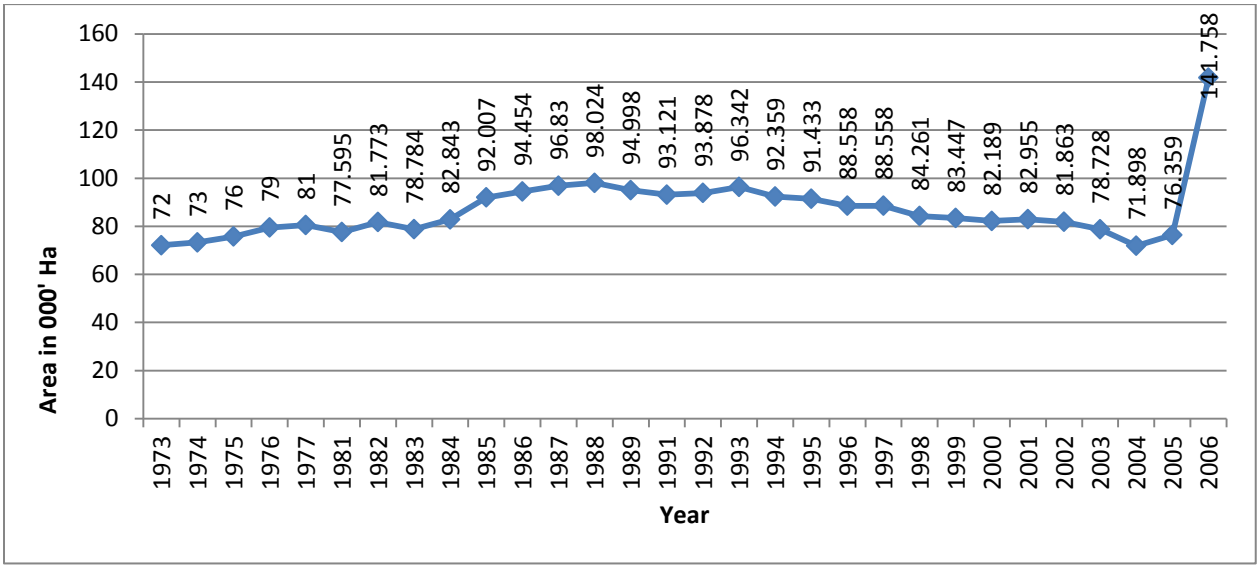
The high growth rate of the State's economy in recent years has led by high growth in the industrial sector. Most large scale industries in Odisha are mineral based. The mining sector contributes about 7.5 percent of real GSDP of Odisha. Being a favourite investment destination of global investors, this sector seems poised for rapid growth. In terms of total value of mineral output, Odisha ranks highest in the country and its share is increasing. Export of minerals and

[112] *A commons story- in the rain shadow of green revolution* by Foundation for Ecological Society (FES)

ores from the State has been rising. Hence, mining plays a crucial role in change in land use in Odisha.

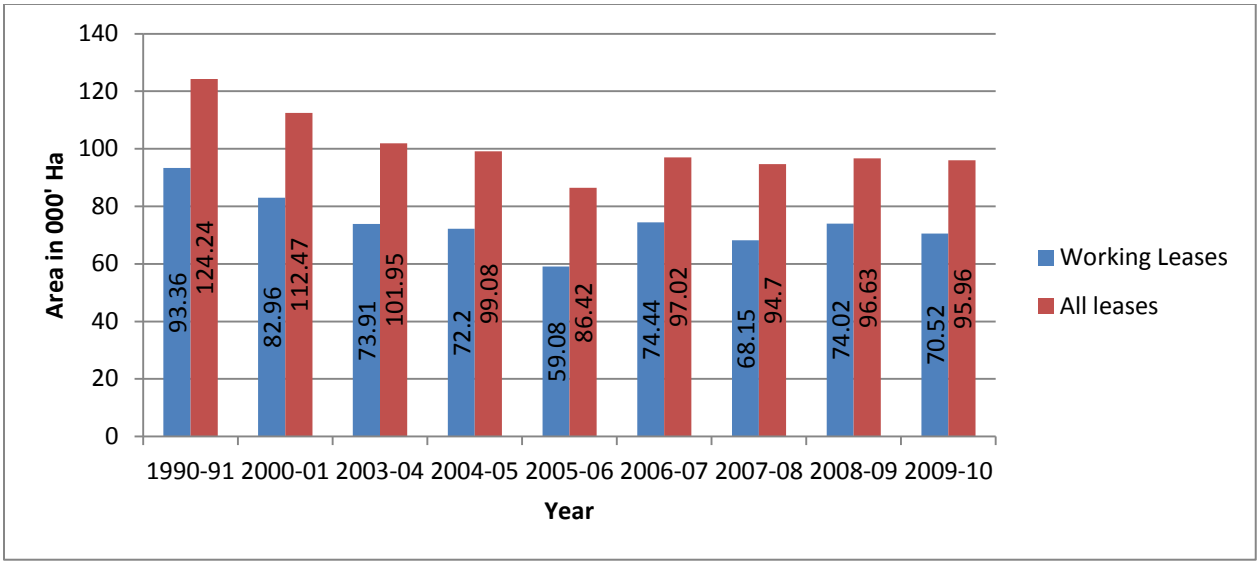
There was increase in working mines as well as more allocation of area for mines in Odisha from 1973 to 2006. The number of working mines initially decreased from 238 in 1973 to 224 in 1976 but there was gradual increase in area allocated from 72 thousand ha to 79 thousand ha in the same period. The number of mines increased thereafter to 406 in the year 1989 remained around 393 in 1994, decreased to 315 in 2000 and again increased up to 2006. However, the area under mines increased to 98024 ha in 1988 and then decreased with little fluctuation up to 76359 ha and suddenly the area nearly doubled to reach 141758 ha in 2006. The figure is also supported by the area under mining leases from 1990 to 2009.

Chart A-7: Area in 000' ha allocated for mines from 1973 to 2006



Mining leases: There was decrease in area for mining leases both working as well as all leases from 1990-91 onwards to 2005-06. After an increase in 2006, then onwards the area under mines does not fluctuate much. There was decrease in total area for mining leases from 124240 ha in 1990 to 86420 ha in 1995. The area under working mines in the same period has been decreased 93360 ha to 59080 ha, but there was a sudden increase in area under all as well as working mines to 97020 ha and 74440 ha respectively. There are 597 mining leases in 2009-10 covering an area of 95.96 thousand ha. Of these 330 leases over an area of 70.52 thousand ha were in operation.

Chart A-8: Leased area for mining in Odisha from 1990 to 2010



3.2 Industries and infrastructures

Industries, irrigation projects, infrastructure development like railways, road, and transmission lines are also major factors responsible for change in land utilization pattern followed by mines. It is estimated that nearly 22283 hectares (60% of total) forest land has diverted for these purposes in Odisha.

3.3. Development programmes and land utilisation

3.3.1. Forest Rights Act

Until the promulgation of FRA 2006, all such diversion of forests and forest land was undertaken without any consultation with local communities. People have a say only in public hearings if there is an environmental impact assessment procedure involved with the project, and there is nothing in the law or administrative procedures that requires project authorities or the government to take on board the results of such hearings. No public hearing is required, even now, for forest diversion, even though the diversion may seriously affect the lives and livelihoods forest-dwelling and forest-dependent communities. As a consequence such communities continue to be displaced from their forest surrounds, or dispossessed of their forest resources, due to 'development' projects.

Gram Sabha empowered to check forestland diversion: The Forest Rights Act, 2006 is meant to legally recognize the rights of Scheduled Tribes and Other Traditional Forest Dwellers who have been traditionally living in the forests but without any legal rights to the land. This progressive legislation aims to recognise the longstanding customary rights of the forest dwelling scheduled

tribes and other traditional forest dwellers rights over forestland and forest resources. It also recognizes rights to protect, regenerate or conserve or manage any community forest resource which they have been traditionally protecting and conserving for sustainable use and empowers right holders and their gram sabhas to protect forest, wildlife and biodiversity.

Currently the diversion of forest land for development and private projects is carried out under the Forest Conservation Act, 1980, which does not require the government to consider the existing occupants' rights while transferring lands. This is because of the faulty forest settlement process[113] when the State Government acquired the forest land and notified under various categories. There are lakhs of tribals/ adivasis who have traditionally and customarily cultivated lands before the notification of these lands as state owned forests under various laws but whose rights were not enquired into because of a faulty survey and settlement process. Hence they do not have title deeds for their lands and were labelled as 'encroachers'. But with the FRA coming into play, the circumstances have changed. The law stops the government from removing the forest dwellers from their original/natural habitats and habitation till their claims for land rights are settled. Diversion of forest land for mining/industrial and infrastructural projects before the implementation of Forest Rights Act (FRA) is illegal and ***status quo*** should be maintained till the rights conferred under the Forest Rights Act are entitled and settled. But it is unfortunate that both the provisions of the (Forest Rights) law are flagrantly flouted by giving environmental clearance and randomly signing MoUs with the project proponents. The FRA also provides for gram sabhas to claim community rights over their traditional forests. Hence, even the community forest lands cannot be taken over till claims of 'gram sabhas' are settled. If the provisions under FRA are implemented strictly, then the mining and power sectors requiring land would be left to negotiate with the 'Gram Sabhas' instead of the Union Environment and Forest Ministry. With hydropower and mining projects requiring large tracts of forest lands, a strict implementation of the Act could put all forest clearances on hold till the land rights are settled.

With such confrontation and confusions prevailing among the people who have displaced due to various developmental projects, the recently enacted Forest Rights Act, 2006 can go a long way in addressing the legal rights of the people which they were deprived of. The provisions of the Act claims to legally recognize the rights of Scheduled Tribes and Other Traditional Forest Dwellers who have been illegally evicted or displaced from their land without receiving legal entitlement to rehabilitation. ***Section 3 (1)(m)of the Act provides for*** *'right to in situ rehabilitation including alternative land in cases where the Scheduled Tribes or other traditional forest dwellers have been illegally evicted or displaced from forestland of any description without receiving their legal entitlement to rehabilitation prior to 13th December 2005'.*

[113] 'Forest settlement' refers to the 'settlement of rights' process followed by the government when it acquired forest land and notified them under various categories. The process involves conducting an inquiry into the rights (habitation, agriculture, use of forest resources etc.) exercised by people in or over the forest being notified and documenting them. For certain categories of forests the process also involved extinguishing these rights after giving compensation.

Further, there are many instances where people have been displaced from their homeland and rehabilitated in forestland areas where land leases have been given to them. The provision of the Forest Rights Act can bring respite to such people also. *Section 3 (1) (g) of the Act provides for* ***'rights over conversion of Pattas or leases or grants issued by any local authority or State Government on forestland to titles'.***

Secured tenurial and access rights over resources: One of the very critical and vital issues i.e., tenure security over resources, very much indispensible for the livelihood security and development of the tribals particularly the PVTGs(Particularly Vulnerable Tribal Groups), did not draw attention in the process of development planning and policy making for decades. Because for the traditional communities without having security of tenure over those resources upon which they have been customarily and critically depending, thinking of their livelihood security and development have been an insignificant endeavour. The processes of exclusion from those rights have been a major challenge to their food security and livelihood. Therefore, after long-time, to make solution for those issues, ***The Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act*** **2006** has been enacted for undoing "the historical injustices" under which has made special provisions for PVTGs[114] to recognize the "rights over community tenures of habitat and habitation for primitive tribal groups and pre-agricultural communities,". This would help in reducing all types of exploitation through protection of their culture, customs, identity and territory and can provide them security of tenure over their customary habitat, over forest resources and livelihood. The law has also empowerment to protect, regenerate or conserve or manage any community forest resources, wildlife and biodiversity for sustainable use, in which the PVTGs and indigenous forest dwelling communities have contributed significantly by using their knowledge potential in a more holistic and sustainable manner.

Section 5 of the FRA both requires and empowers the rights holders, the Gram Sabha and other village-level institutions to "a) protect wild life, forest and biodiversity", and "b) ensure that adjoining catchments area, water sources and other ecological sensitive areas are adequately protected". It also requires and empowers them to "c) ensure that the habitat of forest dwelling Scheduled Tribes and other traditional forest dwellers is preserved from any form of destructive practices affecting their cultural and natural heritage". Habitat here would include that of Particularly Vulnerable Tribal Groups.

It follows from the above that , if communities are to discharge this responsibility meaningfully, they must at least have a say in (if not veto power over) any activities in the areas covered by section 5 that might adversely affect forests, biodiversity, wildlife, water sources, catchments, and the natural and cultural heritage of forest dwellers. With these provisions in mind, the MoEF

[114] Previously known as PTG(primitive tribal group)-RCDC

issued in July 2009 an order[115] relating to the diversion of forest lands for non-forestry purposes under the Forest Conservation Act. In this it specified that all proposals for such diversion needed the following:

a. *A letter from the State Government certifying that the complete process for identification and settlement of rights under the FRA has been carried out for the entire forest area proposed for diversion, with a record of all consultations and meetings held;*

b. *A letter from the State Government certifying that proposals for such diversion(with full details of the project and its implications, in vernacular / local languages)have been placed before each concerned Gram Sabha of forest-dwellers, who are eligible under the FRA;*

c. *A letter from each of the concerned Gram Sabhas, indicating that all formalities/processes under the FRA have been carried out, and that they have given their consent to the proposed diversion and the compensatory and ameliorative measures if any, having understood the purposes and details of proposed diversion.*

d. *A letter from the State Government certifying that the diversion of forest land for facilities managed by the Government as required under section 3(2) of the FRA have been completed and that the Gram Sabhas have consented to it.*

e. *A letter from the State Government certifying that discussions and decisions on such proposals had taken place only when there was a quorum of minimum 50% of members of the Gram Sabha present;*

f. *Obtaining the written consent or rejection of the Gram Sabha to the proposal.*

g. *A letter from the State Government certifying that the rights of Primitive Tribal Groups and Pre-Agricultural Communities, where applicable, have been specifically safeguarded as per section 3(1)(e) of the FRA.*

This landmark order is meant to ensure that the spirit of the FRA in giving forest rights to local communities is not violated the next day by taking them away without consent or consultation in the name of development projects[116].

[115]Letter no. F. No. 11-9/1998-FC (pt), dt. 30.07.2009 from the Sr.Assistant Inspector General of Forests, to all states.

[116] Attempts to dilute the FRA are however been made under pressure from vested interest groups who feel that this Act would be a major obstacle in their way of getting things done. And the first such successful attempt has been the decision by the Government of India to exclude linear projects(such as roads/railways) from the

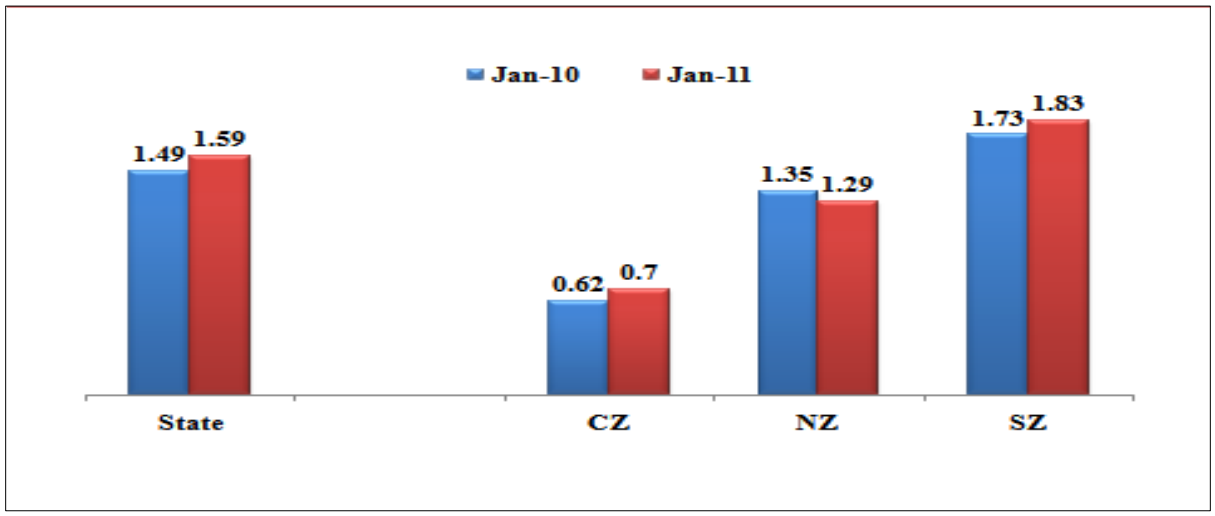
Status of FRA implementation:

- Individual Rights

As on 30th January 2011, the total No. of certificate of title deeds distributed was 243602 over 384653 acres[117] .

- Average forestland approved under the law (in acres[118])

Chart A-9: Average forest land approved under law in the state



Note: CZ: Central zone, NZ: North zone; SZ: South zone

requirement of consent from the Gram sabha, vide http://www.thehindu.com/todays-paper/tp-national/clearance-for-linear-projects-will-not-need-gram-sabha-consent/article4384330.ece. -RCDC

[117] Source: SC& ST Development Department, Govt. of Odisha

[118] Chart A-9 suggests a substantial lowering of the average approved land area under FRA than the upper limit of 4 hectares(more than 9 acres) fixed under law. This is not always because a lower size was claimed but also because the size of land applied for is not always granted even if that is not exceeding 4 hectares. -RCDC

- Community Rights

Table A-6: Approval of community claims under FRA as on 30th January 2011

Authorities	No. of Claims Received	No. of Claims Approved	Extent of Area (in acres)
Forest Rights Committee	474530	426777	
Gram Sabha		345693	553856.00
SDLC		261237	415839.00
DLC		252995	402852.00

Total No. of certificate of title deeds distributed by 30-01-2011 was 655 over 51908.91 acres.

Implication on land utilisation pattern:

As per the estimation, title deed of 436561.91 Acre (1746.24 square kilometres) has been issued to community and individual forest dwellers. Though there has not been any change in the forest *kisam* of land, there might not be any change in the total forest area. The change in land use will undoubtedly have an impact on the forest cover. The State of Forest Report-2009, that shows the change in forest cover from 2005 to 2007, indicates that 155 square kilometres of non forest has been diverted to open forest and scrub. But after promulgation of FRA in 2006 till date[119] it has been recognized that 1764.24 square kilometers (3% of total forest area) of forest land is either used for agriculture or common property resources. This might enhance the area under non forest. However, the issue needs a further debate and validation

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3.3.2. Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS)

After the enactment of National Rural Employment Guarantee Act (NREGA) apart from creating employment some infrastructures are also created at community level not only for employment generation but also as community assets. Infrastructures like Rajiv Gandhi Seva Kendra, community pond, farm pond (*Mo Pokhari*), and road are created in the process of implementation of MGNREGS. This has also resulted in some changes in the land utilization pattern. The changes occurred in implementation of '*Mo Pokhari*' is discussed here as the change due to creation of other infrastructure is very minimal.

The Panchayati Raj Department, Govt. of Odisha issued a guideline vide letter no. 31537 dated 30.09.2009 which was further modified in their letter No. 384 dated 04.01.10 for excavation of

[119] This refers to the period of consultancy under the RCDC assignment.- RCDC

Multi-purpose Farm Pond *(Mo Pokhari)* for multipurpose use like water conservation,protective irrigation, horticulture plantation and pisciculture etc.

Table A-7: Status of implementation of '*Mo Pokhari*' under MGNREGS till June 2010

District	Target	Applications collected	Work order issued	Completed
ANUGUL	15000	21255	5270	26
BALANGIR	25000	7645	3450	11
BARAGARH	15000	464	446	0
DEOGARH	10000	5907	568	17
DHENKANAL	15000	3080	2310	167
JHARSUGUDA	15000	2410	1325	121
KEONJHAR	25000	17490	2866	0
SAMBALPUR	15000	7129	3627	70
SUBARNPUR	15000	3710	922	262
SUNDARGARH	35000	6206	2926	0
BOUDH	10000	3970	1153	19
GAJAPATI	15000	1694	629	0
GANJAM	30000	2222	416	0
KALAHANDI	25000	19054	5365	0
KANDHAMAL	15000	6281	4731	436
KORAPUT	20000	8806	6605	0
MALKANGIRI	15000	9255	5158	227
NABARANGAPUR	15000	5138	5138	171
NUAPADA	15000	6269	1015	46
RAYAGADA	25000	12358	5169	964
BALESWAR	10000	16510	7802	905
BHADRAKH	10000	11336	6136	645

CUTTACK	10000	7824	2578	25
JAGATSINGHPUR	10000	4520	1264	95
JAJPUR	10000	8927	8121	486
KENDRAPARA	10000	3750	940	63
KHURDA	10000	2226	480	13
MAYURBHANJ	35000	11875	5476	756
NAYAGARH	15000	725	273	4
PURI	10000	10783	1023	34
ODISHA	**500000**	**228819**	**93182**	**5563**

Source: Panchayatraj Department, Govt.of Odisha

As per the guideline, each farm pond will be excavated in a land area of 0.67 acre. It is viewed from the matrix above that out of 228819 applications received work order has been issued for 93812. 5563 ponds have been completed till June 2010. It is estimated that nearly 3727 acres of agricultural land has already been converted into water bodies. If the target of five lakh farm pond will be achieved then an extent of 3.35 lakh acres (1.34 lakh hectares) of agricultural land will be converted this way. Though multipurpose use of pond will result in enhancing the income of the people by providing alternative income opportunities and protective irrigation to agriculture, the reduction in food grain production owing to reduction in agriculture area cannot be ruled out. The yield rate of rice per hectare is estimated as 15 quintals. A conservative estimate suggests, taking the yield rate as 10 quintals per hectare, that 1.34 lakh tons of rice production will be declined.

3.3.3. Plantation and Afforestation programmes

The National Afforestation Programme (NAP) Scheme was initiated by scaling-up the SGVSY project experience and converging all afforestation schemes of the 9th Plan period to avoid duplicity or redundancy, and at the same time keeping in focus the decentralization agenda of the government as per 10th Plan document of Planning Commission relating to the Forests and Environment sector. NAP is being operated as a 100% Central Sector Scheme.

In the advent of the NAP, several plantation programmes in form of aided natural regeneration, artificial regeneration, bamboo plantation, cane plantation, mixed plantation of trees having MFP & medicinal value, regeneration of perennial herbs & shrubs of medicine value, pasture development/ silvipasture in forest land are implemented in the state. Apart from that the state is

also using the fund from bilateral donors for afforestation. As per a report[120], last year(2010) 2,33,445 hectares of land brought under plantation and the target for this year is 2,25,000 hectares fixed by the Chief Minister of Odisha. Private sector players are also planning to enter into the process through public private partnership (PPP) mode. A sizeable portion of the cultivable waste would now be transferred for such plantation activities. The move will have definitely a detrimental impact on the process of land distribution to the landless under different government schemes.

Compensatory Afforestation (CAMPA)

The basic objective of Compensatory Afforestation is to compensate the forest area loss due to diversion for non forest use. In order to approve the proposal for dereservation of forest area, Govt. of India stipulated conditions for Compensatory afforestation. Compensatory afforestation is insisted over equivalent area of non-forest land. In case of non availability or less availability of non-forest land, compensatory afforestation may be carried over degraded forest twice in extent to the area being diverted or to the difference between forestland being diverted and available non-forest land. Money received towards Net Present Value(NPV) shall be used for natural regeneration, forest management, protection, infrastructure development, wildlife protection and management, etc. as per the instruction of the Ministry of Environment and Forests, Govt. of India.

Recently, the Chief Minister of Odisha, Naveen Patnaik has reviewed in a high level meeting on the progress of Utilisation of the CAMPA funds. This CAMPA funds was created by the direction of the Supreme Court. Till now the state government has deposited Rs 1500 crore in this CAMPA fund[121]. During the year 2009-10 the Centre government has sanctioned Rs131.06 crore from this source.

With large scale industrialization, the Government also has to find land, especially of the non-forest category, for the industries to take up Compensatory Afforestation, where locals will have no access rights. Besides, in matters of land being given to the industries for compensatory afforestation, no rights assessment is done before such land is transferred. Areas under shifting cultivation have been given for compensatory afforestation. The revenue lands used for agriculture are also being transferred for compensatory plantation. The government is also eyeing on the underutilised or unutilised wastelands in Odisha for compensatory afforestation.

The opinion of local forest dwellers, the real protectors of forest, is ignored while deciding the matters related to forest diversion for non forest purposes or in its utilization. Nay even they have

[120]Vide http://www.dnaindia.com/india/1540678/report-naveen-patnaik-stresses-on-afforestation-in-orissa-RCDC

[121] Seems to be based on a report of December 2010. For an update, see also http://articles.economictimes.indiatimes.com/2013-06-28/news/40255938_1_campa-afforestation-140-crore-RCDC

any say in the compensation received under Net Present Value for such diversion of forestland. The aspect of livelihood loss due to diversion of forest land and land used for compensatory afforesation is not dealt with in the whole process.

Conversion of wasteland for compensatory afforestation process will have an adverse impact on the land distribution programmes to the landless in the coastal plains, while forest dwellers will suffer for afforestation in forest areas. Their livelihood options are legally restricted within the protected forests(as per Indian Forest Act); but at the same time they have no entitlement over cultivable wastelands either(due to the faulty survey & settlement process).

Cashew plantation

In order to check soil erosion in big dams like Machhkund, Kolab, Chitrakonda and Indrabati, the Soil Conservation Department undertook massive cashew plantation under different schemes. The drive for cashew plantation by Soil Conservation Department of Govt. of Odisha on government wastelands has snatched away the food basket (the land, they were cultivating for their food even without the record of rights) from the tribals. Government apathy and lack of awareness retarded the tribal from getting the record of rights of their ancestral land. The land was recorded as government wasteland, and the tribals became encroachers in their own possessed lands. During the 1980s, the cashew plantations in degraded non-forest lands gained momentum. The cashew areas were leased out to private parties. The plantation move engulfed the area where invariably rights of the local community existed or which were shifting cultivation areas in different districts. Thus once the area, which was once with the tribal and local community, went to the clutch of the corporations or private agencies.

Land under cash crops

The role of agriculture in the State's economy is recognized with the promulgation of Agricultural Policy in 1996. Agriculture got the status of an industry. The involvement of private players in the agriculture was given importance apart from the production of food grains. They played a pivotal role in marketing of agricultural products creating space for the entry of the contract farming institutions. The common forms of commercial agriculture prevalent in Odisha are of two types. In one case the land is taken away from the farmers for a specific period of time; and the second case where the farmers are asked to cultivate their own land as per the terms and conditions fixed by the sponsor of the inputs. The second category can be further divided into two sub-groups where, the input provider could be an individual or an agency. In all these processes, the land that is put to commercial farming is small and the farmers more often than not lose control over their land and the mode of production in the process. Some examples of the two types of farming and the repercussions on the small and marginal holdings are discussed.

Contract farming is being practiced in India by MNCs like Cadbury in cocoa, PepsiCo in potato, chilies and groundnut, Unilever in tomato, chicory, tea and milk, ITC in tobacco, wood trees and

oilseeds, and Cargill in seeds. There are also domestic corporate in the field like Ballarpur Industries, JK Papers and Wimco in eucalyptus and poplar trees, Green Agro Pack, VST Natural Products, Global Green, Intergarden India, Kemps city Agro Exports and Sterling Agro in gherkins, United Breweries in barley, Nijjer Agro in tomato, Tarai Foods in vegetables, M Todd in mint, and Namdhari Seeds in seeds. There are also various government and semi-government agencies involved. Financial institutions and banks assisting contract farming. The new changing dynamics of contract farming was the consortium approach. The cultivation of baby corn, chilies, garlic, and onion, verities of bananas and Mangoes, Potatoes, etc. under contract farming is also wide spread. Besides local agribusiness firms a number of MNCs are involved in contract farming in India. PepsiCo and Hindustan Lever Ltd. (HLL) in Punjab and Hariyana, Maxworth Fruits in Andhra Pradesh, Karnataka and Tamilnadu, VST natural products Ltd in Andhra Pradesh, Cadbury in Karnataka, etc. are some of the examples

The state of Odisha is also found to be in the grab of contract farming in recent years. The wide spread of contract farming on jatropha, cotton, rubber, groundnuts etc. is a sign of this development. Various MNCs are taking interest to invest their inputs in contractual farming. In the year 2003-04 ITC entered into Odisha as first contract farming agency to sell organic turmeric and other products procured from Daringbadi block of Kondhamal district. In the year 2004, Satya Cottons and Delite Cottons entered into agreements with the farmers for procurement of a specified amount of cotton in Kalahandi district.

Land lease system for cash crop began in the interior pockets of Koraput district a decade ago. Land lease started for the first time in 1994 and was taken by local businessmen from Andhra Pradesh from the tribals for growing tobacco and in some areas, cotton. The climate, soil and the availability of cheap labour are some of the factors conducive for growing lemon grass in Koraput that attract AP farmers. In 2006-07, nearly 1200 acre of land was used for cultivation of lemon grass which rise up to 1800 acre in 2007. The land leased belongs to both tribal and non-tribal communities. Some of the basic problems faced due to commercial farming are: i) production of traditional food produces like millets, pulses and suen has decreased, ii) production of castor oil that is used as food and medicinal purpose has decreased, iii) loss of land fertility causing increased dependence on Podu.

Farmers from Andhra Pradesh came to the Bandhugaon block of Koraput district in search of new fertile land for growing cash crops like lemon grass. The climate, soil and the availability of cheap labour are some of the factors conducive for growing lemon grass in this area. In 2006-07, nearly 1200 acre of land was used for cultivation; this land belongs to both tribal and non tribal communities. This figure has increased to 1800 acre by end of 2007. Nearly 25 boiler plants have been established close to the block headquarters and produces lemon oil, where round the year about 200 labourers are engaged in the plant.

Land leasing, for lemon grass cultivation, starts in summer with a price varying from Rs 1000 to Rs 3000 per acre per year. The normal period of lease is 3 years with just a verbal agreement; the plain land price is Rs 2000 per acre in the first year, Rs 2500 in the second year and Rs 3000 in the third year. Those lands which are not suitable for cultivation are also leased out with Rs 1500 per year and those who take the lease develop the land for particular crop. This is led to complex socio-legal issues[122].

RECOMMENDATIONS

1. There is a need of conducting land use/land cover analysis on regular intervals and publish a Natural Resource Census Report which will cover the important themes and information on land use and cover. It will map the area under irrigation, current fallows, forest cover, canopy density, human settlement area, water logged and wetland information. The dimension of change in land use and land cover will serve as vital environment parameters.
2. The apparent discrepancy between the procedure followed under FCA and the implications of the FRA must be removed. An amendment to the rules of the FCA incorporating all the requirements laid down in the July 2009 order is urgently required to avoid ruthless land diversion.
3. The Rules of the FRA should be modified to include the requirement that Gram Sabha consent for any diversion of forest land for non-forest purposes is required, including for major developmental projects, to remove any ambiguity of interpretation,.
4. Special publicity should be provided about these requirements of claims process completion and Gram Sabha consent in the case of any forest diversion proposal. For a start the MoEF circular needs to be translated into local languages and disseminated widely to communities.
5. To ensure compliance with the orders or stipulations, all applications for forest diversion under FCA must be publicized in the local language in the local press of the taluka headquarters, and also communicated in writing to the relevant Gram Sabhas. All relevant information on these proposals, including impact assessments, should be given to the relevant Gram Sabhas in local languages so that they can take an informed decision.
6. Any certification of FRA process being complete must be accompanied by resolutions of relevant Gram Sabhas and at least 3 months time from the date of intimation and provision of full information in local languages should be given to hold meetings and indicate their consent or rejection.

[122] In the recent years the Chashi Mulia Adivasi Sangha has instigated the local tribals to take forceful possession of many such lands alienated in the Koraput district.-RCDC

7. In the future, any such certification must be done not by the District Collector alone but a district-level forest governance committee that will contain representatives of the Gram Sabha-level forest-dweller committees and other elected representatives.
8. All forest settlement records must be put in the public domain, preferably on websites, and all project proponents must be asked to peruse these records to build their preliminary understanding of the likely communities affected. As and when FRA rights are claimed and vested, the relevant Record of Rights, and maps showing the areas where such rights are vested, should replace the settlement records.
9. The forest diversion process should include compulsory public hearings amongst communities that are likely to be affected, similar to the hearings mandated for environmental clearance of projects. The results of these hearings must be a crucial factor in taking decisions. This requirement should also be included in the proposed amendment to the FCA.
10. The Forest Advisory Committee must insist on the documents required as stated in the MoEF July 2009 circular, and should actively seek public inputs to detect cases of fraudulent or non-participatory Gram Sabha resolutions. It should conduct a few randomly timed and randomly chosen field visits to major proposed project sites, before deciding on approval/rejection, to verify the compliance with the stipulations of the July 2009 order.
11. An independent enquiry should be commissioned by the MoEF on why its own circular has not been implemented in a number of cases of projects that have since then been approved.
12. State Governments should issue detailed guidelines for the conduct of Gram Sabhas related to forest diversions, so that the meaning of free, prior, informed consent is followed in letter and spirit.
13. Non-compliance by project authorities and state governments should be considered adequate cause for cancellation/rejection of the project.

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Annexure-S-I

CASE STUDIES

A. Economic & bamboo plantation site of Ballaskumpa

Consequent upon implementation of different schemes one economic plantation scheme is implemented in the Ballaskumpa RF of Phulbani Range. The scheme has been implemented in adjacent plots of the RF. Kabar is one of the villages where the scheme is implemented. The village is having 35 households and 145 populations. It is a tribal (Kandha) dominated village. The whole village is dominated by the forest dwellers. Couple of decades ago all of them were practicing shifting cultivation for sustenance of their livelihood but now the same land has been converted to plantation.

The argument of the plantation authority for selection of this site is that the villagers were deeply involved in shifting cultivation which was leading to forest destruction. Trees were totally absent, and only roots, shoots were existing. The nutrient value of soil was decreasing. Secondly, when the working plan was prepared at that time the site had been selected for the plantation.

The authorities explain that denudation of trees from the RF by the villagers was likely to result in a slender and scrub forest. So the Forest Department took the initiative for plantation with valuable and quick growing species i.e. Teak. The species was selected because the climate, soil and topography of the area was favorable, and the success rate was higher than other plants. Teak coppices and hence never dies. Its maintenance period starts after three years. It rises more than 10 to 12 feet of height and no animal can easily graze it.

The old women of the village told that before plantation activity started "*forest guard came to the village and persuaded us to be involved in the plantation programme and allured with good income.*" Once the rehabilitation of the degraded forest process stated, the local people got involved in all the major activities starting from nursery raising to watch & ward. This was one time income. But in turn, we all struggled to gather food in the lean period and suffered a lot. "The forest guard told us we require permission from the Forest Department to harvest the produce", she said.

At present they are devoid of cultivating the said land . The shifting cultivation by the villagers is reduced to 80 % in that periphery. This has led to scarcity of food grains like cereals and millets. The FD is the sole authority of the plantation and no proportion will go to the community when the timber is harvested. The villagers argue that they are the owner of the land and take care of the plantation, so they should get the right to harvest the produce. 70 % of the plantation is standing with Teak and the natural regeneration of mixed forest is increasing the value of the forest which the Department needed, but a fight between the local communities and the Department at the time of timber harvesting may not be avoided.

The bamboo plantation was carried out in the last year 2000-2001, under the bamboo scheme in 50 hectares of land with the expenditure of Rs 50,000. The species used was *Dendrocalamus strictus*, but the plantation was a total failure as the plants did not survive. Now the land is not even used for cultivation. The Department said, due to the biotic intervention the plantation has been ruined and that all the money and labour invested has gone in vain. But the people say this happened only because of lack of foresight of the FD. This has a serious negative repercussion on the livelihood of the villagers.

B. Case study of RLTAP, Sirpalli

Situated at about 15 km from the M.Rampur Range office, Sirapalli is a revenue village of Saraguda GP, located in the M.Rampur tahasil of Kalahandi district. It comes under the Kalahandi South forest division. It is a three generation old village, still the traditional beliefs mixed with modern culture are found in the village.

People here are engaged in subsistence farming; crops grown are paddy, ground nut, sun flower, arahar etc.; and the farmers practice rainfed agriculture.

Forest resources

Dwindling forest resources in the nearby areas brought the community to protect the forest to satisfy their day to day needs. Two types of forest is found in and around of the village area. The status of RF near to village is 445.50 acre and village forest is 65 hectare. Since last 17 years the community is protecting the village forest. Initially 40 hectare of the village forest was being watched and supervised by a local guard. The community people also were getting all their livelihood supports from the RF.

Traditional forest protection committee was converted into the VSS in the year 1999, with the interest and permission of the village leaders in view of a massive problem from the timber mafias. The Forest Department with support of the villagers carried out plantation activity under RLTAP in 45 hectares and under FDA 80 hectares. This immediately had a detrimental effect on agriculture production as they were practicing shifting cultivation in the said area. “The plantation in our cultivable land reduced our food availability”, said one of the villagers with agony.

C. Case study of New Puki on compensatory afforestation

Name of the PIA:- Forest Department
Year of plantation: 2004 to 2005
Name of the scheme: Compensatory afforestation
Total area cover under plantation: 251.214 hec.
100 ha block planting

151.214 ha RDF

Type of land: Revenue
Total no of seedling planted: 202339

New Puki village is about 22 km from the district head quarter, Koraput. This village is surrounded by the Durma Dangar[123] in the north, Lada Amba Dangar in the south, Rakaspar Dangar in the west and Kolab river in the east. Two hamlets Ganjaipadar and Balliapadar are situated respectively in the west and south direction of the village. This village(44 HHs) is dominated by the schedule caste people(Damo) though there are about 10 households of Paraja(ST).

251.214 hectares of revenue lands in this village have been transferred to the FD for compensatory afforestation. Now the Department has become the sole authority of the land.

The traditional rights and concession the villagers were enjoying over this land was cultivating ragi, maize, bean, up land paddy and so on.. They were able to ensure at least 3 months food security from the said land. The food security is however now at stake after the compensatory afforestation on the land.

The Department engaged the village community through their VSS for the construction of stone wall on the plantation and its cost was Rs.500000/-. But as one of the villagers said, "the Department snatched away our source of sustainable income and in lieu of that provided this opportunity. What next after completion of the programme?".

D. Forest for whose benefit ?

As a consequence of the construction of Telengiri irrigation project in the Jeypore sub-division of Koraput district, a patch of forest land has been diverted and to compensate this the revenue lands are being provided by the Revenue Department to the FD. The plantation area was selected by the Telengiri irrigation project and later on was handed over to the Forest Department. The FD formed a VSS in the village, and in a meeting , the Forester told the villagers for plantation of various species like sal, asana, kendu, chakunda, acacia, simarua,

[123] Dongar means hill.-RCDC

jaffra , gambhari, amla and tamarind on the revenue land. The villagers were however demanding for cashew and banana plants. The Department raised cashew seedling for the villagers under the compensatory afforestation scheme. The villagers were unwilling to launch that project in their cultivated land and the PRIs were ignorant about this project. There was no role the Gram sabha and PRIs in the site selection. When the plantation started, local people started agitation following which the Department agreed to plant cashew in few areas to sublime the situation.

Livelihood issues:

The impact of the project has been quite adverse for the local community, as summarised under[124]:

Impact	***Initial situation***	***Situation after the implementation of the project***
Livelihood	They managed 3 to 4 months from the forest and podu cultivation in the revenue land.	When the project was lunched shifting cultivation was stopped and they depended only on daily wages.
Dependency on forest	Their dependency increased more on the forest.	Dependency had to be reduced, particularly after formation of VSS.
Change in forest cover	___	By the plantation the man-made forest is growing and greenery is expanding.
Attitude of the people on forest/ forest department	___	The people have a negative attitude towards the department because they lost their podu land.

[124] An update is available at http://www.thehindu.com/todays-paper/tp-national/tp-otherstates/villagers-to-launch-protest-against-irrigation-project/article4639336.ece- RCDC

Monitoring of the activity:

Institutions/Department	What is their expected role	What is the reality
FD	To assume success of the plantation which will help the people in future.	After the maintenance period was over, protection of the standing trees has become a big question mark.
Village institution	No role	Everything was done by the VSS.
PRIs	No role	Forest Department is unwilling to involve the PRI members in the project.
