Forest and Common Land Acquisition

Estimated Forecast and Lessons of Case Studies from 6 States

December, 2012

Society for Promotion of Wastelands Development

Rights and Resources Initiative

The **Rights and Resources Initiative** (RRI) is a global coalition of international, regional, and community organizations advancing forest tenure, policy, and market reforms. RRI leverages the strategic collaboration and investment of its Partners and Collaborators around the world by working together on research, advocacy, and convening strategic actors to catalyze change on the ground.
RRI is coordinated by the Rights and Resources Group, a non-profit organization based in Washington, D.C. For more information, please visit www.rightsandresources.org.

The **Society for Promotion of Wastelands Development (SPWD)** has been working closely on issues related to natural resources, ecology and livelihoods and its implications for governance. Working primarily in the action research mode, the Society currently has worked in 16 of 21 agro-ecological regions of the country covering 22 States. SPWD believes in partnerships on one hand and science people interface on the other as the means to provide the wherewithal for local communities to develop context specific solutions to the issues in front of them. To learn more, please visit www.spwd.org.

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1. Jagran Jan Vikas Samiti, Udaipur (Raj)
2. Hanuman Van Vikas Samiti, Udaipur (Raj)
3. Prayatna Samiti, Udaipur (Raj)
4. Timabtu Collective / Kalpavalli Cooperative Society, Anantpur AP
5. Samaj Pragati Samuday, Bellary (Karnataka)
6. Environics Trust, Delhi
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Summary

Land grabbing has today become a major issue across India and a central political faultline in Indian politics. Protests, resistance and conflicts have been growing as a result of attempts by people to assert their legal and customary rights in the face of state and corporate attempts to take over land. Much of this has been framed as a struggle against land acquisition, but the issues involved go beyond acquisition of private land for particular projects. Therefore, there is a need to develop a frame of understanding that sees land takeovers as a systematic process embedded in India's current socio-political environment.

There are several developments that are accelerating land acquisition process in the country-

1. The biofuel sector is witnessing unprecedented expansion,
2. Forestry plantations are getting a tremendous boost from the heavy outlay through Green India Mission,
3. Booming commodity trade is leading to a heavy demand for forested ancestral tribal land by extractive industries,
4. Demand for land from the infrastructure sector is dramatically growing,
5. Demand from the conservation lobby for carving out larger forest areas for critical tiger and wildlife habitats is gaining momentum.

All these sectors are vying for forest and other common lands the Forest Rights Act and strong community based institutional development that is mandated by PESA. The true extent of land being acquired by these sectors, the number of affected people, and how this is happening is not clearly known. The objectives of this study are-

1. To estimate the extent of land that has already been acquired;
2. To forecast the land needs by various sectors on the basis of current trends of growth and their planned expansion;
3. To estimate of numbers of people affected by such acquisitions;
4. To develop a clear understanding of the modus operandi of land acquisition particularly in view of the provisions of FRA and PESA;
5. To develop of policy options for various sectors that are more just and equitable.

While the studies try to examine the question of land acquisition on forest and common lands, the inter–relationship with the life-support systems have also been looked at. The study is divided into two basic components:-

1. The first deals with the estimation of the extent of land required in the next fifteen years. This is estimated at 11.5 million hectares. This figure is a conservative estimate as it does not take into account "collateral damage" to adjacent lands.
2. The seven case studies covering six states namely Rajasthan, Chhattisgarh, Andhra Pradesh, Karnataka, Maharashtra and Goa provide insights into the nature of issues involved in selected sectors. The sectoral and spatial coverage provides insight into the state-level policies and practices on one hand and specific impacts on the land and life-support systems on the other.
   - ❖ The case studies of Jaisamand catchment area deal with land acquisition for various development programmes on the life support system of local communities. Industrial development, mining, infrastructure and urban development in upper, middle and lower part of the catchment areas have been examined.
   - ❖ The biofuel and windmill studies cover the impact of green/clean development on the life support system of the local community. The issues related to dry-land region and the complex life support system which are very little understood come out sharply.

The case studies of Bellary in Karnataka and the issues related to land acquisition in Chhattisgarh indicate that the "development" envisaged by the respective state Government has limited

- relevance to the local population. On the other hand the damage to the environment severely impacts the life support system of the local community. In Chhattisgarh, the issues related to PESA in FRA also have been looked at.

- The case studies of the Western Ghats and Polavaram bring into sharp focus the relevance of the forest to the local community and the issues related to non-implementation of FRA in these regions.

The studies bring out strongly the need to meaningfully engage with the local communities so as to understand the complexities of the life-support systems that will be impacted. FRA, PESA and the Biodiversity Act provide mechanisms to ensure that the interests of the local communities are protected.

Estimation of Land Requirement for Emergent Sectors

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Area in Hectares

#	Sectors	Sub-sector	Current Area 2011	Estimated Requirement	Additional Required
1	**Agri-Fuel (Estimation for 2026)**	Jatropha[1]	500000	4400000	3900000
		Bio-Power[2]	273700	2000000	1726300
			773700	**6400000**	**5626300**
2	**Infrastructure (Estimation for 2026)**	Roads[3]	1816355	3117000	1300645
		Dams[4]	2907000	3908171	1001171
		SEZs[5]	86107	150000	63893
			4809462	**7175171**	**2365709**
3	**Extractive Activities[6] (Estimation for 2026)**	Coal	147000	535445	388445
		Iron	88065	320775	232710
		Bauxtie	30059	109489	79430
		Limestone	144979	528083	383104
		Other Minerals	244301	889862	645561
			654404	**2383654**	**1729250**
4	**Non Conventional Energy[7] (Estimation for 2032)**	Wind	180000	540000	360000
		Solar	76	100000	99924
			180076	**640000**	**459924**
	Total		**6511266**	**17958825**	**11447559**

[1]Biofuels in India: Potential, Policy and Emerging Paradigms National Centre for Agricultural Economics and Policy Research, April 2012
Estimate Figures for Jatropha includes common lands from forest (10% of JFM areas, wastelands and other public land)

[2]Report of The Working Group on Power for Twelth Plan (2012-17)
MNRE report in Bioenergy Mission http://www.eai.in/club/users/Shweta/blogs/7498
Bio-power includes dedicated plantations proposed for 12 & 13 Five year Plans

[3]Basic Road Statistics of India GoI, Ministry of Road Transport & Highways (Transport Research Wing), New Delhi JULY 2010

[4]Water and Related Statistics, Water Resources Information System Directorate, Central Water Commission, 2010
Report of the working group on Water Resources for the 11 five year plan
India's Water Supply and Demand from 2025-2050: Business- as- Usual Scenario and Issues: Upali A. Amarasinghe, Tushaar Shah, and B.K.Anand

[5]SEZs and Land Acquisition: Factsheet for an Unconstitutional Economic Policy, Citizens' Research Collective, New Delhi
www.sezindia.nic.in/writereaddata/pdf/listofformalapprovals.pdf

[6]Report of the Working Group Mineral Exploration and Development 12 Five Year Plan
Existing mining area figures were taken from the Indian Minerals Yearbook 2010, IBM, 2011. The estimation for 2025 is made on the basis of 9% growth rate mentioned in the Report of the Working Group Mineral Exploration and Development 12 Five Year Plan document,

[7]Report of The Working Group on Power for Twelth Plan (2012-17)
The estimation is made on the basis of potential figures given in the Report of The Working Group on Power for Twelfth Plan (page 28 of chapter 1). The area calculation done on the basis of information from the link pib.nic.in/release/release.asp?relid=33144. It mentioned that land requirement of wind farms @ 12 ha/MW, similarly for solar power it is @ 2 ha/MW (5 acre/MW)

Agri-Fuel

The emerging scenario of agriculture and proposals for promotion of agriculture- based fuel programmes indicate that in the coming decades a large area will be required for growing and harvesting species for energy needs. Jatropha and Prosopis juliflora are getting a major thrust in the plans.

The area target for expansion of Jatropha is projected as 13.4 million hectares in the Planning Commission's Report of the Committee on Development of Bio-Fuel. Considering the performance of biofuel promotion during the last decade, this figure is unrealistic. Based on the plans made by the respective State Biofuel authorities, we can realistically take 10% of the JFM areas (14 million hectares) the forest land targeted for Jatropha plantation comes to around 1.4 million hectares. Similarly under Integrated Watershed Development and other poverty alleviation programmes of Ministry of Rural Development a potential of 2 million hectares of plantation is assessed. On vast stretches of public lands along railway tracks, roads and canals, one million hectare of notional coverage with *Jatropha curcas* is reasonable assessment. So the total area targeted for Jatropha plantation is around 4.4 million hectares.

Energy generation through biomass has been taken up by most of the states in recent years. The Report of the Working Group on Power for 12th Plan mentions that there is a plan to increase renewable power (Agro residues & Plantations) generation from current level of 2737 MW to 61,000 MW by 2032. The MNRE Report on Bioenergy shows that the potential of biopower could be increased substantially if linked with dedicated plantations on forest and non-forest degraded lands. It is possible to generate about 5,000-6,000 MW power from raising dedicated plantations on about 2 million hectares forest and non-forest degraded lands.

Infrastructure

With the current trend of growth in infrastructure sector, it is expected that it will require large areas for expansion. The three categories included in this are roads, dams and SEZs. These three sub-sectors are growing in all states and also targeting the common lands.

According to Basic Road Statistics of India Ministry of Road Transport and Highways, 2010 the total road length is about 1.6 million kilometers and area under these roads comes to around 1.8 million hectares. Looking at the past trends of expansion of different types of roads and the projected growth rate the area under road projects will reach to 31.1 million hectares by 2025. The additional land requirement will be about 1.3 million hectares.

Report of the Working Group on Major & Medium Irrigation and Command Area Development for the XII Five Year Plan(2012-2017) shows that there is a need to increase the irrigation command in the coming years in line with the current growth rates. Central Water Commission's Water and Related Statistics indicate that the current area under major reservoirs is about 2.9 million hectares, after considering the current water demand and projected water demand for 2025, it is estimated the area under reservoirs will increase by about 34.5% and reach to 3.9 million hectares. It indicates that about 1 million hectares will be required for reservoirs construction in next 15 years.

In 2000 the Special Economic Zones (SEZs) Policy was announced and the Special Economic Zones Act, 2005, was passed by Parliament in May, 2005. Till date 588 SEZ were approved by the government and the total area under these SEZ's is about 86,000 hectares. As per the plans and projections the area under SEZ will increase to 1,50,000 hectares. Hence about 63,000 hectares of land will be required for upcoming SEZ's.

Extractive Activities (Mining)

India has accorded great importance to mining in its industrial development and overall growth of the country. Contribution of fuel minerals in GDP in mining sector during 2008-09 was 54%, metallic minerals 28%, non-metallic minerals 2% and minor minerals 16%.

In the case of fuel minerals, the share of coal and lignite to the GDP was 31% and that of petroleum (crude) and natural gas (utilised) was 23%. In India, about 77% of the total coal output is consumed in the power sector.In 2008-09; 493 million tonnes of coal was produced. As on March 31, 2011, coal is mined

over 1.47 lac hectares. For the year 2024-25, coal production of 1267 million tonnes is projected which will require 535445 hectares of land.

There were 10,488 mining leases in force in 2011 in the country covering an area of 507403 hectares for 65 metallic and non-metallic minerals excluding lignite, coal, petroleum, natural gas, atomic minerals and minor minerals.The current area under mining leases for Iron is more than 88,000 hectares and as per the proposed growth rate of 9% mentioned in the report of the Working group on Mineral Exploration and Development for 12th Five Year Plan, the estimated area for iron mining leases comes to 3,20,000 hectares. Similarly for Bauxite and Limestone mining the current area in 30,000 and 1,45,000 hectares respectively. With the proposed growth rate of 9% by planning commission it is estimated that the area requirement for these minerals will be 1,10,000 and 5,28,000 hectares respectively by 2025. The estimates for other minerals are also made on similar basis.

The total area under mining is about 6.5 lac hectares and it is estimated that in the coming 15 years it will increase almost 4 fold to reach 2.38 million hectares. Therefore the additional land requirement for mining purposes will be about 1.73 million hectares by 2025.

Non-Conventional Energy

The Indian power sector is largely coal-based with the total installed capacity comprising of 99,503 MW (55 %) coal-based, 17,706 MW (10%) gas-based, 1200MW (1%) diesel generation, 38,206 MW (21%) hydro, 4,780 MW (2 %) nuclear and 20,162 MW (11%)from renewable energy sources. Development of Renewable Energy Sources is being accorded special emphasis in view of their inherent advantages. The installed capacity from renewable sources has grown to 20,162 MW in June 2011 comprising 3,226 MW in the State Sector & 16,936 MW in the Private Sector.

Based on MNRE plans the grid interactive renewable capacity addition of about 18,500 MW during 12th Plan comprising of 11,000 MW wind, 1,600 MW small hydro, 2,100 MW Biomass power, Bagasse Cogeneration and waste to energy put together and 3,800 MW Solar has been estimated. Similarly for 13th Plan a grid interactive renewable capacity addition of about 30,500 MW, comprising of 11,000 MW Wind, 1,500 MW from Small Hydro, 2,000 MW Biomass power, Bagasse Cogen and waste to energy put together and 16,000 MW Solar.

As per the available data about wind and solar energy projects, the current installed capacity is 14,157 and 38 MW respectively. To get the area covered by these projects calculation has been done on the basis of land requirement for wind farms @ 12 ha/MW. Similarly for solar power it is @ 2 ha/MW (5 acre per MW). So the current area is 1,80,000 and 76 hectares. The estimation of area requirement is calculated for the proposed capacities of 45,000 and 50,000 MW by wind and solar projects. The area required by these projects by the year 2032 will be 6,40,000 hectares (5,40,000 and 1,00,000 hectares respectively).

Growth in Jaisamand Catchment: A disconnect between ecology and 'development'

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The Catchment of Jaisamand Lake (earlier known as Dhebar Lake) falls almost entirely in Udaipur district of Rajasthan comprising a total land area of 186018 hectare. Out of the total Catchment area, legally, areas under irrigated agriculture ((six per cent), under un-irrigated agriculture ((sixteen per cent) and under pasture (eighteen per cent - almost nine per cent each of culturable waste and non-arable) is under private ownership whereas remaining large chunk of sixty per cent is common under the categories of forest land (sixteen per cent), culturable waste (sixteen per cent) and not available for cultivation (twenty eight per cent). Though the sixty per cent of the land is legally common, a lot of this is encroached either for agriculture or private pastures. This has implications in the land use management for the region. Nearly 100000 hectares land (both under private and common ownership) is lying almost under-utilized as it falls in the category of non-arable and pastureland category. Another 31677 hectares which is under the category of forest land is also remaining under productive. In all we can perceive a great threat to environment as is apparent from excessive land degradation and biodiversity reduction throughout the Catchment due largely to poor conception on resources and their utilization rather than institutional management.

Jaisamand Catchment area belongs to IV–A agro-climatic zone having moderately warm climate. It falls within the temperature zone of 36° Celsius, while as for as evapotranspiration is concerned it falls within the range of 125 to 140 mm. The humidity is high and all these factors putting together support good vegetation growth. The area is part of open forest with crown density varying from 10 to 40% at places isolated patches are dense forest with crown density more than 40%. Undulating pediment plain and rocky valleys with two different types of tree dominance are found. One is Butea monosperma (Dhak), Madhuca Indica (Mahua) and Zozphus mauritianna that exhibits co-dominance and occurs in places with deep soil deposits. There are other region dominated by Sagwan in association with Boswellia serrata and Seesam. Places with gentle slopes exhibit good density. The shrubs common in the block are Nyctanthus arbortristis, Holesshena pubescens, Thoor, E-nivulia, Dendracalamus strictitus, Cassia auriculata and Dichrostachys cineria.

The temperature does not fluctuate much in summer and winter. The average annual rainfall of about 700 mm. Erratic and low rainfall with varying intensity and uneven distribution of heavy intensity rainfall in short spells characterizes the region. A major portion of the rainfall is wasted as runoff, which also takes the top layer of soil away from the fields. A combination of all these factors makes agriculture a difficult proposition in the region. Almost 60% of the cultivation is undertaken on sloping lands causing erosion and permanent loss of soil. Kharif is the main crop season as almost ninety per cent of the net cultivated area is sown every year. During Rabi season sowing varies between 6 to 15 per cent of cultivated land depending on water availability. The Jaid (summer sowing) is limited to nominal fodder cultivation on less than 2 per cent of the cultivated land. The area crop diversity is remarkably good even though only 22% land is under cultivation. The communities have adapted to the challenge of low area under agriculture by adding on the activity of livestock rearing to cultivation to support their livelihood. In the catchments almost all caste people are involved in animal husbandry as a secondary occupation but type of animal varies most of the scheduled tribes, who are predominant in the area rear, small animals like goats, cows and bullocks. Buffaloes are limited to families having better land ownership. While milk production depends primarily on agricultural production for fodder, the fodder for goats comes primarily from common land. After agriculture residue, private pastures are the second largest source of fodder for the milch cattle. The limited irrigation provided in the Catchment is through a small number of poorly maintained minor irrigation tanks and farmers-owned wells. Jaisamand Lake (constructed during the period 1711-30 AD), the largest artificial lake of the country for quite some time, was initially built for providing facilities for regeneration and preservation of wildlife, now serve as a major irrigation source for the Jaisamand Command area.

Introduction

Over last three decades there have been attempts on the part of a number of civil society organizations to demonstrate aptness of local communities to manage collectively their natural resources for sustaining their livelihoods and also to advocate for programmes and policies that would strengthen the communities to own up responsibility for the resource management. The government seemingly conceded to the idea as is apparent from the expansive government programmes like Watershed Development and Joint Forest Management and also policies and Acts like PESA and FRA that place a trust in communities to own and manage resources. But at the same time, the area has witnessed counter trends that along with degrading natural resources have alienated the communities further from their resources. Along with traditional economic activities like agriculture and animal husbandry there have been increasing trends towards industrialization, mining, urbanization and infrastructure development. These new developments secured into the area by outside interests, nurtured on relatively poor socio-economic and natural resource-base have been giving rise to new interest groups.

The case study documents the new developments in the Jaisamand Catchment area. GIS mapping and field survey were carried out to uncover different facets of the natural resources, the people and their relation to natural resources. The first section presents the changes in land use pattern over a decade beginning with 1997-98. It is followed by issues around phosphate mining and associated tailing dam, fertilizer industry, sand mining and construction of a highway.

Land Use Pattern

The table below gives the area statistics of land use / cover at Level-I, Level-II and Level-III as per NRSA classification system.

	2005-06		2000-01		1997-98	
Land use/cover categories	Area	Percentage	Area	Percentage	Area	Percentage
Built-up land	5294.13	2.85	5294.13	2.85	5294.13	2.85
Kharif crop only	11103.61	5.97	1427.73	0.77	5237.4	2.82
Rabi crop only	2256.08	1.21	10380.27	5.58	5311.76	2.86
Double crop	8028.69	4.32	11287.24	6.07	11070.66	5.95
Fallow land	2150.96	1.16	4682.02	2.52	6969.95	3.75
Dense forest	16658.96	8.96	16151.27	8.68	24830.61	13.35
Degraded forest	49319.19	26.51	50122.25	26.94	41137.75	22.11
Total forest	65978.15	35.47	66273.52	35.63	65968.36	35.46
Land with scrub	15335.77	8.24	30416.37	16.35	3396.21	1.83
Land without scrub	32296.49	17.36	28283.9	15.20	29640.79	15.93
Barren/rocky area	37620.52	20.22	23753.32	12.77	45248.83	24.32
River sand	784.74	0.42	924.54	0.50	279.71	0.15
Water body	4779.65	2.57	2816.29	1.51	6955.55	3.74
Mining area	389.03	0.21	478.48	0.26	644.49	0.35

Built-up land: The category "Built-up" as classified and mapped using satellite data and tallied with collateral information includes residential (rural), Industries (factory premises) and roads. Built-up land in the Catchment occupies an area of 5294.13 ha and has remained constant from 1997-98 to 2005-06.

Agriculture land: Net average area available for agriculture turns out to be 26635.46 ha (14.32 per cent) over three periods (years) given in the table and average gross cropped area for the same periods amounts to 32163.14 ha (17.3 per cent). The area under cultivation is confined to mainly plains and valley fills. Kharif crop in year 2005-06 accounts for somewhat higher area percentage of 10.29 compared to Rabi crop that covers 5.53 per cent of total catchment area. This may be attributed to high rainfall during Kharif season and poor workability in water filled lake during the Rabi season. In year 2000-01 the pattern is reversed with percentage of area under Kharif being 6.84 and under Rabi being 11.65. This indicates large amount of tank bed cultivation, wherein relatively better moisture retention during Rabi 2000-01 helped to increase the cropped area. In year 1997-98 the area under

indicates large amount of tank bed cultivation, wherein relatively better moisture retention during Rabi 2000-01 helped to increase the cropped area. In year 1997-98 the area under Kharif and Rabi turns out to be almost same. Sizable area of 8028.69 (4.32% of total area) is under double crop where irrigation facility available. Plantations are mainly confined along forest patches, roads, canal etc. There is a marked dominance of residual fallow land mostly in eastern and southern part of the catchment indicating a scope for increasing cropping intensity through better management practices.

Forest area : Forest area covers 35.47 per cent area of the Catchment. Almost entire forest area (74.75 per cent of total forest land) is either degraded or of scrub status. It indicates poor status of regeneration and plantation. Water spread in the forest area is the cause for slight change in the forest area in three different years. The area under dense forest has decreased whereas the area under degraded forest has increased from 1997-98 to 2000-01.

Wastelands : Wastelands occupy largest of all Level-I categories covering 86037.52 ha (38.01 per cent) of the total Catchment area. Barren/rock & stony waste/sheet rock accounts for 37620.52 ha. (20.22 per cent), followed by 3229649 ha of land without scrub (17.36 per cent), land with scrub 15335.77 ha. (08.24 per cent) & river sand 784.74 ha (0.42 per cent), respectively. Along the Jhamri and Gomati rivers and there are areas of deposition of fluvial sand. These areas separated from total width of river along with deposition along other drainage lines are shown as river sand. Stony waste/sheet rock areas are distributed randomly over the area.

Wetland: Wetlands are the areas on the landscape where land and water meet and usually lie in depressions or along river and lakes where they are subjected to periodic flooding. In recent years wetlands have received greater significance due to its use for supplementing human dietary requirement, ecological significance in terms of flood control, water purification, aquatic productivity, control on micro-climate, ground water recharge and above all it is the ecological niche for large number of fish, birds and wildlife. The wetlands classified into two categories viz., water bodies and rivers. Water bodies and rivers together occupy 4779.65 ha area.

Others: The mining activities are observed only in certain portions of the catchment area. Since the mining is open cast, a clear pattern is discernible over the surface. Mining area includes Rajasthan Mines and Mineral (RSMM) Corporation's Jhamar kotra rock phosphaste mining areas and the mining dumps and amounts to 389.03 ha (0.21 per cent) of total Catchment area.

Phosphate Mining and Fertilizer Industries

Rock phosphate mining and the phosphate fertilizer industry have played a key role in land acquisition in the Jaisamand catchment area. More specifically, these industries have acquired land across villages in Jhamar Kotra and Kanpur Gram Panchayat. Mining for rock phosphate began in Jhamar Kotra in 1968. The area has the largest phosphate reserve in the country amounting to 74.68 metric tons. Rajasthan State Mines and Minerals Limited (RSMML) took over production within the leased area of 1370.369 hectare. The mining requires deep excavation and the removal of substantial waste overburden; around nineteen times the amount of phosphate ore mined. Thus, whilst the mining activity itself extends over a strike length of 16 km, vast areas of land are required for removing and dumping the burden. Fertilizer industries utilizing the mined phosphate have been established a few kilometers from Jhamar Kotra in village Umarda.

Land use/cover changes

There are discrepancies between official land records and satellite imagery. Land officially acquired by RSMML is not necessarily being used. In fact, many households still live within the area of the mining

lease and can do so legally until RSMML provides appropriate resettlement and rehabilitation (RSMML has completed the process with 69 families).

Changes in land cover in Jhamar Kotra, area covering 150.73km²

(Unit = km²)	1971	1988	1996
Mining activity	**0.045**	**0.71**	**2.172**
Dense forest cover	58.62	37.51	15.58
Open forest cover	32	29.47	17.54
Scrub forest cover	56.23	83.49	94.38
Agricultural land	8.204	3.09	4.734
Wasteland	0.57	7.460	13.691

Rock Phosphate Mining

Initially, in 1968, the government acquired the land and gave leases to the RSMML. Since then the leases have been renewed in years 1988 and 2001. RSMML has acquired both common and private land in Jhamar Kotra GP. Much of the acquired land was earlier used by community for agriculture (on wastelands), livestock-grazing, fodder and firewood. The first acquisition in Jodhpurya village of Chansda Gram Panchyat was commenced in 1997. Despite PESA, 1996, according to the Sarpanch, *Patawari* continued to have key control over leasing government wastelands. In Jhamar Kotra GP 500 hectare of forest land was leased to RSMML in exchange of compensatory afforestation elsewhere. The decision was made with permission of the Forest department and the NOC was issued by the Patawari following consultations with Gram Panchayat. The land lost was being used for grazing, fodder, firewood and about 250 families were dependent on it.

Bhekda Tailing Dam

Bhekda Dam is located in Bhekda and Karget villages of Girwa block in Udaipur district. On one side it touches the Karget forest and other side it touches Jamar kotra panchayat. It is constructed by RSMML ostensibly to contain the pollutants. Water comes in this dam from mining of Jamar kotra Phosphate mines. The tailing dam is cement - concrete structure having height of about 50 meter. Polluted water normally leaks out through many cracks in the dam's wall. The wall was built temporarily and has a foundation 3.5 meter deep, width 250 meters and a height of 52 meters. The cost incurred on it is Rs. 200 lakh. It has got filled till 50 meters during last 10 years and may get fully filled in another one year. The filter plant is located under the central area of the dam and covers 4 meters width and has a height of 51meters.

The base spread area of the dam is porous because of which polluted water contaminates the fresh ground water of the nearby areas. Village people are experiencing harmful effects of the polluted water. People witnessed immediate death of many monkeys on drinking polluted water and there have been cases of abortion in some other animals. There is a fear that the harmful water may spread through the river to various areas and may create pollution in Jaisamand Lake after passing through valleys of Bhalonta ka guda, Devda and Vali in the coming years.

Fertilizer Industry

Eight fertilizer industries have been set up in village Umarda. The presence of a large working population and the establishment of fertilizer industries gave an inevitable onset of linked industries. One can witness the arrival of various shops, residential areas, *colleges* and other industry in the area. Interview with a key leader in Bargdeera Bastee of Umarda hamlet disclosed that the village landowners and families had been under extreme pressure from prospective buyers.

Impacts of mining and industrial activity

A key issue emerging from interviews in Umarda villages and Jhamar Kotra GP is a loss of farmers' control or choice over selling their land to industry. The adverse impact on the community health and its

access to natural resources and livelihoods has driven and continue to drive them off their lands following the mining activity or the development of the fertilizer industries. The Jhamar Kotra Sarpanch, Umarda Ward Panch, and households interviewed described that land was sold to the mining or fertilizer industries in desperation as their livelihoods were destroyed. This goes on to show how a farmer's earning of livelihood from his own private land in Jhamar Kotra and Umarda is intrinsically linked to ecological condition of area and the availability of common land. Also, the reduction in the density of forest as is the case in the study area reduces the availability of timber and non-timber forest produce for the community.

FRA status in Jhamar Kotra and Chansda revenue villages

In village Jhamar Kotra 43 individual and one community claims were made, out of which rights have been granted against 17 individual claims. In village Chansda only individual claims, 32 in number were made, and rights were granted against 17 claims. Interview with ex-Sarpanch of Jhamar Kotra revealed that 100 hectare of government land was allocated for mining and that the Gram Panchayat signed the lease as a result of pressure from the mining company including false allegations made against the Gram Panchayat. In Chansda revenue village there have been multiple penalty charges @ Rs. 300 per Bigha over the last 30 years for illegal encroachment on the Forest Land because the community has not had rights to the land.

A Murder of a River: Case of Sand Mining

Discussions with communities along the rivers in the catchment reveal that the rampant sand mining in area is taking place for the last 30 years. For instance rapid digging of bed of river Aavara is operational 20 hours a day with continuous movement of trolleys in and out the villages. A count by local community informs that as many as 600 trucks (19,200 ton) carry the sand daily to Udaipur city which is 55 km from the periphery of 1000 ha area of villages studied. The river is deepening at the rate of 4.7 feet per year. Massive degradation of river at such an intensified manner has almost finished the water holding capacity of river. Agricultural based livelihood activities are being disturbed and floral & faunal loss has affected the animal husbandry.

Measurements of water level in wells, which are monitored in December (3 months after rain) show that water recedes by 3 to 4.7 feet every year. In summers water level falls down to touch the bottom. In April to July 2011 water level fell by 45 ft. It takes 24 hours for wells to recharge again after pumping water with motor for 3 hours. Hence wells require deepening every other year. In Aavara village 100 new wells of 90 feet to 100 feet depth were dug by farmers last year, out of which only 65 per cent are running successfully. Rising up of river Aavara banks from 4.6 feet to 5 feet and widening from 1foot to 1.5 feet every year has uprooted the green herbs and grasses. A rich amount of biomass of 50 kg per 0.5 hectare (from flora dense sites) comprising only of grasses is assessed to be decimated during last 3 years. Further, dumping of large stone pieces and heavy gravels residue of sand has suppressed the growth of germinating seeds.

Sand mining has increased over the years partly because of encroachment of commons by the community. A trend got evolved whereby the common land which falls under the command of a farmer becomes his/her property. When the land becomes unusable as it lies under the river territory it is leased to the sand miners. Land is leased to the miners at the rate of tractor- trolley or truck load trip which makes farmer earn large sums of money (up to Rs. 2000 a day). It becomes difficult when half of the people from the same village are involved in mining. In Dhmidi itself 20 out of 50 families are involved. However, people from Kalodia have filed several appeals in Gram Panchayat but none of them is heard, says Ratan Lal Patel from Kalodia. According to the people the orders of sand mining are passed by the state government. Unless people who are suffering from ill effects of sand mining get organized and compel others in the village who are party to it to abandon the practice there is little chance of stopping the state government from passing such orders.

Projections for next three years state that with rapid increase in urbanization to two fold, advancement in technology and expansion of markets in and around Udaipur, mining will continue from the selected sites but during the last years (2012-13 and 2013-14) it will slow down as the most of the river depth would have been exploited. At this stage widening process can find some scope. There will be rapid land degradation and migration before the mining stops as forecasted because of non-availability of sand in the area.

Land Acquisition under Highway

Land acquisition takes place for many different reasons. Highway road construction is also one of the kinds. In this context a study was conducted on land acquisition carried out for the construction of a State highway (SH-53) from Keer ki chouki (Km 12) to Salumber (Km 79.8) in Udaipur district of Rajasthan. State government has decided to develop selected State roads through Rajasthan State Road Development & Construction Corporation. The area studied, from the Rania village at Km 32.5 to Bambora town at km 48, forms a part of three blocks viz. Vallabhnagar, Girwa and Salumber of Udaipur district. The road passes through several villages namely Khana talab, Mand kala, Sawna, Ramela, Upla semleya, Nicla Semliya, Hatida, Ratanpura and Jamun. The highway is a two lane carriageway 7 meters wide with a 1.5 m earthen shoulder.

The State highway (SH-53) was earlier a rural link road constructed as single lane carriageway 3 meter wide with soft shoulders 1 meter wide on either side. As per government records it was classified as a famine road. Hence no proper data regarding Right of Way (RoW) was kept. The road was reconstructed and was prepared for two lane undertaking landfill on road sides under Pradhan Mantri Gram Sadak Yojana (PMGSY) and National Rural Employment Guaranty Act (NREGA). The discussion with concerned PWD officers revealed that a general norm followed is to acquire 15 meter RoW all along a road. The work on two lane making has been taken up in patches. The RoW proposed for double lane work was 15 meter for rural areas and 12 meter for residential or other built up area. Theoretically this does away with the need to acquire additional land for double-laning of the road which could be adjusted within 15 meter RoW that is already assumed from the time the road was a rural link road. But in practice land and at places affected structures need to be acquired for constructing two lane carriageway. For instance additional land would be required for two proposed Toll-Plazas comprising 2-lanes each of width 3.2 m and two wider lanes of width 4.1 m. Of late decision has been taken to convert road into 4 lane carriageway. The construction work is proposed to be handed over to the National Highway Authority.

In terms of area 5 (3 M + 2 M) x 70 Km = 35 hectare area was already used in the existing road. The road passes through predominantly barren and agricultural areas interspersed with residential settlements, along with some public land use. On the one side of highway forest land also exists but forest land is not affected due it. If this state highway-53 converts in to 4 lane divided highway, then the highway need 164 hectare. It means 4 lane highway will acquired 94 hectare extra land. This calculation is only in connection with area required for carriageway but if calculations are made taking in account full right of way (ROW) then 4 lane high way construction would need acquisition of 364 hectares of land.

In anticipation of above developments approximately 40 per cent of private land around the State highway has been sold at rates much higher than otherwise prevalent in the area. According to the local people prevailing rates vary between 1.5 to 2 lakhs rupees per bigha. It is not local farmers who are making the purchases but outside non-farming people. According to the Hari Singh from Sawana village, the land rates are increasing day by day. While describing the process of land sale, he mentioned that person (A) who belongs to the Rania village fixes a deal with the person (B) of other village for Rupees 8000 per bigha of his 170 bigha private/ pastureland/ barren land. Person (B) makes the deal of that land with the person (C), who is outsider, for Rupees 35,000 per bigha for getting the land registered in his name. Thus, person (B) acts as a local broker. This has been happening for last 2 years after the commencement of the highway works. Hari singh and Bahadur singh belonging to Sawana village sold their own land to non-farming outsiders at Rupees 35000 per bigha. The current price of that land is Rs.100000 per bigha. The Naru ba S/o Uda ji from village Upla Semleya narrated how 3 months ago his

nephew sold his 14 bighas of barren land for Rupees 9 lakh to a non-farmer in Bhinder. This deal was brokered through a local broker.

The case reveals how a seemingly innocuous development activity like road construction in the absence of real empowerment of local community can give rise to processes that move people away from their resources-making both the resource base and their livelihoods vulnerable. The activity cannot be assessed only in terms quantity of land directly acquired but has to be looked in terms of its qualitative impact on people's life.

The cases of 'developments' in the Jaisamand catchment starting three to four decades back and accelerating presently viz. phosphate mining & associated tailing dam, fertilizer industry, sand mining and State highway show how changes planned and planted in an area without taking into consideration the local resource base and communities may turn out to be counter-productive both in short and long run. In case the general development policy and practice continues to remain the same the chances of success on ground of even progressive legislations like PESA and FRA get compromised along with likely increase of confrontations both within communities and of communities with the administration. Government may itself find it difficult to successfully pursue its own plans. This happened in case of the biofuel programme announced by the Government of India and taken up enthusiastically by the Government of Rajasthan. As a follow up, 200000 hectare of wastelands was identified in Udaipur alone for the plantation of Jatropha. Out of this 58000 hectare of degraded forest was to be handed over to companies either directly or through an agreement with local village forest protection committees. With respect to revenue wastelands, the modus operandi was to allot land to community groups and facilitate the plantation of Jatropha under NREGA. These decisions were taken about various lands without taking into account the existing land-use. Inevitably there was a lot of resistance from the community against these. A total disconnect of planning from the ground reality about communities' resource use becomes apparent when one realizes that the degraded forest land that was to be handed over to companies was the same that gets classified later as eligible for recognition under the Forest Rights Act.

Biofuel: A Case study of Rajasthan and Chhattisgarh

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Introduction

The concept of biofuels was introduced in India to meet the following objectives:

- Reduce Emissions
- Reduce Fossil Fuel Dependence and to
- Develop Wastelands.

To achieve these objectives, a National Mission on Biofuels and Biofuel Authorities at State level, have been constituted. In view of the food security issues in the country, the policy states that biofuel production will only be promoted on the basis of non-edible oilseeds. Hence, oil bearing species like *Jatropha curcas* and *Pongamia pinnata* were chosen. The target was set as 20% blending with High Speed Diesel by 2011-12 (later revised to 2017). It was envisaged that about 32 million hectares of wastelands could be put under oilseed plantations, and with modest productivity improvements, about 20 billion of biodiesel could be produced. This amount is sufficient to replace 20% of the national petroleum diesel requirement in 2017[1] (Gunatilake 2011). Molasses Ethanol production, which has other lucrative uses, was not deemed sufficient to meet the 20% blending target.

The "Wastelands" were targeted due to higher opportunity cost of better lands. The expectation from the selected species was that they would have better yields even on marginal and drylands without too many additional inputs like irrigation, fertilizers and pesticides. Plant agronomy suggests that it is the water that combines with carbon to form oil. The plant preserves the oil in the seeds. In distress conditions, the seeds become very thin and the seed to oil ratio will be much higher than the projected 4:1 (4 kg. seeds for 1 litre oil). The conditions normally prevalent on 'wastelands' belie the estimates of the planning commission. More seeds are required per kg indicating a much lower productivity per acre than envisaged.

If one looks at the land proposed for the plantation of biofuels, all categories of 'wastelands' have been targeted. Most such 'wastelands' are used as commons. The commons are being used by village communities for various purposes e.g. they are available for open grazing at least for 2 to 3 months in a year, people also collect fuelwood and in some regions they are part of the traditional route taken by pastoralists. Due to overexploitation of these lands and neglect in terms of taking steps to restore/ maintain their productivity, the lands are most degraded.

Biofuel Plantation in Rajasthan and Chhattisgarh

Rajasthan

If one looks at the available wastelands in Rajasthan – the NRSA data shows that almost 27 % of the total geographical area is wastelands of various types. Out of this almost 11.5 % area is not fit to be put under any type of plantation. Over the 10 year period recorded above, wastelands have decreased marginally. 'Land with or without scrub' has increased by 11128.32 hectares (or 29%) during this period whereas "Underutilized/degraded notified forest land" and "Degraded pastures / grazing land" have decreased in the last 10 years indicating conditions of pressure on land resources. Field observations indicate that this is mostly due to grazing.

[1] Gunatilake, H. 2011. "Food Security, Energy Security and Inclusive Growth in India: the Role of Biofuels." Asian Development Bank, Manila.

Category wise status of wastelands in Rajasthan (2000 & 2010)

Sl. No.	Category	2000		2010	
		Total Wastelands	% to total geographical area covered	Total Wastelands	% to total geographical area covered
1	Gullied and/or Ravinous land	4952.77	1.45	1884.92	0.55
2	Land with or without scrub	27152.76	7.93	38281.08	11.19
3	Waterlogged and marshy land	289.66	0.08	119.82	0.04
4	Land affected by salinity / alkalinity-coastal/ inland	2722.99	0.8	616.24	0.18
5	Shifting Cultivation area	0	0	0	0
6	Underutilized/degraded notified forest land	12541.89	3.66	12220.12	3.57
7	Degraded pastures / grazing land	12208.44	3.57	3918.42	1.14
8	Degraded land under plantation crop	21.14	0.01	0	0
9	sands - lands/ coastal	40639.51	11.87	31627.22	9.24
10	Mining/industrial wastelands	128.65	0.04	115.92	0.03
11	Barren rocky/stony waste/sheet rock area	4981.3	1.46	4905.72	1.43
12	snow covered and/or glacial area	0	0	0	0
	Total wastelands	**105639.1**	**30.87**	**93689.46**	**27.38**
	Land which cannot be used for plantation (1+3+4+5+8+9+10+11+12)	**53736.02**	**50.86 to total wastelands**	**39269.84**	**41.91% to total wastelands**

Source: Wastelands Atlas; NRSA 2003, 2005, 2010

On their official website the Biofuel Authority, Rajasthan shows the wastelands availability for biofuel plantations as below:

District wise Identification of Wastelands and allotment (Ha.) 2010-11

Sl. No.	District	Culturable Wasteland Agri. Statistics 2007-08	Culturable Wasteland as Identified by District Collector	Status of wastelands allotment (2010-11)								Remaining identified land for Allotment
				SHG's		Gram Panchayat		Societies		Total		
				No.	Area	No.	Area	No.	Area	No.	Area	
1	Baran	29392	1383	71	831	0	0	0	0	71	831	552.29
2	Banswara	15501	2090	62	391	41	700	0	0	103	1090	999.51
3	Bhilwara	135222	8812	6	50	0	0	0	0	6	50	8762.46
4	Bundi	29892	3780	158	1925	0	0	0	0	158	1925	1854.85
5	Chittoragarh	137294	741	53	514	0	0	0	0	53	514	226.80
6	Dungarpur	21913	1285	0	0	33	330	0	0	33	330	955.00
7	Jhalawar	46583	4254	0	0	0	0	0	0	0	0	4254.00
8	Kota	22735	644	0	0	0	0	0	0	0	0	644.00
9	Rajsamand	117751	6799	281	2807	0	0	0	0	281	2807	3992.50
10	Sirohi	9417	2547	32	355	11	128	0	0	43	483	2064.05
11	Udaipur	120443	8792	278	1565	333	3264	0	0	611	4829	3963.03
Total		**686143**	**41127**	**941**	**8437**	**418**	**4422**	**0**	**0**	**1359**	**12859**	**28267.99**

Source: Biofuel Authority, Rajasthan, 2011 (http://www.biofuel.rajasthan.gov.in/distide.pdf)

The district collectors were assigned the task to create a land bank in the name of biofuel plantations. After a lot of effort, only 6% (686143Ha.) land has been identified in 11 districts so far. Out of this, only 31% (12859 ha), has been allotted to SHGs & GPs.

Sl. No.	Year	Financial Progress (in Rs. Lakhs)		Physical Progress (In lakhs)		
		Allotment	Expenditure	Nurssary Raising		Plantation Achievements
				Target	Achievement	
1	**2006 – 07**	225.00	191.80	75.00	66.00	61.00
2	**2007 – 08**	500.00	292.80	174.00	147.81	134.01
3	**2008 – 09**	240.40	124.50	38.85	46.63	46.63
4	**2009 – 10**	92.26	25.86	30.75	9.94	6.83
5	**2010 – 11**	66.40	19.39	22.10	9.41	9.41
Total		**725.00**	**654.35**	**340.70**	**279.79**	**257.88**

Source: http://www.biofuel.rajasthan.gov.in/b.pdf

The data has also been analysed for physical and financial progress and plantation done over a period of time.

Over the period of five years the targets for nursery raising has gone down and accordingly the nursery raising expenditure have also gone down. The financial achievements are 90% whereas in terms of physical achievement it is 82%. Where ever the plantations have been carried out, neither the mortality has been checked nor gapfilling done. At local level conflicts have also occurred as the people's groups (SHGs) have done *Jatropha* plantation just to get wages. Incidents of uprooting of Jatropha plants at night have come to light (Sagtadi Village – Girwa Panchayat; Udaipur District).

Plantation Achievements (plants in lakhs)

Rs. 84.26 Lakh has been alloted for the plantation of 28 lakh *Jatropha* plants in the financial year 2011-12. In this year the plantation of *Jatropha* will be done through MNREGA. To take up this in the microplans, neccessary orders have also been issued. A report in Dainik Bhaskar states that only 800 Q of Jatropha seed was produced from 12,000 hectares of land distributed in Rajasthan[1].

Chhattisgarh

Chhattisgarh state is situated between $74^0$46' N to $24^0$5'N longitudes and 80015'E to $84^0$20'E latitudes. It covers 137898 Km^2 areas out of which 44747 Km^2 is Forest area (excluding Revenue Forest land). The state receives 1202 mm rainfall in 64 rainy days. The state has 16 Revenue districts, 98 Tehsils, 146 Development blocks and 20308 villages. The state is dominated by tribal people and 85 blocks are Tribal development blocks.

The population of the state is 20,834,000 persons (Urban=10,474,000 & Rural=10,360,000). The population density is 154 persons/Km^2 (324 persons/Km^2 at the national level). The sex Ratio is 989. The literacy rate in the state is 64.7% where male literacy is 77.4% & female literacy is 51.9%.

The state falls into Chhattisgarh/Mahanadi Basin Agro eco-region [Moderately to gently sloping Chhattisgarh/Mahanadi Basin, Hot, moist-sub humid eco-sub region[2]

The **Land Utilization** (2004-05) in Chhattisgarh is as follows:[3]

[1] *http://www.bhask ar.com/article/RAJ-OTH-12000-hectares-of-land-desertification-project-3679664.html*

[2] [J3 Cd (cm) 5]. BSS&LUP, 1999, pp 192-196)

[3] Chhattisgarh at a glance 2005, Directorate of Economics & Statistics *http://www.bhask ar.com/article/RAJ-OTH-12000-hectares-of-land-desertification-project-3679664.html*

Sr. No	Particulars	Area (In '000 hect.)	% to total Geog. area
1	**Geographical Area**	**13789**	**100**
2	Forest	4475	32.45
3	Land not available for cultivation	1045	7.57
4 a	Pasture & other grazing land	850	6.17
4 b	Land under misc. Trees corps	0.70	0.005
4 c	Cultivable waste land	337	2.44
5 a	Current Fallow	238	1.72
5 b	Other fallow land	250	1.81
6	Net area sown	4770	34.59
7	Area sown more than once	946	6.86
8	Total cropped area	5716	41.45

*Percentage to net area sown

In Chhattisgarh seven districts fully and six districts partially come under PESA (Panchayat Extension to Scheduled Areas). This forest area covers almost 44% of the total state and 8% of the National forest area.

The land utilization at state level shows that out of (137,890,00 hect.) total available geographical area 32.45% area comes under Forest, Land not available for cultivation is 7.57%, Pasture & other grazing land is 6.17% and Cultivable waste land is 2.44%. The net area sown is 35% and area sown more than once is only 6.86 % which shows that the irrigated area is very less. The state has a low cropping intensity of 121 per cent. The productivity of rice in rainfed areas ranges between 10.0 to 11.0 quintals per hectare whereas it is 16 to 19 quintals per hectare in irrigated areas which is very low compared to the national average and other states.[1] Chhattisgarh suffers from lack of irrigation and periodic droughts while the average rainfall is 1400 mm. Migration is the norm and the majority of farmers have very small landholdings.

The state policy for biofuel involves large scale plantation of *Jatropha*. CREDA (Chhattisgarh rural energy development authority), Tribal Area Development Department, Forest Department, Agriculture Department, Horticulture Department, and PRI are actively involved in this programme. This state is targeting the 'wastelands' and degraded forest lands for *Jatropha* plantation.

The state is known for its long **history of rice cultivation** and was once the **"Rice Bowl"** of India. Over 1, 50,000 varieties of paddy were grown here. A number of these traditional and rare varieties have disappeared due to the changed pattern of agriculture. Today only 22,972 varieties of paddy exist which have been documented and stored at the Indira Gandhi Krishi Vishavidhyalaya at Raipur. The state has dramatically changing its identity becoming **the largest producer** of thermal power, cement and sponge iron. Most of this produce is meant for export outside the state and does not benefit a large section of the indigenous population.

"Within 10 years of its creation, the state has 2000 large industrial units. The state government has signed 115 MoUs based on which the companies will submit project proposals. The proposed investment of these MoUs is **Rs.** 176193/- crore. Since each MoU is in turn a shelf of projects, the total number is 543. Twelve MoUs have moved two stages – companies have submitted project proposals, based on which the MoEF issued them Terms of Reference for environment impact assessment." [2]

In the state of Chhattisgarh, now Centre for Rural Education and Development Action (CREDA) is facilitating private companies to acquire land for biofuel plantations. They have signed MoUs with HPCL and IOC and have registered as "CREDA – HPCL Biofuel Limited" and "IOCL – CREDA Biofuel Limited". Production of *Jatropha* will be dealt with by these two companies. The status of *Jatropha* plantation in Chhatisgarh is given below -

[1] IGAU's Status report, 2000

[2] Industrial Jungle – the cover story; Down to Earth September 1-15, 2010; pp20-29

Status of Biofuel plantation in Chhattisgarh[1]

District	Available Revenue Wastelands	Biofuel plantation (area in Lakh hectare)				Total Plantation
		2005-06	2006-07	2007-08	2008-09	
Raipur	0.0212436	0.0073	0.0713	0.053	0.020	0.152
Mahasamund	0.015283	0.010	0.047	0.034	0.005	0.096
Dhamtari	0.0112462	0.019	0.020	0.007	0.000	0.046
Durg	0.0172277	0.004	0.035	0.024	0.006	0.069
Rajnandgaon	0.0214325	0.012	0.064	0.043	0.004	0.123
Kabir dham	0.11627	0.008	0.019	0.033	0.015	0.074
Bilaspur	0	0.017	0.060	0.098	0.027	0.202
Janjgir	0.0324198	0.005	0.027	0.018	0.002	0.053
Korba	0.0749089	0.005	0.026	0.070	0.004	0.105
Raigarh	0.1144198	0.010	0.032	0.053	0.003	0.099
Jashpur nagar	0.0063872	0.012	0.026	0.016	0.012	0.067
Sarguja	0.539447	0.047	0.097	0.078	0.016	0.237
Koria	0.46065	0.017	0.022	0.021	0.006	0.066
Baster	0.0431696	0.015	0.052	0.048	0.034	0.149
Narayanpur	0.0193052	0.000	0.000	0.000	0.000	0.000
Dantewada	0.0697464	0.007	0.011	0.009	0.000	0.027
Bijapur	0.0001459	0.000	0.000	0.000	0.000	0.000
Kanker	0.0100187	0.008	0.038	0.045	0.000	0.091
Total	**1.5733215**	**0.20317**	**0.64715**	**0.65046**	**0.1550412**	**1.6558212**

The table and graph above clearly show that within four years of implementation of the biofuel policy in the state, the area under plantation which earlier went up has now gone down. Very few districts are performing in the desired manner and that too where the Forest Department is taking interest. The rest of the departments have thrown in the towel. Most of the roadside plantations have been uprooted due to road works and people have also objected in a very strong voice.

Department	Target	No. of plants developed	planted by department	No. of plants distributed	Area under plantation
Forest	200.00	172.00	159.87	2.27	6394.80
Horticulture	100.00	17.48	0.00	8.90	356.00
Agriculture	200.00	40.00	3.26	37.49	1630.00
CREDA	0.00	51.00	0.00	47.53	1101.20
Seed Dev. Corp.	200.00	188.27	0.00	188.27	7531.96
Total	**700.00**	**468.75**	**163.13**	**284.46**	**17013.96**

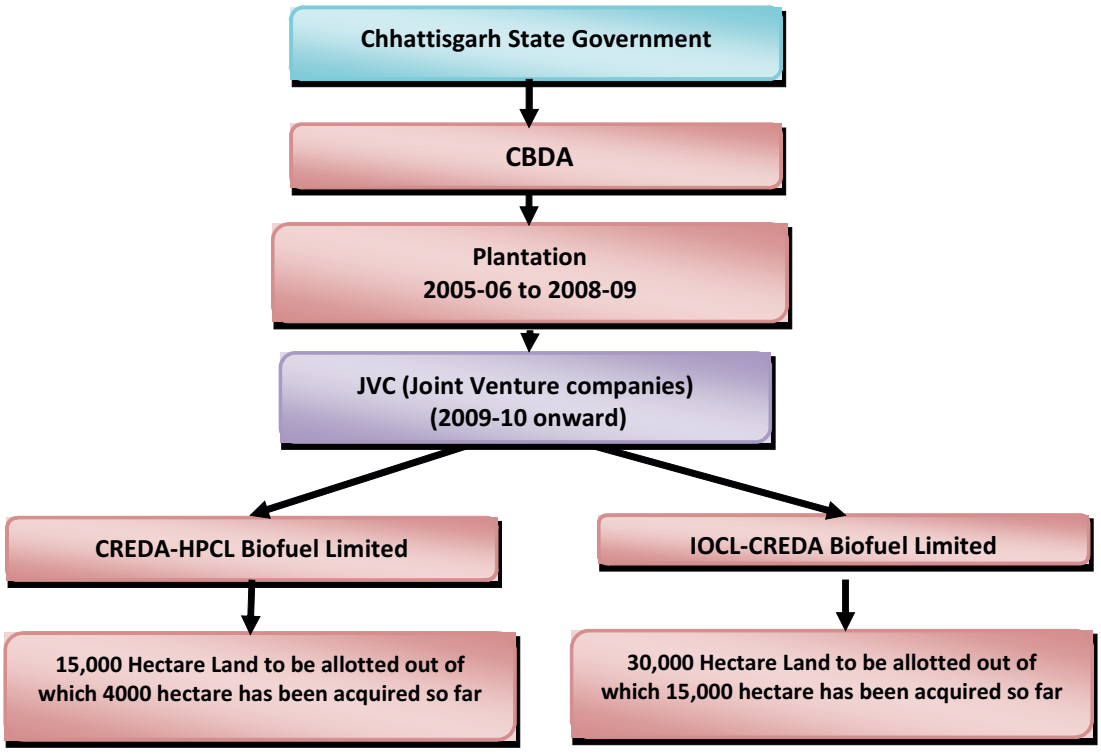
Plantation of *Jatropha* has been done till 2009-10. At one time the biofuel programme was the flagship project of the state, much touted across the country. The Chief Minister himself was taking interest in plantation of *Jatropha*. Even his official vehicle was running on 100% biofuel. Now that this programme has been put in a corner by the officials themselves, the CM's vehicle has also been changed on the ground that due to security reasons a bullet-proof vehicle was required.
Since 2009-10 the state has invited Joint Venture Companies (JVC) to take up Biofuel plantations in future. The Government of Chhattisgarh shall lease 45000 hectares of vacant waste / barren land to CREDA. Through a separate license agreement CREDA would lease the land to ***CREDA-HPCL Biofuel Ltd.*** & ***Indian Oil-CREDA Biofuels Ltd.*** on terms mutually agreed upon for a period of 30 years for

[1] Information collected from the CBDA office, Raipur in April 2011.

carrying out plantation of *Jatropha.* Joint Venture Companies and CREDA hold 74 percent and 26 percent equity respectively in this JVC. 15,000 Hectare Land is to be allotted to ***CREDA-HPCL Biofuel Ltd.*** out of which 4000 hectare has been taken over so far and 30,000 Hectare Land to be allotted to ***Indian Oil-CREDA Biofuels Ltd.***out of which 15,000 hectare has been taken over so far.

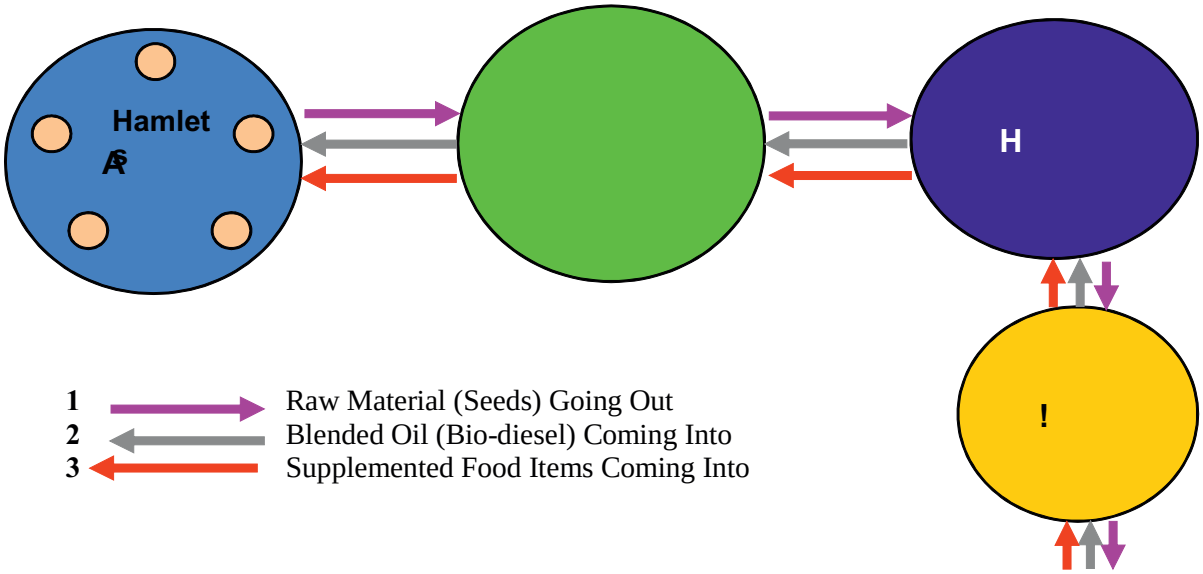
District	Available Land (in Hectare)	% to total Available land
Sarguja	53944.70	34.29
Korba	7490.89	4.76
Janjgir	3241.98	2.06
Raigad	11441.98	7.27
Raipur	2124.36	1.35
Mahasamund	1528.30	0.97
Rajnandgaon	2143.25	1.36
Durg	1722.77	1.09
Baster	4316.96	2.74
Narayanpura	1930.52	1.23
Bilaspur	0.00	0.00
Koriya	46065.00	29.28
Jashpur	638.72	0.41
Kabirdham	11627.00	7.39
Dhamtari	1124.62	0.71
Kanker	1001.87	0.64
Dantewada	6974.64	4.43
Beejapur	14.59	0.01
Total	**157332.14**	100.00

The process of *Jatropha* plantation in Chhattisgarh



These companies are now facing problems on the land to be used for plantation. Most of the lands which have been allotted to them are commons. The plains have been encroached. Only hilly regions are left for the JVCs. The JVCs would like to operate in project mode. They have made models for plantation which includes activities like pit digging, pit filling material, plants, bore-wells, CPT etc. They have also included cost of maintenance at Rs. 26–32 /plant for two years. Since the JVCs have taken over these programmes, no biodiesel has been produced as seeds are not yet available.

Consumption of Diesel in the process of blending



The model above schematically represents the process of Biofuel production, blending and then its use. As mentioned above (a) we have to reduce pollution levels (b) reduce dependency on fossil fuel and (c) reduce the budgetary expenses on the import of fossil fuel. The use of blended diesel and petrol was to provide an answer to these problems in India. How will this happen on the ground.

Stage **one**; *Jatropha* will be grown either on the wastelands or on the private farms . Collection of seeds will be done from the fields. Decoating process may be done in fields. People will bring the seeds to depots from where they will be sent for oil extraction. The oil expeller(s) units will be set up either at the Panchayat level or at the block levels. From there the oil will be extracted and then it will be sent for triestrification process in which glycerol and other impurities will be taken out . This process may take place either at block level or at district level. The state biofuel authority mentioned that they will have two collection centres at Rajasthan i.e. one at Sulawas near Jodhpur and the other one near Jaipur. So after this triestrification process at state level (@ two places) the bio-diesel will be sent to oil corporations' / companies' depots where it will be blended with fossil fuel. In this whole process – diesel consumption will take place at one level.

Stage **two**; This blended diesel will be sent back to the point sources to be filled in. Again diesel will be consumed to reach the source of blending.

Stage **three**; If agicultural fields have been used to grow *Jatropha* then some agri-crops would have been replaced by *Jatropha.* Therefore the suplemented Agri-crops or food items have to be supplied in the villages from some other sources. That means some more diesel consumption will take place at this stage.

Inspite of solving the problem of consumption of fuel, if this happens than the consumption of diesel will increase three fold and that to in the name of reducing pollution. This process has aptly been termed as adding fuel miles.

Summary:

- Seeing status in the states of Rajasthan and Chhattisgarh, it is clear that from National to state level and upto different dipartment levels, there is lack of seriousness about biofuel plantations.
- The land which was targeted for biofuel plantation in Rajasthan has not been even identified. Where it has been identified, it is not availble for plantation of biofuels as the village community is using these lands either as commons or as private land.
- The real problems of Pollution reduction, easing of the financial pressure created by import of fossil fuel are not being dealt with. Integrated research on land use and tecnology adaptation have not taken place.
- Till date, there are no national level certified seeds available for *Jatropha* planation which one can rely upon for at least 25% oil content.
- If at national level, if there really is a desire to decrease the consumption levels of fossil fuel then public transport systems have to be improved and that too with improvement in infrastructure.
- At national level there should be an automobile policy in favour of the environment on one hand and seeing the fuel policy on other hand. There should not be any more encouragement for individual vehicles rather development and use of public transport.
- The 'wastelands' were targeted to grow *Jatropha* plants. This will not work as if they are wastelands in the true sense, they will require high input cost for improvement to acheive desired levels of productivity. Even then one can not claim that it will not be more beneficial to put these lands to use for agriculture, animal husbandry or forestry production systems.
- Such policies should be seen from the communities' point of view as valuable resources are being diverted for improper land use.

Kalpavalli: Windmills -- a Breath of Life or a Kiss of Death?

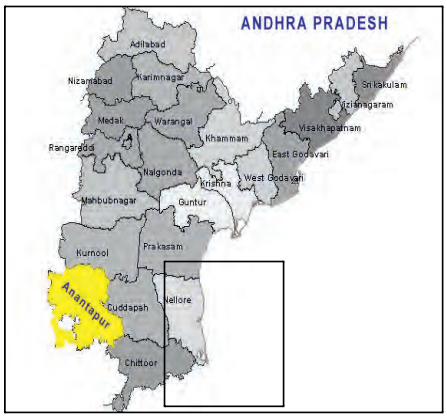
Dr. Leena Gupta
Senior Scientist, SPWD – New Delhi

Executive Summary

Windmills are considered to be generators of clean energy. They are seen as alternatives to thermal power stations which are very polluting and big dams that are considered as destructive of the environment and causing huge displacement of people. Very little is understood in India about the hazardous effects of setting up and running windmills. This is due to the relatively late arrival of this technology in India. In other countries where windmills were established earlier, there is some documentation of the negative effects of this technology. This case documents the negative effects of windmills and places it in the context of the effort of the local community of Kalpavalli to restore a once barren region with support from Timbaktu Collective and the Government.

Overview

The background deals with the description and history of Anantpur area culminating in the arrival of a group of development professionals and their vision of ecological development. The next section describes the situation in Kalpavalli 25 years ago prior to the formation of Timbaktu Collective and contrasts the earlier situation with the present position. It describes the decades of hard work that went into converting the area ecologically. The rejuvenated ecosystem of Kalpavalli which has many characteristics of the wilderness in the nearby Guttur forest is then described. The entry of windmills, supposed to be a breath of life has turned into a kiss of death for the people of Kalpavalli.

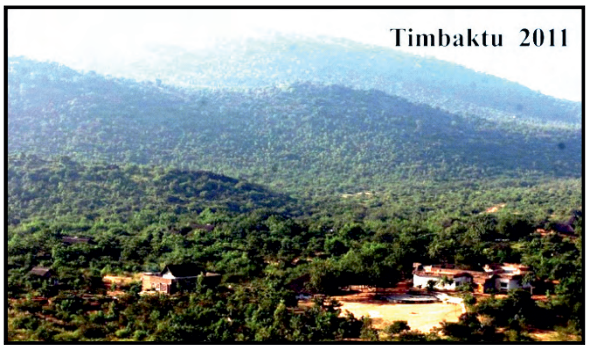


Background

This case concerns the setting up of 48 windmills, starting from early 2011 and carrying on till this day, in the Kalpavalli area (comprising of 8 villages, Mustikovila, Subbrayanpalli, Gvalagondipalli, Burujuguttapalli, Shyapuram, Kogira, Bedanpalli and Kambalpalli) in Anantpur district of Andhra Pradesh. This district is one of the most arid districts in the country. It has low rainfall and therefore very little vegetation, the people are very poor. Anantpur district whose hills were barren even as early as 1905, were once upon a time an area of massive dense forest cover. This deforestation was the result of the large scale use of wood for sleepers for the railways and extensive bangle making in the region as was evident from the large number of abandoned brick kilns during this period (1905). Despite this the area was rich in wildlife with Panthers *(Pantherus pardus)* which had been spotted till 1920. The forests were also home to dacoits in the Presidency. *Hardwickia binata (locally*

known as nara yepi), a local hardwood species was in extensive demand for its use as timber, fodder, rope making and compost making. Col. R H Beddomme, a forest officer in his report to the government in 1880 mentioned that there is hardly any tree which has escaped the bill hooks of the graziers and it was impossible to get any wood for making beams. The district currently has the largest number of sheep and goat in the State. The arid climate makes the region suitable for grass and pastures dominate the hill slopes. Extensive grazing has resulted in stunted growth of trees and shrubs. The district currently has 2.3% forest cover as against the reported geographical area of 10.8%

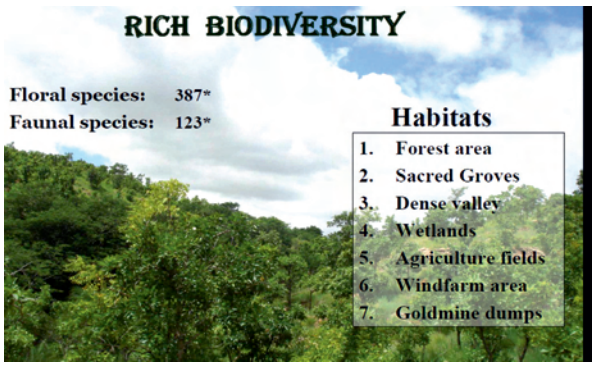
Timbaktu Collective was formed in 1990 by a young team of highly qualified individuals who believed that agriculture was the key to progress and that if the poor were organized in a collective to do organic farming even the barren wastelands of Anantpur district could be transformed into forests, the productive capacity of the soil regenerated, the water bodies could be revived and agriculture could flourish even in areas where there is uncertain rainfall. These young idealists purchased 32 acres of land, established a school, did organic farming, marketed organic cereals and pulses without the use of pesticides and established a weaving unit.



By 1993, Timbaktu Collective began very close collaboration with the 8 villages mentioned above and other villages as well in an attempt to plant trees and revive the forests in the area. Together with the villagers, the planting of trees and eco-restoration work began and slowly over time one could see the beginnings of what would eventually become a dense forest. The work consisted of the restoration of water bodies, soil moisture conservation, nursery development, fire prevention and desiltation of tanks and other water bodies. As a result of this the soil began to heal and plants began to grow so that today there is a rich biodiversity in the area. Bore wells were dug and pumps were installed, fruit trees planted, earth works done for protection of the trees and the water bodies, check dams were built, grass began to grow to full height. Seed collection was done which was used for dibbling and broadcasting. Terracing was done, saplings were planted and, as a result, the trees grew higher, the water table rose by 30 feet, species of flora increased from 23 to 320. Farmers who used to go to other areas to purchase paddy could now cut grass from the hills. Broom grass not available anywhere else grew well in Timbaktu. Temporary fences were erected, fire lines were created to prevent the spread of fire. Soil and water conservation measures were carried out making rock filled dams, trenches, gully plugs and swales. As a result, Timbaktu and surrounding hills were covered with trees and plants in star contrast to the barren land around. The birds have increased from 40 species in 1992 to over 100 species today. Snakes, bears, deer and wild boar have made Timbaktu their home.

Kalpavalli: A range of Micro-Macro habitat and species association

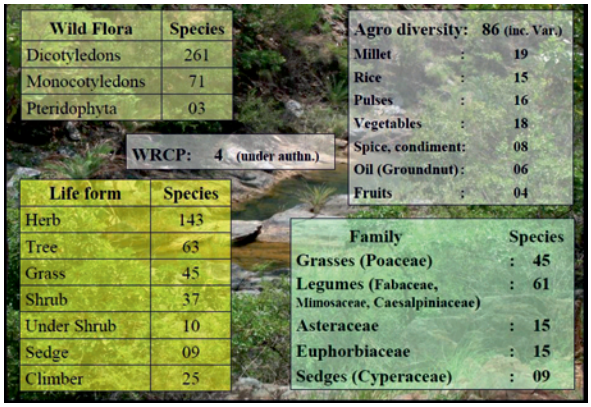
To understand the eco-services of Kalpavalli forest in terms of life-support systems and also to understand the impacts of Wind Energy project operations done in Kalpavalli region, a detailed study was done. Line transects were laid in different habitats like wetland, valley, hilltops, streams, cliffs, dense and degraded patches, grass patches, sacred groves, paddy fields, Toddy and Date palm groves, spring proximities, Windmill operation areas (in Kalpavalli), adjoining Guttur Reserve Forest, Wind Farms and Gold mine dumps of Ramagiri and other open areas. Attention was given to the Windmill legal (on purchased-authorised land) and illegal operations



(on unauthorised area for road constructions without legal permissions) to understand the impacts of such projects on local vegetation, catchment area, streams and water flow towards tanks.
Surveys were conducted in terrestrial and aquatic (lentic and lotic) ecosystems. Trees, shrubs, herbs, grasses, climbers were reported and specimen collected for herbarium. Threats, pressure on resources, community dependency on the forest, interlinkages between the forests, agriculture, pasture lands, windfarms were also studied to understand the status of the forest. Information on the historical profile of the area was collected from local community of Kalpavalli, authentic documents and members of Timbaktu Collective.

Kalpavalli: A saga of development in tune with Nature

Kalpavalli has an enormous variety of plants and animals, both domesticated and wild, as also a wide array of habitats and ecosystems. This diversity meets the food, medicine, shelter, spiritual as well as the recreational needs of local people in and around the Kalpavalli region. It also ensures that ecological functions such as the supply of clean water, nutrient cycling and soil protection are maintained (soil erosion started due to irresponsible, illegal and unsystematic Windmill operations).



The diversity and richness of genes, species, habitats and ecosystems are the real wealth, far more important than money. Perhaps the most important value of biodiversity, particularly in a region like Anantpur, is that it meets the basic survival needs of a vast number of people. A large number of traditional communities depend, wholly or partially, on the surrounding natural resources for their daily needs of food, shelter, clothing, household goods, medicines, fertilizers, religious customs, economy, etc.

In the preliminary survey a total of 386 species were reported from Kalpavalli forest, pasture patches, sacred groves, agriculture fields, Guttur RF fringe area (border area) and other outside areas of Kalpavalli. Out of 387 species, 3 belong to Cryptogamous group and 384 species belong to angiosperms. The plant diversity of Kalpavalli is expected to be well over 500 plant species, including cultivated and ornamental plants. The dominance of Poaceae family is because of the rich grasslands everywhere in the hillocks of Kalpavalli.

Fauna diversity is dependent on the flora of the area. The rich vegetation of Kalpavalli supports a range of non-chordate and chordate fauna diversity (more than 150 fauna species were recorded from the area). Non-chordate fauna recorded in Kalpavalli including Mantis, Grasshopper, Crickets, Dragonfly, Damselfly, Ant, Beetle, Honey Bee, Flies, Moths and Butterflies, Water bugs and Water skaters, Dragonflies and Damselflies (Odonates group-indicators of quality of the biotope), Centipedes and Millipedes, Mollusca (fresh water and land Snail species- feed on litters, fungi, dead plants and animals and help in their decomposition thereby enriching the soil; therefore often

called as ‘Soil engineers’). Among the Chordate group, fish, amphibian, avifauna, small and big mammals were reported from different habitats.

Large numbers of local and migratory birds and animals are indicators of good habitat and food security in Kalpavalli. The Mushtikovila tank and adjoining plains are playing a role of corridor for the wildlife of Guttur Reserve Forest. There is a site in this corridor area where the local people discard dead bodies and thus it is a food zone for vultures, small and big carnivore animals and scavengers. In an easy language one can say that the Kalpavalli tanks and valleys provide food and water whereas Guttur RF provides safe hiding for animals.

The regenerated Kalpavalli forest area become a strong and sustainable life support system for the local community. About 86 agricultural crops grow in the fields. From the 8,000 acres on the Kalpavalli under regeneration, close to 7,000 cart loads of fodder were carried away by 3,000 farmers in 40 villages of Roddam, Ramagiri, Chennakothapalli and Penukonda mandals. Farmers even came from Thirumali of neighbouring Karnataka State. Additionally, the hills welcomed around 40,000 sheep from 23 villages. The regenerating hills had yielded Rs 27.50 lakhs of produce, and over 34,000 work-days of employment. The availability of fodder supports a great genetic diversity of cattle and small ruminants. Kalpavalli provides fuelwood, NTFPs, and many more ecoservices to the local community

Clean Energy Dirty Business

Enercon, a company specializing in wind energy began negotiations with Government of Andhra Pradesh for the setting up of windmills and generation of wind energy in 2007. The company chose Kalpavalli and the surrounding areas for the setting up of 48 windmills because studies showed that the area had high potential for wind energy. Despite the area then being covered by forests, both the government as well as the company ignored this and referred to obsolete revenue records which showed the area as “wastelands”. Subsequently, the company and the government entered into purchase agreements for one acre plots at 48 strategic locations at throwaway prices. Despite the introduction of Part IX in the Constitution of India dealing with the Panchayats (The smallest unit of Governance comprising of a group of villages) and powers given to the Gram Sabha (A meeting where all members of the village above voting age are eligible to attend and give their opinion) and Panchayats, neither the state government nor the company thought it fit to discuss the setting up of windmills in the Gram Sabhas and thereafter in the Panchayats. Meetings were held with government officials and with elected representatives and occasionally with some of the Sarpanch (Elected Head of the Panchayat). The State Government and the elected representatives were most keen to promote windmills as the investments were considerable. The large number of requests from the local community to the Collector, Sub- Collector and Tehsildars to recognise the rights of the local community and cancel the allocation of land to the wind mill company have gone unheeded.

Windmill intervention in Kalpavalli without proper Community perspective:

The cutting of top of the hill to create a flat area for the construction of the windmill, the making of the roads, the incessant heavy traffic up and down the hills and through the villages by trucks carrying the massive parts of the windmills, all created heavy dust pollution which settled on the trees and on the agricultural fields causing tremendous inconvenience to the people, the rise of temperature in the area, and the decline of agriculture. As road building required the mountains to be cut, the internal water aquifers were also cut and destroyed leading to a drastic decline in water availability through traditional sources. Even the main streams of the villages began to slowly dry up. The Kalpavalli Area is known for the abundance of grass that grew on the hill slopes which was more suitable for sheep and goats. Even during the drought periods Kalpavalli was one area where the grass grew in abundance and animals could graze and survive. The livelihood of the people of Kalpavalli depended, in no small measure, on these pasturelands which brought them livelihood and income. With the making of the roads, the cutting of the mountains, the destruction of the groundwater sources, the cutting of the trees for the construction activity, and the erection of 48 huge steel structures reaching high into the sky; the grass of Kalpavalli began to mysteriously diminish and now, in many parts, has disappeared altogether. The cattle are unable to graze on the mountains because the slopes of the mountains have been disrupted by the making of massive roads and by deep cuts made in the mountain side which make it impossible for the cattle to climb up. Grazing of cattle has therefore come to an end completely and with that a major source of livelihood for the people of Kalpavalli disrupted

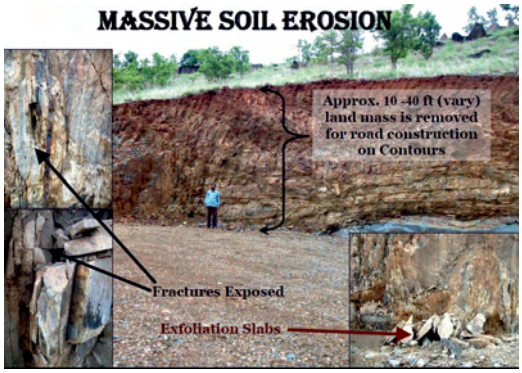
The construction work also caused huge amount of debris to spill into the adjacent fields and to fall into the tanks and water bodies thus destroying the water bodies wholly or partially and affecting livestock. Grass began to decline, the people had much less fodder today than before. The putting up of the windmills so plastic and metal debris spread all over the area. Cattle ate this debris and died. The water table began to fall. As stated before the natural streams and rivulets began to dry up. To make matters worse the construction activity needed a huge amount of water and even afterwards windmills need a constant supply of water for the cooling of windmills. This water was taken by the company from the traditional water bodies of the villages without bothering to take permission and most often without payment and occasionally on the payment of some paltry amount. Water was also taken by the excessive drawing of water from the tube wells on private lands which depleted the water table even further. After all, ground water is the public resource

and it is not open to any private party to set up a tube well and exhaust the water table.

Bewildered by the quick pace of construction the 8 villages suddenly saw a flurry of construction activity taking place on the government land within their villages. Although it was initially said that a 3 m road would be made, eventually a 15 m road was made cutting through the villages and going upto the hills. On the top massive cement construction work was done and, using these as a base 74 m high windmills each with a potential of generating 800 KW power were set up.

Annually about 40,000 sheep graze at Kalpavalli.
60 local Shepherds and roughly 30 Shepherds from Rapthadu, Kanaganapalli, Bandameedapalli also graze their flock in Kalpavalli

In the beginning the villagers thought that a windmill here and a windmill there would bring money to the area in the form of employment and income-generating activities such as tea shops and the renting of tractors. Local politicians were given employment contracts and they in turn took sub contractors so that they were a small group in every village benefitting from the petty contracts given to them. The work on the windmills began early 2011 and as of today all the 48 windmills have been erected with miscellaneous work still remaining to be done. The employment has come to an end except for a few local people employed as "watchers" to guard the windmills.



As things moved swiftly, it took some time for the villagers to understand the environmental degradation taking place as well as to comprehend the short-term and long-term irreversible damage that had taken place.

The Kalpavalli area was widely known for the abundance of grass that grew on the hill slopes which was more suitable for sheep and goats. Tens and thousands of these animals used to come from far away places in Karnataka to Kalpavali for grazing. Even during the drought periods Kalpavalli was one area where the grass grew in abundance and these animals could graze and survive.

It is estimated by the villagers that in the making of the roads and the cutting of the mountain tops and the laying of the transmission lines, over 30,000 full grown trees were cut and thousands of smaller trees and shrubs including freshly planted trees of the afforestation programme were destroyed. The people of this area depended on these trees for their livelihood. They use the fruits, the leaves and the minor forest produce. By cutting the trees the wild life of the area began to disappear. Whereas earlier the area was rich in biodiversity (384 flora species and more than 123 fauna species), over last 18 months there has been a dramatic decline in wild life.

All the vehicular activities also resulted in human beings, chickens and animals being injured and killed in accidents for which there was no accountability at all.

What are the possible long term effects of setting up a cluster of windmills? The situation is not exactly clear although the present research points unambiguously in the direction of permanent, irreversible long term ecological damage. It is said that windmills increase the overall temperature of the area. The whirling of the massive blades with a huge span with the windmills reaching 74 mts from the top of a mountain indicates that the blades are likely to disperse the rain clouds thus causing a fall in rainfall. The blades also dry the ground beneath sapping the moisture content thus destroying the grass and making the pasture economy unviable. It is not clear, presently as to what the long term and permanent damage will be. This is a relatively unchartered territory. It is possible that after the study is

made and report submitted it will emerge that the windmills operation (today they are not operating) would result in the permanent and irreversible destruction of the area forcing people to abandon agriculture, sell their lands for a pittance and migrate in search of work.

Low Benefit Huge negative impact

Yet Enercon has submitted this windmill project to UNFCC to get Carbon credits under the UN offsetting scheme Clean Development Mechanism (CDM). Under this scheme, projects can receive Carbon credits if they reduce emissions and contribute to sustainable development. If approved, the project will receive about 360,000 Carbon credits. Compared to other CDM projects, a relatively small amount.

Despite serious concerns explained above, the Indian Government has confirmed that the project contributes to the social, environmental, economic and technological well-being in the region. This without any Environment Impact Assessment (EIA) being done in the area.

Moreover the UNFCC approval process requires a thorough Stakeholder consultation process including a local stakeholder consultation where local communities are consulted about the project. This was not done in the case of Kalpavalli. It was only when the roads needed to be constructed that a process of involving the community was followed by making many promises with the idea of dividing them. When concern was raised about the effect on the cattle grazing near by the project after 4 to 5 years down the line from the commencement of project, villagers were assured that the project would not have any impact on grazing. This as shown above is belied in practice.

A brief study of the International cases reveal that while the setting up of windmills has been an age old practice, the opposition to windmills has increased in the recent years. Reports of opposition to windmills can be found in Great Britain, Holland, New Zealand, Canada and the USA. The major reasons emerging are as follows.

Size and scale of the windmill operations have increased enormously.

1. Massive subsidy provided to windmills in the name of clean energy and the bypassing of standard procedures for project approval have led to a number of distortions in terms of a proper assessment of the relevance of windmills in relation to other land uses .
2. Impact on avain biodiversity. Large scale impacts being noticed on bats and birds. The Altemont pass in USA has decided to close down windmills in the region during the winter as large number of bird deaths were reported from here during the passage of migratory birds.
3. Impact on Human and animal health due to noise pollution, the low but continuous hum of the windmills have been known to cause problems related to sleeplessness and mental stress.
4. Areas of high wind speeds where windmills function are also the last wilderness areas.
5. The ungainly sight of these huge structures have resulted in the price of real estate going down in the immediate vicinity of windmills. There has also been a considerable impact on tourism with a resultant loss of revenues for the local resident population.

The reports also indicate that the Governments are aggressively pushing the Windmill Programme, with scant respect for local opinion. The nexus between the policy makers and the windmill owners is often open and blatant.

Indian reports of problems related to windmills have surfaced in Jaisalmer, Rajasthan, Kutch and Maharashtra.

ToI Jaipur edition dated Sept 21st 2011 has reported a protest on 20th Sept 2011 at Gadsisar Choraha. The MLA Sangh Singh Bhati reported that the police had killed one person at HAbur village. Jila Vikas Sanyukti Samiti was staging demonstration for last 12 days at the Collectorate. Villagers of Kanoi were staging dharna for last 45 days. The claim of the people was that windmills were adversely affecting tourism. The villagers demanded that Windmills should not be set up on Oran and Gauchar land. At Habur 4 police were injured due to protests by local community. Police have registered cases against 33 people and 17 people of the Private Company .

TNN July 21st report of Rachna Singh mentions how Windmills are sounding the death knell for Tourism in Jaisalmer as camel safari on the rolling sanddune landscape will be a thing of the past with Windmills dotting the landscape. In case of Jaisalmer, Rajasthan (TNN), an area of 1890 bigha on the tourist track to Sand dunes was allotted to a Mumbai-based company to set up a 159-MW wind turbine project by the district administration and state revenue department. While on the one hand, the government is trying to promote rural tourism and two of the 13 selected villages fall on the same track, wind turbine development is a death knell for tourism in Jaisalmer. This would also render hundreds of camel owners who depend on tourism for survival, unemployed. Land allotted for the windmill project traverses through village Kanoi, Khaba, Kuldhara, Damodara that fall on the Jaisalmer-Sam route, which is the only camel safari route left. Thus this development will ruin the tourism and dependent local livelihoods.

Koyna Wildlife Sanctuary, the Sahyadri Tiger Reserve in Maharashtra is a critical corridor of forest and home to tigers, bison and around 250 species of birds (BNHS). But the land inside the Tiger Reserve is up for grabs and over 200 windmills are operating inside the Sanctuary . Under the Wildlife Protection Act, any diversion of land inside a Sanctuary needs prior permission. But an RTI response from the Forest Department proved that the windmills lie inside the sanctuary without any permission and hence they are illegal (Bahar Dutt)

Similar example of the Bhimashankar Wildlife Sanctuary, where the windmill company Enercon has violated the Act. Sanctuary is home to the endangered Indian Giant Squirrel and many more wild animals and it has a sacred grove also. Setting up windmills around the 73 Bhimashankar sanctuary has damaged the biodiversity and water resources in the area. Despite objections from local people and groups, windmills were set up within the 10-km periphery around sanctuary. The shortest aerial distance between the sanctuary and a windmill is just 3.5 km. The local residents allege that, though the forest department has given permission to cut a few trees for the

project, many more trees have been cut down. Experts from the Indian Institute of Science, who have studied the Indian Giant Squirrel in Bhimashankar sanctuary, have said that the Indian Giant Squirrel requires a continuous canopy cover. The Western Ghats ecology expert panel has looked at the environmental issues and the broader policy issues concerning windmills (TNN).

In 2010, the Monitor documented a case in Dhule, India, where 2,000 tribal were forced to accept hundreds of wind turbines on their traditional lands. They had lived on the land for generations but had dubious title. The government gave the land to Suzlon, which, in some cases, bought out owners. Kammen, says that most conflicts involving wind energy deal with land occupied – but not owned – by indigenous groups, such as in the Kutch District of India, where a case pitting local herders against Indian wind giant Suzlon Energy Ltd. went to the high court.

Conclusion

From the above it is clear that windmills have a cost to the local community apart from diminishing valuable biodiversity. As mentioned above, there are more than 500 flora and fauna species in the region, including a number of rare and endangered ones. The study also shows that the region is acting as a corridor to the nearby Guttur Reserve Forest which is the only wilderness area in the region.

Windmills are being promoted as an alternative to thermal power and big dams that are considered destructive of the environment besides causing huge displacement of people. The use of windmills is an age old practice, however the way in which wind power projects are being implemented under CDM without a proper EIA and SIA process is defeating the purpose for which it is intended. The Kalpavalli case study shows that wind is part of a larger energy system. Indiscriminate tampering with this, results in destruction of other forms of energy. The impact on the life support systems of the local people have therefore to be considered as an integral part of any project and must be factored into the assessment of the benefits and costs.

The Way forward

In the short term the following actions need to be taken.

Appropriate soil conservation structures to prevent siltation of Mushtikovila Tank.

1. Repair of all damaged pasture patches, plantation patches, water recharge structures, trenches and pits in forest areas.
2. Water audit with community and royalty for water usage from local water bodies.
3. Monetary compensations alone cannot save Kalpavalli life support systems

Long Term Perspective

1. Need for revisiting legal status of "Revenue Wasteland" of Kalpavalli and recognition of its productive capacity and contribution to local livelihood and life support systems at the landscape level.
2. Need for participation of community in governance mechanism for integrated an optimal use of Natural Resources for overall wellbeing.
3. Providing a mandatory provision of Environment Impact Assessment (EIA) and Social Impact Assessment (SIA) for the construction of windmills which would ensure that there is a proper assessment of the potential damage before giving permission to the windmill company.
4. Rejection of the request for registration as CDM project by UNFCC Executive board due to breach of local stakeholder consultation rules.

After the presentation of the findings of the case, 8 Biodiversity Management Committees have been formed in the 8 villages of Kalpavalli area under Biodiversity Act in October 2011.

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Impact of mining on people and environment in Sandur, Bellary

Maneesh Manjunath

Background

Sandur, a region once known for its pristine hills and its lush green forests, today, is stripped of not only its beauty but its character too; all for the mucky ore, needed to build and propagate the 'great human civilization'. Almost symbolic of the beauty of its forests, is its aerial view revealing a leaf shaped region with a green contour depicting its hills. Sandur with rich mineral resources (NEERI, 2002), like anywhere else in India where mineral-bearing regions are characterized by good forests or vice versa, is a taluka situated in the district of Bellary in Karnataka. The district of Bellary is home to the high grade (iron content varying between 62-68 per cent) haematite ore of iron (427.62 million tonnes of proved reserves) and is believed to have 1500 million tonnes in all (Geographical Survey of India, 2006).

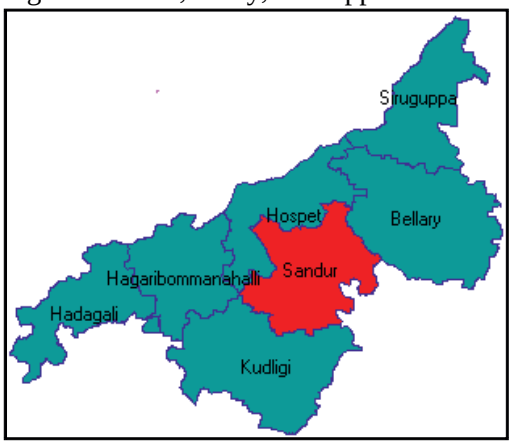


Figure: Map of Bellary district of Karnataka depicting Sandur taluka

Iron and steel industry is age-old in Karnataka, the evidence of which could be found in Sandur itself, near a village called Kammathur situated on top of the Swamimalai range forest, where there are remains of moulds that were used to make weapons for the Vijaynagar empire some 500 years ago[1].The steel produced from Karnataka was known by the name Wootz[2] and the state hosts the country's 11 per cent haematite and 74 per cent magnetite reserves. The Damascus blades known for their strength, flexibility and sharpness are believed to have been fabricated from Wootz steel.

The Bellary, Hospet and Sandur (BHS) region form a part of the "Sandur Schist Belt"[3] named as the "Dhawars", with the deposit belonging to the Precambrian Schistose[4] rocks of Mysore. The iron ore in the belt of Sandur occurs as Banded Iron

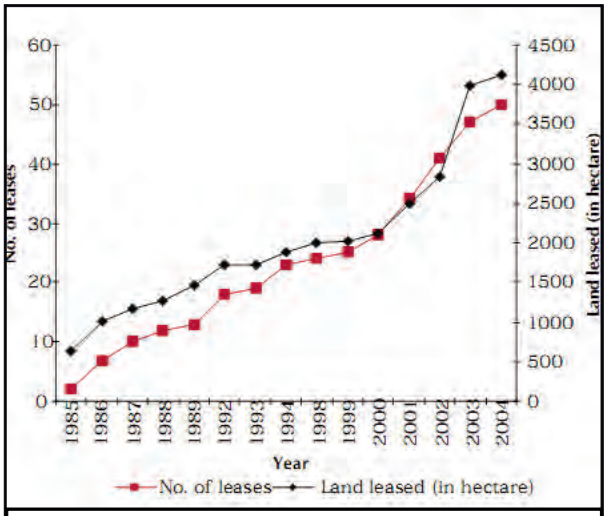


Figure: Number of iron ore mining leases and land leased in Bellary
Source: Understanding HIV & Development-An analysis from Bellary, Karnataka, India. UNDP (2008)

[1] Based on the information provided by the people of *Kammathur* on the history and practice of weapon making in the region during the period of the Vijaynagar Empire and also through observation of some of the mould remnants found, which showed presence of 'Slag' around its edges, during a visit to the village as part of this study in June 2011

[2] *Wootz* is the Anglicized version of *ukku* in the languages of the states of Karnataka, and AP, a term denoting steel. Steel from southern India was rated as some of the finest in the world and was traded over ancient Europe, China, the Arab world and the Middle East. (Srinivasan & Ranganathan, 2004).

[3] Refer to the Survey of India Toposheet No.-57-A/8

[4] The geological formation of rocks in BHS region is of the Schist type, where the Schistose is kind of layering in a coarse grained, crystalline rock due to the parallel arrangement of platy mineral grains such as muscovite and biotite and these formation belong to the Precambrian age or period

Formations (BIF)[1] mainly in the form of Banded Haematitic Quartzite (BHQ). The iron- ore deposits in Sandur are found in four main forest blocks - North Eastern/NE, Kumaraswamy, Ramghad and Donimalia.

Mining, initially carried out on a small scale by public sector companies as well as private companies, has expanded vastly in the last decade as reflected in massive increase in the number of leases granted and land leased owing to the de-notification of reserved forest area through the orders passed by the Government of Karnataka.

The production increased owing to the international demand for iron-ore in East Asian countries, especially China, which is the largest consumer of steel (Anand, 2007). China is a major destination for export of Indian iron ore and 79.78 million tonnes of iron ore was exported to it in the year 2006-07. This demand for iron-ore led to the strengthening of the horrid 'Iron Triangle'[2] (ref. fig. below) that resulted in illegalities and violations on a colossal scale with active connivance of businessmen, politicians including several senior politicians and bureaucrats for purposes of profiteering through illegal means; with corruption having engulfed the State Government machinery right from the grassroots, including the Panchayats, till the top of the power structure in the State. One of the primary reasons for this situation was the lacunae in the functioning of the State Environmental Impact Assessment Authority (SEIAA) in Karnataka, which was responsible for granting mining leases for areas less than 50 hectares.

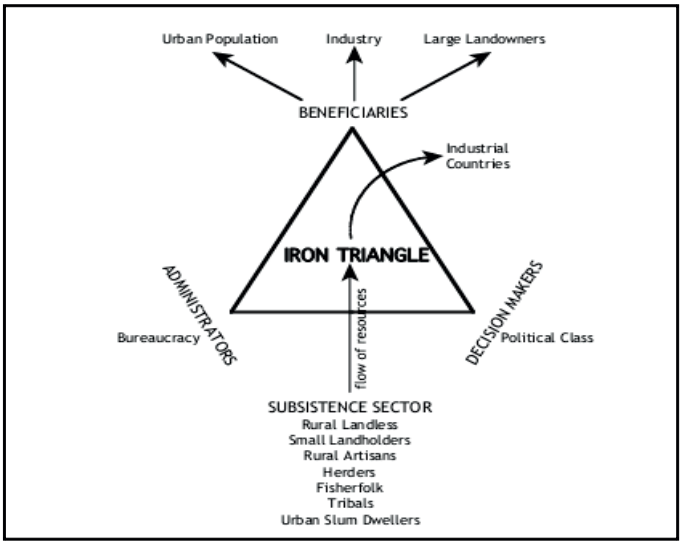


Figure: Gadgil & Guha's Iron Triangle (Governing Resource Use patterns)

The alleged illegal export of iron ore from Karnataka amounted to 30.68 million tonnes over a period of seven years (between2003 and 2010) and an estimate of the loss to the state exchequer due to illegal export of iron-ore is about Rs.16,085 Cr (Lokayukta of Karnataka, 2011).

S. No.	Year	Permits given (million million tons)	Export made (million million tons)	Difference (million million tons)
1	2003-04	2.327	4.576	2.049
2	2004-05	6.451	11.691	5.239
3	2005-06	9.299	11.171	2.171
4	2006-07	6.055	10.800	4.744
5	2007-08	8.973	14.734	5.761
6	2008-09	7.664	11.060	3.396
7	2009-10	6.071	13.199	7.127
Total		46.842	77.531	30.689

Table: Year-wise export of iron-ore from Karnataka
Source: Affidavit of the Chief Secretary, Karnataka, submitted to the Supreme Court (W.P.562 of 2009)

[1] The BIF is one which possesses the characteristics of the two main types of iron formations from pre-Cambrian viz. Algoma and Superior (Gross 1965). The superior type on the other hand has the characteristic formation of the Proterozoic and is laterally very extensive and closely associated with clastic sediments like quartzite and pelitic rocks without showing any direct relationship with volcanic associations. (NEERI, 2002)

[2] The concept or the idea of the 'Iron Triangle' was sketched out by Ramachandra Guha and Madhav Gadgil. An illustrative diagram can be found in figure 3. (Gadgil & Guha, 1995)

Alleged irregularities have been committed by various authorities (like the SEIAA, Forest Department, Mines Department and others) in granting mining leases, issuing transport permits, allowing trading and exporting the iron ore; illegal activities such as mining without lease or after expiry of lease period, encroachment in forests (1081.40 hectares in BHS region) and even into other mine lease areas. These have been done at times through the arrangement of raising contracts, transporting ore without permits or with fake permits, overloading trucks, under-invoicing and benami transactions (Lokayukta of Karnataka, 2008 and 2011). Apart from this, float[1] iron/manganese ore was extracted from patta lands, government revenue lands and forest lands by contractors, local leaders and the farmers themselves.

Investigations of the Lokayukta of Karnataka brought to light the large scale illegalities and violations related to iron-ore mining in Bellary and subsequently Samaj Parivarthana Samudaya, an NGO based in Dharwad, filed a PIL[2] in the Supreme Court on the same issue in 2009 which gradually slowed down the mining activities in the region. Based on the Central Empowered Committee's findings, the Supreme Court has suspended the mining activities in the region until further orders[3]. With the suspension of mining activities in the region, a large of number of workers have been laid off and mining related jobs are unavailable, due to which there is a major uncertainty of employment in the future for these people.

Though the per capita Net District Domestic Product (NDDP) of Bellary improved by 140 per cent (CAGR of 6.9 per cent) from Rs. 6,591 in 1990-91 to Rs.15, 770 in 2003-04 and the district income grew by 63 per cent between 1998-99 and 2003-04 against 47 per cent between 1990-91 and 1998-99 thereby increasing the district's rank from ninth to third making it the third richest district of Karnataka, the district of Bellary ranked eighteenth on the Human Development Index in 2011.

The case study was carried out to look at the impact of mining on the livelihoods of the communities living close to the mines and on the local environment. For the purpose of the study, three villages (Lakshmipur, Navilatti and Sushilnagara) were chosen based on different criteria such as topography, dependence of the local population on mining, size of the villages and their location. Conjointly, visits to the other villages, mining areas and other important locations were undertaken

Discussion

Mining is a major economic activity in many developing countries such as India, China, South Africa, Brazil and many more. Operations, whether small or large-scale, are inherently disruptive to the environment. In cases such as iron-ore, coal, etc., enormous quantities of waste are produced that can have deleterious impacts for decades. The environmental deterioration is augmented as a result of inappropriate and wasteful working practices and rehabilitation measures. Mining has a number of common stages or activities, each of which has potentially-adverse impacts on the natural environment, society and cultural heritage, the health and safety of mine workers, and communities based in close proximity to operations. It is extremely land and water intensive, where water is a common property resource and so is land excluding that under private ownership. For instance, iron-ore mining in India used up 77 million tonnes of water in 2005-06, enough to meet the daily water needs of more than three million people.

Impact on livelihoods

The intent of providing mining leases in Sandur and the neighboring regions was to attract private investments and create employment opportunities. Traditional livelihood practices - agriculture, livestock rearing, NTFP collection and others like mining labour - have suffered since the commencement of large-scale mining, especially since the incorporation of machinery in the mines some 12-15 years ago[4].

[1] Float ore is generally the ore dislodged from the main out crop and segregated around the ore body in the form of boulders and pebbles as part of the top soil. (Geographical Survey of India, 2006)

[2] One can find the details of the PIL under Writ Petition (Civil) No.562 of 2009 filed by SPS and others in the Supreme Court of India

[3] As per the orders of the Hon'ble Supreme Court of India given under SLP(Civil)Nos.7366-7367/2010

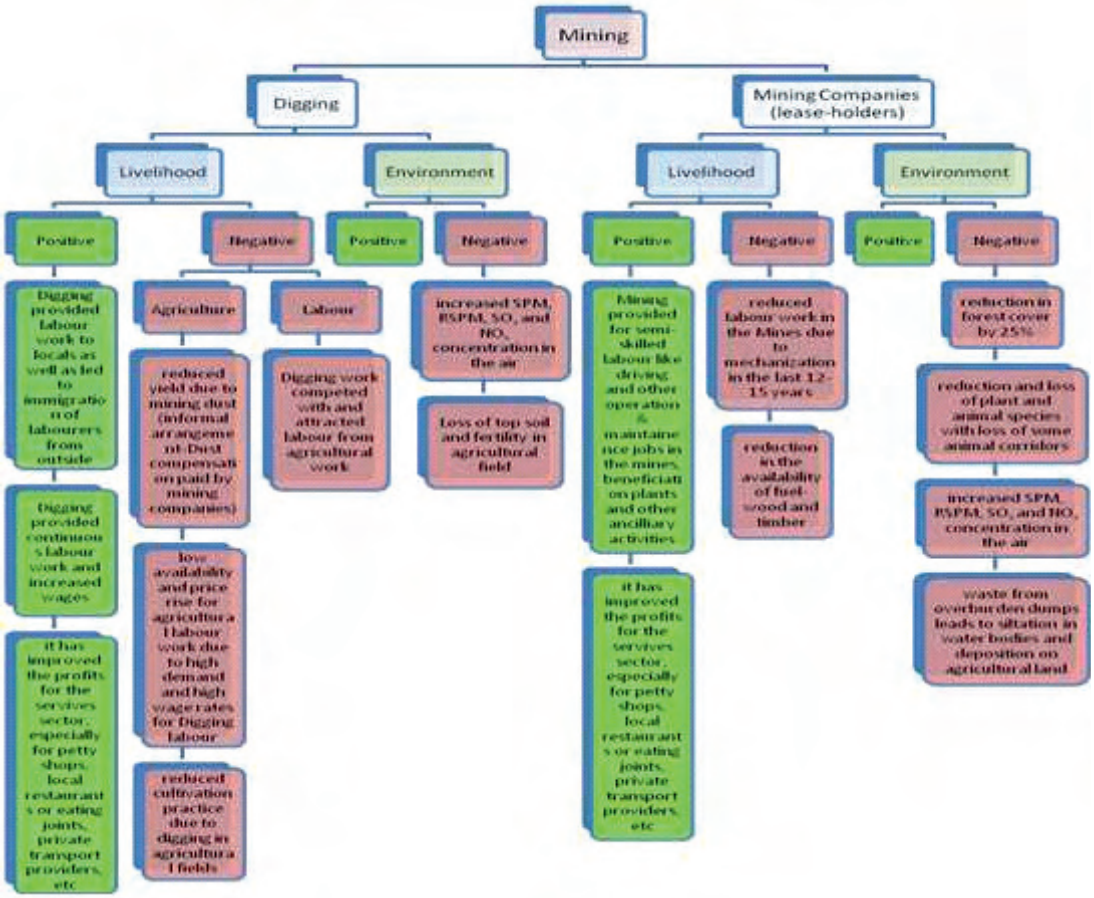
[4] Based on primary data gathered through participatory exercises and other methods

Except for a few mining companies like NMDC and the Sandur Manganese & Iron Ores (SMIORE),no one has carried out any developmental activities in the region, including in the company adopted villages[1].

Agriculture

Agriculture, being the largest occupation is the most affected among all the prevalent occupations owing to the negative externalities of mining operations. With the unlawful practice of mining in some of the agricultural lands from 2003 onwards, locally known as 'digging', the agricultural pattern, and nature of land-use and also farmer's attitude in a few cases have changed radically. Approximately 50 per cent or more of agriculture fields (those with reddish-brown soil) were dug up for extracting ore by contractors initially and later by farmers. These lands have not been cultivated for a couple of years, in some cases for almost 5 years or more. Currently a lot of the fields still remain undulated and dug-up, with many farmers still carrying the hope of mining the ore. Some fields continue to be uncultivated with seized ore (by the Forest Department) still lying in these fields for the past 1-2 years. After 2003, the number of fallow lands increased drastically from 9 in 2003-04 to 712 in 2005-06 and subsequently peaking to 911 in 2008-09 (ICFRE, 2011). The top soil in most of the cases is improperly stored and gets mixed with the subsoil leading to loss of nutrients and thereby reducing the prospects of a good yield in the future. Also, the surface of the leveled fields in many cases, are lower in depth causing problems in water flow and cultivation.

Figure: Diagrammatic representation of the impacts of mining in Sandur



[1] The Mining Company adopts a village or villages in the vicinity of its mining lease area, to carryout developmental activities in that village.

Alongside, the dust from mining operations and transportation of ore has significantly reduced the yield of crops over the last decade with yield for hybrid corn having reduced almost 50 per cent during the last 5-7 years in the fields of many farmers and that for other crops like maize, bajra, millets and sunflower having reduced considerably. All this in spite of the fact that there was an informal arrangement through which most mining companies paid dust-compensation (the amount was decided through negotiation between the farmers union leaders and the company) to the farmers to the tune of Rs. 2500/acre for patta lands and Rs.1000/acre for unregistered fields, irrespective of the land' proximity to the mines.

In a few cases, it was also seen that cultivation was not carried out since the men (under working age-group) in the house were employed in mining activities. Another impact has been the change in agricultural land-use for purposes of building stockyards, beneficiation and crushing plants and building roads and railway lines. Storage and processing of ore at beneficiation plants due to improper management of tailings pollute the soil beneath (change in the soil profile can render it unsuitable for agriculture) and quite possibly even the ground water. In order to facilitate transportation of ore, a by-pass road was built and currently a railway line is under construction, both these have led to loss of fertile arable lands. These developments combined with the fact that the land available for cultivation is limited due to the regions' topography - has put immense pressure on agriculture.

Mining and labour

Mining activity was carried out in agricultural fields by contractors (local as well as from outside towns, cities and states), groups of local persons, individual farmers to extract float ore[1]. Digging was carried out by contractors during the early years through leasing of land from farmers for a period of 11 months in a year and during later stages by farmers themselves (individually and sometimes even in groups). This exercise provided labour work for many, local as well as migrant labourers, during the past decade and involved different processes like excavation, crushing, breaking stones, sieving, loading, dumping, transporting and processing of iron-ore. It employed manual labour including men, women and children, with the whole family being employed at such digging sites. With the gradual increase in digging operations, machines like the JCB-loader-cum-excavator was also used, mainly for excavation. However, a report by Mines, Minerals and People , 2005 estimates that 400,000 casual labourers were working in all the iron ore mines in Bellary, of whom 50 percent were child labourers, mainly girls, and very young boys, some of whom were only ?ve years of age. Besides, the transportation sector used to employ at least 1.5 lakh casual workers in the BHS region, of whom the helpers in the trucks are mostly young boys, who join in order to earn money and learn driving.

The digging work is usually carried out by men and young boys (sometimes even below the age of 10) while the women and girl children break the ore into stones and smaller pieces called 'lumps' and these lumps are sieved and processed into 'fines' (iron-ore powder). Children attend school in the morning and join the afternoon shift or work in the early morning and go to school in the afternoon. The demand for ore and consequently the demand for labour together with the high profit-margin (a large chunk of the profit was enjoyed by the contractors, traders and exporters) in the trade, has subsequently led to the increase in labour wage-rates. A couple or two labourers together earned Rs.200/tonne of ore extracted during the initial years, depending on the type of work carried out and this amount reached almost Rs 600/tonne during 2008-09.The variation in the price of the ore during different years also influenced the wage rates. Considering that two workers together could extract around 1 to1.5 tonnes of ore/day, they would earn anywhere between Rs.1500/-and Rs.4500/- working 6 days a week depending on the time- period (year) and the price of ore during that year. This sort of labour reduced the availability of labourers for agriculture and also the increased wage-rates, which further enhanced the difficulty for cultivating-farmers. The trend still continues with male labourers demanding Rs.180-200/day and this transformation has increased the cost of production in agriculture for cultivating-farmers. Availability of manual labour work these days is low, except for agricultural purpose which in itself has reduced and mining in the agricultural fields has completely stopped.

[1] Based on the information provided by farmers, local activists, local agriculture office during interviews

Since the mechanization of mining activities in the region during the last 12-15 years, manual labour work is hardly available and the mining related jobs available are mostly skilled/semi-skilled, like machine operation (excavator, loader, dumper, etc), mechanic, foreman, manager and other clerical jobs and also other supervising work in blasting, loading, etc. which constitutes a lower percentage of the local mining workforce; this apart, truck driving mostly (local private-contractor/individual owned, external to the mining company in both the cases) constitutes the majority of the workforce, totally accounting for a significant percentage of the village population (2 to 10 per cent of the population depending on the village) and also by taking into consideration that there were about 5000-8000 trucks in Sandur employing about 70,000 workers (Lokayukta of Karnataka, 2008). Most of the drivers/operators employed are above the age of 18 years, excluding helpers who are mostly young boys. These drivers/ operators join as helpers when they are young and in the process learn the job with the training/learning phase lasting for 2-3 years in case of machinery operation and truck driving. The individual truck owners and contractors are paid a commission on a per tonne basis, which again varies depending on the destination and the truck drivers are paid a fixed salary plus get a share of the commission earned on their vehicle. The mines' workers are mostly employed by the company, directly (usually manager, foreman, surveyor) or on a contract basis (drivers, loading in-charge, blasting in-charge and other tier 2 jobs) and hence in many instances the contract workers do not enjoy many benefits. In a few instances, the workers complained that they were not given the uniform or a pair of boots (which they are entitled to) regularly and also that there were not enough safety measures taken such as use of air masks. In case of private-owned trucks, the more the trips made the more the income, which leads to a frenzy among drivers and contractors to make more trips further leading to rash driving, accidents, traffic jams inside villages and town, and over-usage of trucks without proper maintenance. Apart from this, work was available at the beneficiation plants and stockyards but since the ban on mining, this too is unfeasible. With the influx of migrant workers (skilled/unskilled), many of these jobs, at times, were not easily available. The other labour work available is in building constructions and this too is not regularly available and mostly in local areas which limits its scope as a sole and reliable occupation.

Other occupation

Livestock rearing (cattle, goats and sheep) in the area has become difficult due to pollution from mining-dust, which the animals breathe and also consume the plants on which the dust has settled. Blasting carried out in the mining areas generated fly-rock which constrained animal grazing in the forest areas. The livestock suffered from illness (fatigue, breathing problem, etc) due to dust and also the milk production of cows reduced significantly. Availability of cattle/goat herders reduced due to the availability of mining work in the fields due to which livestock-keeping has reduced.

Impact on the environment

Mining activities of all types have taken a tremendous toll on the local environment. According to the local people, field observations and other studies conducted in the region, the forest cover has drastically reduced. The total forest cover in Sandur is 30561.95 ha and the total forest area under mining is 6051.64 ha[1] along with the encroachment in forests being 1081.40 hectares (ref. tab. below), it can be approximated that almost 25 per cent or more of the forest cover has been lost to mining. Further, the quality of the forest has degraded with the Simpsons Diversity Index (SDI) being quite low near mining areas (0.062) and largely young species present nowadays, due to mining activity carried out especially in the last decade (Lokayukta of Karnataka, 2008).The practice of open-cast iron ore mining in Sandur has laid waste the forest lands in the region and has significantly debilitated the biodiversity of the region, consequently incapacitating their potential for regeneration naturally. Also, the mining companies have barely carried out any reclamation work in these areas and a few who have complied by these rules, have propagated mono-culture through planting of exotic species, like Eucalyptus.

[1] As per the details provided by the Department of Mines and Geology, Government of Karnataka

Table: Details of Encroachments in Forest areas

#		(in Hectares)
1)	Approval granted under M&M (D&R), 1957	9,704.66
2)	Approval granted under the Forest (Conservation) Act 1980	5,426.35
3	Encroachment in the form of extraction of iron ore (pit)	147.29
4	Encroachment due to waste dumps	306.07
5	Other type of encroachments	504.09
6	Encroachment due to construction of roads to mines	124.90
7	Total encroachments	1,081.40
8	Total length of the mining roads (in k.m.)	180.42

Source: Interim report of the Karnataka Lokayukta on illegal mining in Karnataka (December 2008)

These forests are home to 194 species of plants (out of which, 72 are medicinal species), 16 species of mammals, 145 species of birds and 9 species of reptiles (Kotresha, 2010) (Lokayukta of Karnataka, 2008). Among these, plant species like *Sandalwood, Rosewood*, *Hardwickiabinata Roxb***,** and a few others have reduced in quantity and quality, species like Blackbuck, Vultures are impossible to spot these days. Mining activities have disrupted the natural animal corridors thereby affecting their movement and have also reduced their numbers. There has been a reduction in the availability of fuel-wood and timber for household usage which has further increased their prices in the local market.

Apart from the degradation and encroachments in forest areas by mining companies, digging was carried out in forest area by certain people (local politicians/leaders or other influential people with collusion of forest officials) typically during night hours in secrecy and under obscure conditions. This has further caused destruction of forest area with cutting down of trees and exposing the surface, leading to soil erosion. Many a times, the ore illegally extracted from the forest area was transferred and stored along with the ore from digging in agricultural land and dispatched along with the same.

The semi-arid climatic condition combined with unscientific mining practices (specifically by smaller mining contractors operating without lease – illegally, either manual mining or semi- mechanized mining) has worsened the situation. The air is laden with ore-dust from blasting, dry waste dump sand transportation of ore, which has painted the houses, roads, trees and people' faces red. The SPM and RSPM concentration in ambient air, around a decade ago, was found to be very high throughout the year and are higher than the concentration prescribed by the 'Indian Ambient Air Quality standards'. One can imagine the conditions during the last couple of years when production has been the highest (NEERI, 2002)(CPCB, 2007). Movement of heavy ore-laden trucks have ruined the metaled roads and state highways, hampering transportation of passenger vehicles and the sheer frequency of their movement along village roads has constrained the mobility of people and cattle. These affairs have further increased dust and noise pollution; the sheer number of trucks in the region, their frequency of movement and their badly maintained condition significantly increase the SO_x and NO_x emissions.

The heavy metals suspended in air are Manganese, Iron, Lead, Nickel, Cadmium etc., and these have adverse impacts not only on the health of human beings but also on animals and on the growth and productivity of plants (NEERI, 2002). Soil and water bodies including groundwater get affected. Waste from overburden dumps along the hill slopes of the natural watershed areas come down during rains leading to pollution and siltation in ponds, tanks, stream courses, natural drains of the hills. This also leads to deposition along low-lying areas; an average of 13.96 gm of silt was being carried out by every litre of water (Lokayukta of Karnataka, 2008). Leaching from overburden dumps around mine sites, seepage or overflow water from tailings pond and from the other activities pollutes near-by water bodies and their effect on groundwater needs to be tested.

From the scale of mining carried out in Sandur combined with the low rainfall, low yield of groundwater of poor quality and poor aquifers, it should be possible to guess the impact on groundwater table (CGWBSWR). Another possible impact could be the lowering of soil moisture content due to excess use of ground water, which is unfavorable for agriculture. The district of Bellary is also infamous for being

the highest generator of hazardous waste, producing around 28391. 1 Metric Tonne in 2003-04 (KSPCB, 2003-04).

Socio-cultural impacts

Though a considerable section (about 5-10 per cent of the population in the villages) of the local community has gained in terms of employment and monetary benefits, there have been instances of social unrest since the commencement of large-scale mining. Due to the economic inequality and inequitable income distribution (from mining) among the community and the resulting social and political conditions, there has been an increase in disruptiveness among the youth, low social cohesion among the community and mistrust amongst its members. Mining has increased alcoholism (even among boys of 8-10 years of age) and other immoral activities like gambling and prostitution. The nature of activities, its scale and the money involved, seem to have brought about a change in the behavior and attitude of the people creating a sort of lawlessness and disorder in society, though the situation now is better than what it was a couple of years ago. Many of the farmers who carried out digging have lost interest in agriculture with some of them even going onto say that 'it takes too much effort to till the fields'.

Education and Skills

Apart from monetary or employment benefits, mining has helped a section (mine workers) of the society gain certain skills which definitely increases their employability elsewhere; since with the acquisition of some skills like driving, operating earth-moving equipment, knowledge and skills of operations at beneficiation plants, would enable them to find jobs elsewhere. Nevertheless, the larger picture tells a different story with education being one of the most affected due to mining. The lure of mining jobs and the associated money has driven the youth and also young children (mostly coerced by family) away from education. The education scenario is further exacerbated due to the bad transportation facilities or rather the lack of it, due to which many students find it hard to commute to their schools or colleges, forcing them to quit and the teachers are not regular and do not follow the timings due to the same reason. The district of Bellary despite the mining boom remains among the bottom ?ve districts on the education front (UNDP, 2008).

Health

Mining has had a significant impact on the health of human beings with the villagers complaining of cases of Asthma, Tuberculosis, Joint pain, Skin diseases and Fatigue with dust being the main culprit for respiratory ailments. People attribute the joint pain to the use of bore-well water for drinking purposes. Apart from this, bad roads and appalling transportation facilities have increased travel time and uncertainty due to which commuting to hospital/health centres has become difficult. The villagers say that the conditions were far worse a couple of years ago when there were about 8000 trucks plying these roads; this can be substantiated with stories of child births and failed pregnancies in vehicles, on the way to hospitals, narrated by locals. Mining has actually increased the community' expenses on health, be it on medicines and consultation or on transportation with many having had to frequent hospitals every week.

Economy

Agriculture is the major occupation, notwithstanding the mining boom and also considering the halt of digging activities after the release of the Lokayukta report in December 2008; nevertheless, it is important to note that a significant chunk of the population depended on mining, like labourers, local truck owners, mine' workers and even other services' providers. During the hey days of mining, the services sectors like hotels, restaurants, transportation (public and private including taxis), provision stores, petrol pumps/stations, especially in Sandur town, benefitted a great deal. Although, it is also important to note that since the acceleration of mining in the region some 10-12 years ago, the relative employment generation has decreased significantly.

Although most of their iron-ore mined (legally/illegally and including float ore from digging) was exported through companies or middlemen, some of it was consumed by large steel units as well as sponge-iron plants, local as well as outside the district. Nonetheless, considering the scale of extraction of ore, which far exceeded the local demand and the rampant exploitation of the resources, it is safe to assume that this is going to have adverse impacts on the local economy in the long run and the situation in a sense reflects the‘ Dutch disease’ phenomenon.

The district of Bellary is home to 3 big steel plants and about 40 sponge-iron plants, out of which 10 sponge-iron plants were shut down due to unavailability of raw material since the slowing down of mining activities in the district. The demand has been so high that ore in patta land exhausted quickly and by 2005-06, it became scare leading to the commencement of digging in revenue-government land up till 2007-08, upon which depletion set in these lands as well setting off these operations in forest land too, mainly during 2009-10 and 2011 (Lokayukta of Karnataka, 2011). Upon depletion of ore in forest areas, lifting of all accessible dumps and other seized ore is happening.

Politics

The billions earned (see table below) from the mining trade have sketched out a political saga in the state that has never been witnessed in the history of independent India. With power of illicit money in their hands, the law-breakers became law-makers, almost synonymous to the devil taking the crown, with many mining company owners getting elected to the state assembly and the parliament. Money and might controlled everything in Sandur, right from the people’s representatives including panchayat members to the government officials, including even the forest guard.

Mining not only increased corruption but also the price of bribes for the common man, be it for any purpose or any government office. A farmer went to say that even the walls in these offices call out for bribe when one visits them. Apart from the elected representatives and appointed officials, certain village leaders/dominant persons worked in nexus with the companies for the latter’ benefit, like subduing any unrest (sometimes with force) among the community arising due to mining activities or vouching for the companies during public hearing. Certain leaders of the Farmers’ Union entrusted with job of protecting the farmers’ rights, in some cases actually helped companies acquire agricultural land (at times at low prices) and also received a percentage of the dust compensation as commission from the farmers.

Table: Computation of Rupee Value of Illicit Iron Ore Exported

Year	Quantity of illicit iron ore exported during the year	Average Sale Rate for Export of iron ore across all ports during the year (US $)	Average Rupee Value of US $ during the Year	Value in Rs
2006-07	31,84,152	56.71	45.11	8,14,56,59,755
2007-08	37,14,720	115.70	40.12	17,24,32,99,332
2008-09	53,55,660	94.28	45.89	23,17,13,12,262
2009-10	1,27,99,396	76.38	47.42	46,35,86,39,228
2010 (till Dec)	48,06,719	124.70	45.65	27,36,25,12,277
			Total	**1,22,28,14,22,854**

Source: Report of the Lokayukta, Karnataka, on illegal mining, dated 27th July 2011

Recommendations and Conclusion

Mining in the region has had a significant impact on the livelihoods of the people and also the environment. As observed, the degradation of the environment has significantly impacted the livelihood of the people in the region. The restoration/rejuvenation of the degraded environment, mainly forests is quintessential for the sustainability of the local livelihoods and their support systems. Reclamation of mined areas along with development and conservation of the natural watershed is necessary. Ground water table needs to be checked for depletion along with contamination and suitable recharge measures should be undertaken. Considering that mining in the region produces only 25 per cent waste against 75

per cent ore, the recommendation of the Central Pollution Control Board to create a water body of less than 30 meter depth that can become a community asset in providing irrigation water and recharge of ground water in the region, besides water harvesting practices could be considered (CPCB, 2007). Over the long run, environmental preservation and sustainability in the region is important keeping in view the larger issue of climate change and its linkages to livelihoods, population and poverty and also that of inter-generational equity.

With the practice of agriculture having reduced and consequent reduction in availability of agricultural labour work, combined with low degree of irrigation in the region (2 per cent of land irrigated), the prospect of agriculture as a means of livelihood for the majority is non-viable. The discrete nature of the availability of other labour jobs, make it unreliable and unsustainable as a major source of livelihood. Due to very low availability of other jobs (skilled/unskilled) to cater to the majority of the population combined with the fact that mining has been banned in the region, employment opportunities are very few. With such a situation at hand, it is imperative on the part of the community to look for alternative livelihood strategies that are not only sustainable but would cater to the needs/preferences of the community. It is necessary to imbibe new skills and create new opportunities that could be leveraged by the community to support their livelihood with effective facilitation from governmental, non-governmental organizations and other stakeholders. The rejuvenation of the different components of the environment along with creation of alternate livelihood strategies for the community should happen simultaneously.

Along with this, there is a need for certain institutional reforms. To ensure better governance at local level, the active participation and strengthening of the gram sabha along with the power to conduct social audits combined with regular (quarterly) meetings has to be encouraged (Planning Commission, 2005). An efficient and transparent grievance redressal system, for the government' development initiatives, needs to be in place at the village level through the strengthening of the channels of communication. Local ownership and involvement of the community in decision making for any development initiatives, needs to be stressed upon. Beyond this, proper implementation of the existing laws and its compliance by the respective stakeholders need to be ensured.

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Chhattisgarh- Land Grab Special Reference to Forest & Commons

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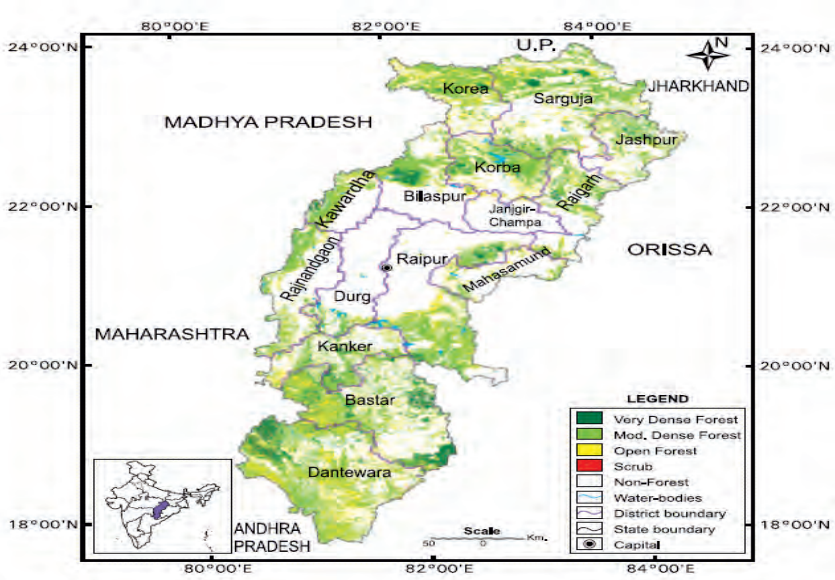
Introduction

The mineral rich forested state of Chattisgarh was carved out of Madhya Pradesh in the year 2000 after a long political struggle, with an objective of efficient, pro-people governance of natural resources for sustainable development.



The state was carved out of 7 south-eastern districts of Madhya Pradesh on 1st November, 2000. These districts are Bastar, Bilaspur, Durg, Raigarh, Raipur, Sarguja and Rajnandgaon. The livelihood of the majority of the population is agriculture and more than three-fourth of the population live in rural areas. The state is rich in forest and mineral resources. The forests form the catchments of a number of rivers, namely Seonath, Mahanadi, Hasdeo, Rihand, Mand, Kanhar and Indravati. Geographically Chhattisgarh can be divided into Northern region, Central plain region and Southern region. The state has 27.50% hills, 29.29% plateau and 43.21% under plans and river basins. One third of Chhattisgarh's population is tribal. They mostly reside in the thickly forested areas distributed across the state. Around 41.33 % of the area of the state is under forests which is around 8.4% of India's forests. The central plains of Chhattisgarh are known as the "Rice Bowl" of Central India.

The state is known for its rich cultural heritage as well as for its deposits of natural resources. A variety of minerals both metallic and non-metallic are found in this region ranging from diamond, gold, iron-ore, coal, corundum, bauxite, dolomite, lime, tin to granite. The quality of iron-ore deposits of Bailadila & Dalhi-Rajhara hill ranges are considered as very high grade. Large deposits of lime stone are also found in the districts of Raipur, Bilaspur, Durg and Bastar and attracting several large cement plants to the state. The state is third largest cement producer.

The state had announced its Mineral Policy in 2001, aimed at harnessing the State's mineral wealth potential and achieving the target of doubling the contribution of minerals to the State Domestic Product as envisaged in its Vision 2010 statement.

Economic progress of the state and its people- Net State Domestic Product (NSDP) and HDI

Chhattisgarh is one of the emerging states with relatively high growth rates of NSDP (8.2% vs. 7.1% All India over 2002-2008) and per capita NSDP (6.2% vs. 5.4% All India over 2002-2008). The growth rates of the said parameters are above the national averages and it appears that Chhattisgarh is catching up with other states in this respect. However, Chhattisgarh still has very low per capita income as compared to other states. Chhattisgarh has one of the lowest standards of living in India as per the Income Index (0.127). Health Index of Chhattisgarh is less than 0.49, one of the lowest in the country. Chhattisgarh with a HDI value of 0.358, has the dubious distinction of being an Indian state with the lowest HDI Value.

The ownership of primary natural resources in Chhatisgarh is shifting from communities to either public or private sectors. In Chhattisgarh, major land grab is being done in the name of mineral extraction; infrastructure, industrialization and energy plantation. Some of this land has been cleared of existing

inhabitants and users but not yet put into production. One of most damaging issues in relation to human lives is the acquisition of agricultural land and commons.

In Chhattisgarh, 80% of the people depend on agriculture and agriculture-based cottage industries in the state. 15.22 lakh marginal farmers, 6.24 lakh small farmers and 8.19 lakh medium and big farmers cultivate 58.81 lakhs hectares of area. The total area of Chhattisgarh is about 1.35 lakh square kilometers. About 36 percent of the area is cultivated, and another 44 percent is under forests (forest land and revenue forests). Of the total area in the State, 4828 thousand hectares are sown, and the per capita net sown area is 0.24 hectares. The gross sown area$_{35}$ is 5327 thousand hectares. After the formation of Chhattisgarh state 8000 hectares of agricultural land has been wiped out of cultivation. Chhattisgarh which boasts of small and big reservoirs has only 28% irrigated cultivable lands. Even in the irrigated cultivable areas 80% of this farms are devoid of irrigation facilities. Water meant for irrigation is being diverted to the factories at the cost of farming communities. The agricultural production in the state has rapidly decreased and the productivity of land has also gone down tremendously due to various factors. As a result farmers are being compelled to sell their land, thus benefitting the industrial fraternity.

In over the last decade or so about 43,000 acres of agricultural land has been acquired for industrial purposes(Ansuni Awaj by Ramesh Sharma unpublished report, Ekta Parishad). In Raigarh district itself, 1341 hectares of agricultural land with the production capacity of 50,000 qtls of paddy has been wiped out as per the records of the Agriculture Department. Also due to industrial pollution about 4500 hectares of paddy with a yield of 1.10 laks qtls worth Rs 35 lakhs have been destroyed (Report of CSD). The issue was also raised in the state assembly in the year 2005, where it was found that in Dharsewa area of Raipur district, another 4611 hectares of paddy crop in 17 villages has been also destroyed.

Water from a common property to private property

Chhatisgarh also has the dubious distinction of being the first state to have initiated privatization of a river - Sheonath River totally disregarding all the concerns of communities whose livelihood was dependent on it. Be it Kelo river in Raigarh, or Sheonath river water a common property has been made a pseudo-private property, serving the interests of industries and undermining the rights and ecosystem services required by downstream stakeholders.

Forests - A common under severe threat

There has been diversion of forest land for mining purposes it stood at 34116 Ha in the year 2011. The process continues and with an increase in demand for energy, the pressure on forests of coal rich power surplus states has been increasing.

Forest land diversion for various purposes: 1981-2011

Purposes	Area in Ha
Mining Projects	34116.21
Irrigation Projects	4796.75
Transmission Lines	2162.758
Thermal Power	1491.935
Other Purposes	722.26
Defence	606.019
Railway Projects	290.057
Roads	147.296
Hydal Projects	62.381
Schools	3.08
Total	44398.7437

Source: http://www.moef.nic.in/modules/project-clearances/forest-clearances/#

The total diversion of forest land during the period of 1981 to 2011 is 165771 hectares and the above table shows figures of land diversion for different purposes (except encroachments)

Pressure for land from various projects:

Commons under Biofuel Plantation

Chhattisgarh Renewable Energy Agency (CREDA) planned Jatropha plantation on 1.2 Million acres of land by 2015. These lands were primarily common lands and revenue land, though the plantations were in all categories of land including forest land. The Chhattisgarh Biodiesel Authority (CBDA) is of the opinion that "India is having vast wastelands available for Jatropha plantation" and that bio-diesel projects can provide an opportunity to develop these areas to improve living standards.

Chhattsgarh was foremost in promotion of biofuel plantations, the efforts were centred around plantation of Jatropha plants. There was however no investigation, trials or demonstrations done prior to taking up such a large and ambitious programme. Efforts were made to identify the lands (mainly commons and revenue) for plantation. It is noteworthy that around 157,332 ha were identified for Jatropha plantation. Since, biofuel promotion was one of the prime agenda of the Chief Minister and the concerned Minister was taking personal interest in it, the planted area exceeded the identified area. This increased area mainly accounted for by plantation of 6394 ha on forest lands and plantations on private lands. The targets were met by plantation by Horticulture Department on 1630 ha, Chhattisgarh Renewable Development Authority (CREDA) on 1901 ha and Seed Development Corporation on 7531 ha.

District	Land (ha) made avl. by Govt	Plantation till 2009 (ha)
Bastar	4317	14880
Bilaspur	NA	20210
Dantewada	6975	2704
Durg	1723	6854
Janjgir-Champa	324	5262
Jashpur	639	6669
Kanker (N.Bastar)	1002	10031
Kawardha	11627	7422
Korba	7491	10518
Koriya	46065	6606
Mahasamund	1528	9598
Raigarh	11442	5864
Raipur & Dhamtari	3249	19862
Rajnandgaon	2143	12256
Sarguja	53945	23744
Total	157,332	165,582 (0.2 % of commons)
Available land was primarily from revenue and pasture land but planted includes forest land also		

Source: Land availability as provided by letter of Chief Secretary to Chairman Chhattisgarh Biofuel Development Authority (CBDA) via letter number 67-82 dated 7-4-2007.

The state government has taken following steps to promote biodiesel related land grab:

- Constituted specialised agency named "Chhattisgarh Bio-fuel Development Authority"
- Identified Govt. waste/fallow lands for Jatropha Plantation
- Formed 'Task Force' in each district under Chairmanship of the District Collector.
- Raised 380 Million Jatropha saplings in Nurseries of different Departments for planting and planted them on 152,000 hectares of private land, forest and Revenue land.
- Pilot demonstration Plantation on 100 Hectare Government fallow land in each district. Encouraging private investors to go for contract farming. Allotting government wasteland to Government Organizations and corporates who are desirous of setting up Bio-diesel plant, for Jatropha plantation. The Government Organization involved in Jatropha plantation can also enter into joint venture with the corporate.

1. One Trans-esterification plant for bio diesel production at Raipur installed.

- Bio-diesel based power generators for rural electrification in a cluster of 50 remote villages installed.
- Govt. Notification issued for allotting Govt. Revenue fallow land on lease to private investors (Company, Partnership Firm or Registered Society) to undertake Jatropha/Karanj plantation and also to setup Biodiesel plant.
- State-of-art laboratory set up in association with a local NGO, with a capital outlay of about Rs.1.5 crore for testing of oils. bio-diesel etc.

Efforts were also made to involve the private players for Jatropha plantation and companies were asked to sign MoUs directly with the farmers. However, no significant achievement was made on this count. Later two joint ventures were launched with CREDA and Indian Oil Corporation Limited (IOCL-CREDA) and CREDA- Hindustan Petroleum Corporation Limited (HPCL-CREDA). These joint ventures too are struggling to find their foot on the ground. Now biodiesel or Jatropha is not anymore on the agenda of the Chief Minister. It is interesting to note that such a large plantation of 1.6 million ha is not visible anywhere.

However, identifying and allocating government and common land for biofuel plantation at such a fast pace without considering its importance to the lives of the community and leaving the programme to mere two joint venture forces one to think seriously about the policy of the government towards changing the land use.

The land is a vital resource for initiating industries and such lands are acquired either from commons, private or revenue land. As per Chhattisgarh Industrial Development Corporation (CIDC) 4288 ha was diverted for the existing industrial areas and demand from ongoing and upcoming industrial areas is 2695 ha. In all 6883 ha of land was diverted for the industries.

Land Acquired for Industrial Areas

Existing Industrial Areas	Area in ha	Ongoing & Upcoming Industrial Areas	Area in ha
Bilaspur	795	Urla, Raipur	375
Raipur	1767	Siltara, Raipur	1185
Raigarh	1466	Sirgitti, Raipur	338
Korba	140	Barai, Durg	451
Durg	120	Rawtabhata, Raipur	200
Total	4288	Raipur City	146
		Total	2695

Source: Chhattisgarh State Industrial Development Corporation Limited, http://www.csidc.in/established.htm

Land for Mining

The production of the coal and bauxite has increased dramatically over the last 4-5 years. The extraction of coal increased from 45.30% over the period while the extraction of bauxite increased from 26.67 %. This indicates the need to study the change in area under mines. Extraction of other minerals is showing an increasing trend. There are 347 mining leases operational in Chhattisgarh and these are extracting mineral resources from 77,746 ha of land. The average size of the lease varies from 3 ha to 2074 ha.

Eviction of tribals from Sancuatries and National parks

Further the conversion of forests into national parks & sanctuaries is promoting another kind of problem where large level of relocations were done or proposed. Once the forest is declared as national park, the forest department officials starts facilitating relocation process, this relocation is almost common from the core zone of the park.

A National Board for Wildlife (NBWL), chaired by the Prime Minister of India provides for policy framework for wildlife conservation in the country. The National Wildlife Action Plan (2002-2016) was adopted in 2002, emphasizing people's participation and their support for wildlife conservation. India's conservation planning is based on the philosophy of identifying and protecting representative wild habitats across all ecosystems. There are 4 categories of Protected Areas viz, National Parks, Sanctuaries,

Conservation Reserves and Community Reserves. The provisions of Sanctuary and National Park are given below.

- A Sanctuary is declared for the purpose of protecting, propagating or developing wildlife or its environment. Certain rights of people living inside the Sanctuary could be permitted. Further during the settlement of claims, before finally notifying the Sanctuary, the Collector may, in consultation with the Chief Wildlife Warden, allow the continuation of any right of any person in or over any land within the limits of the Sanctuary.
- National Park is an area within a Sanctuary or outside having adequate ecological, faunal, floral, geomorphological, natural or zoological significance. The National Park is also declared for the purpose of protecting, propagating or developing wildlife or its environment, like that of a Sanctuary. The difference between a Sanctuary and a National Park mainly lies in the vesting of rights of people living inside. Unlike Sanctuary, where certain rights can be allowed, in a National Park, no rights are allowed. No grazing of any livestock shall be permitted inside a National Park while in a Sanctuary, the Chief Wildlife Warden may regulate, control or prohibit it. In addition, while any removal or exploitation of wildlife of forest produce from a Sanctuary requires the recommendation of the State Board for Wildlife, removal etc., from a National Park requires recommendation of the National Board for Wildlife (*However, as per orders of Hon'ble Supreme Court dated 9th May 2002 in Writ Petition (Civil) No. 337 of 1995, such removal/ exploitation from a Sanctuary also requires the recommendation of the Standing Committee of The National Board for Wildlife*).
- The conservation strategy[1] by state indicates - *All lands falling within 10 sq km. of the boundaries of National Parks and Sanctuaries should be notified as Eco-fragile zones under section 3(v) of the Environment (Protection) Act and Rule 5 Sub-rule 5(viii) & (x) of the Environment (Protection) Rules; so as to prohibit any ecologically & environmentally hazardous development/ industrial activity.* The strategy also mentioned that "L*ooking into the rising man-animal conflict in and round PA's; degradation of habitat, & thus endangering livelihood security of local populations; each PA should be declared into Core and Buffer Zones. Core should be declared as sanctum sanctorum with zero human disturbance whereas Buffer be managed as Multiple Use Area on the principle of co-existence.*

The Centre has asked[2] Chhattisgarh government to submit a proposal to National Tiger Conservation Authority to declare Guru Ghasidas National Park in the State as a tiger reserve, saying it had the potential to support a viable population of the tiger. This proposal if implemented may facilitate relocation from another 2800 square kilometers.

From Barnwapara sanctuary, 3 villages Rampur (135 hh), Navapara (168 hh) and Latadadar (98 hh) were relocated during 2010-11 as per the departmental progress report. These households were given compensation of Rs 10 lakh, 2 ha land and house to each family.

There has been a lot of resistance to these undemocratic and arbitrary processes of land grab in the name of development and conservation more so in tribal areas, resulting in some progressive laws being framed to protect their rights and entitlements.

Protective laws for Tribal population, FRRA and PESA:

The Constitution provides for special provisions for administration and control of Scheduled Areas. The provisions of the Panchayats Extension to Scheduled Areas (PESA) Act, 1996, give special powers to the Gram Sabhas in Scheduled Areas especially in the management of natural resources. Areas with pockets of substantial Scheduled Tribe populations living within the dominance of non-tribal communities have been categorised in the Constitution as Scheduled V Areas. Of the 16 districts in Chhattisgarh, seven districts (Surguja, Korea, Jashpur, Kanker, Bastar, Dakshin Bastar Dantewada and Korba)are categorised

[1] http://cg.nic.in/cgbsap/strategy.PDF

[2] http://www.thehindu.com/news/states/other-states/article2147726.ece

as Scheduled V Area districts and six (Bilaspur, Durg, Rajnandgaon, Raipur Raigarh and Dhamtari) are partially Scheduled V Area districts.

Sanctuaries	District	Area (km^2)	Area reserve for core/critical wildlife habitat
Gomarda (1972)	Raigarh	411.2	
Badalkhol (1975)	Jashpur	104.55	Badalkhol and Tomor Pingla combine 1155 sq km is reserved for critical elephant habitat
Barnawapara (1976)	Raipur	244.66	
Semarsot (1978)	Sarguja	608.52	
Tamor Pingala (1978)	Sarguja	608.52	Refer Badalkhol
Bhairamgarh (1983)	Dantewada	139	
Pameda (1983)	Dantewada	262	
Sitanadi	Dhamtari	553.36	Udanti and Sitanadi combine 851 square km is reserved for critical tiger habitat
Udanti (1983)	Raipur	247.59	Refer Sitanadi
Bhoramdev	Kawardha	163.8	
Total		3716.59	
Total	NP+Sanctuaries	7522 km^2	(9.44% of Forest)

When the newly carved state came out with its mineral policy it seems to have decided that mining should be encouraged at all costs. In the introduction to the Mineral Policy document there is reference to the need for mineral exploitation it states "*The basic purpose of its (Chattisgarh's) formation would be defeated if the natural resources are not used due to constraints of stringent forest laws and environment problems… the stringent self serving policies are detrimental to facilitate financial investment.*"
The policy also states that the Chattisgarh will formulate its own rules for minor mineral concession, which will simplify the mining lease process and renewal process. The policy goes on to state "*As the policy of leasing and royalty collections of minor minerals by the Panchayats has failed to increase the mineral revenues the powers will be vested with the Collector, who will auction the minor minerals and deposit the revenue accrued to the Panchayat for development*" this totally defeats the purpose and intent of PESA and also reduces the role of gram sabha in control and management of minor minerals.

The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006
The Forest Rights Recognition Act is another progressive law which was enacted with an objective to recognise the rights of the community over its forest for conservation and management.

Rights Recognized Under Forest Right Act

	Total	Individual	Community
Number of claims filed at Gram Sabha Level	4,91,374	487,332	4042
Number of claims given	214,918	214,668	250
Area for which claims were given	211,839.7 ha	211,142.2 ha	697.52 ha
No. of claims rejected	2,71,469		

Source: www.forestrights.in Website, Ministry of Tribal Affairs,

The act stipulates that all the claims for rights recognition should first be settled before any displacement or allocation of the forest land but it is hardly being adhered to.

Process of Land Acquisition
It is noteworthy that around half of the geographical area of the state comes under Schedule-V. Seven districts of Chhattisgarh are fully covered under Schedule V, namely, Surguja, Koriya, Jashpur, Kanker, Bastar, Dantewada and Korba and six districts are partially covered under Schedule V, namely Raigarh, Bilaspur, Durg, Rajnandgaon, Raipur and Dhamtari. In the Schedule V Areas, Gram Sabhas are

constituted for each "community" which manages its affairs in accordance with the traditions and customs. Gram Sabhas can therefore be constituted for villages, hamlets or even a habitation.

Power Vested with GS through Chhattisgarh Panchayat Raj Evam Gram Swaraj Adhiniyam 1993 (PESA amendment 1997)

- Section 129 c (iii) - the natural resources within the area of the village comprised by land, water and forests will be managed in accordance with the traditions of the village
- For the purposes of land acquisition under the provisions of the land acquisition act 1894 an order no. F12-46/97/7-9 has been passed
- Section 3 (6) - the collector & representative of the government department or company that wants to acquire land in the village will be present during the gram sabha meeting called for the purpose of consultation & consider all the objections raised to the project and the land acquisition by the oustees
- Section 4 - the gram sabha if it is in agreement with the proposal for land acquisition will pass a resolution to that effect and if it is not then after extensive consultation with the collector and the company representative will record the reasons for its disagreement in the resolution to that effect and submit it to the collector

The mining leases are sanctioned by the State Government, Director (Geology & Mining) or the collectors depending upon the mineral and extent of area applied for. Quarries of certain minerals are auctioned by the Sub–Divisional officers of the concerned sub divisions. Applications for quarry leases and renewal have to be made, through the mining officer or assistant mining officer, to the collector of the district in which the area falls. The application is to be made in a prescribed form along with the requisite fees and documentary proof's required. In case an application is not disposed of within one year the lease is deemed to have been refused. It is made mandatory that consultation with the Gram Sabha and resolution is necessary, but its decision is not binding on the district collector. Section 16 of land acquisition act empowers the district collector to bypass the decision of the gram sabha.

Land Acquisition- Standard Process

1. Publication of preliminary notification and powers of officers
2. Payment for damage. Objections
3. Hearing of objections, declaration of intended acquisition
4. Declaration that land is required for a public purpose
5. After declaration, collector to take order for acquisition
6. Land to be marked out, measured and planned
7. Notice to persons interested
8. Power to require and enforce the making of statements as to names and interests. Enquiry into measurements, value and claims, and award by the collector
9. Enquiry and award by collector
10. A period within which an award shall be made
11. award of collector when to be final
12. Adjournment of enquiry 12 A correction of clerical errors, etc
13. Power to summon and enforce attendance of witnesses and production of documents.
14. Matters to be considered and neglected.
15. Power to call for records, etc. taking possession
    Power to take possession - When the collector has made an award under section 11, s/he may take possession of the land, which shall thereupon [vest absolutely in the [government]], free from all encumbrances.

Special powers in case of urgency. – (1) in cases of urgency whenever the [appropriate government], so directs, the collector, though no such award has been made, may, on the expiration of fifteen days from the publication of the notice mentioned in section 9, sub-section 1). [Take possession of any

land needed for a public purpose]. Such land shall thereupon [vest absolutely in the [government], free from all encumbrances

What Happens in Reality…

Once the proposal is brought into the GS, it is assumed that the same would be passed and completing its formality is a major concern. The GS pressurized by all available sources starting from company, government officials, contractors, political leader, money lenders to higher level panchayat representatives. In case of any objection, the Jan Sunvais (Public Hearings-PH) organized where the District Collector listen to the objections. All efforts made in organizing such PH so that, only members favouring the acquisition are present (the 50 % quorum requirement is seldom met). To show that the members were in favour, signatures are taken as beneficiary of other scheme to fulfill the quorum. The members easily sign assuming its individual benefit. The role of the District Collector is crucial in such hearings, it becomes very difficult for villagers to say no once the collector is favoring any acquisition. However, efforts are made to avoid using the powers that are given by act in major circumstances.

Violation of Environmental Norms

Many small and medium size industries have come up without even getting statutory clearances from pollution control board. The state Minister for Environment Mr.Ganeshram Bhagat on 2nd of March 2005 in an answer to a query in the Legislative Assembly of the state provided the information that

out of 48 functional sponge iron units in the state about 33 have not obtained the statutory clearance from the Pollution Control Board and that all such industries need to do lot to get to the minimum emission levels legally permitted.

Case study of Coal blocks of Premnagar tehsil

In Premnagar tehsil of Surguja district which is a schedule V district two coal mines and a power plant has been planned within a radius of 10 Km. A coal block and a power plant has been allotted to Chattisgarh Mineral Development Corporation which will be implemented by M/s IFFCO Chattisgarh Power Limited, while another coal mine has been allotted to Rajasthan Vidyut Nigam Limited and the mining will be done by Adani industry. These industries will impact many villages, namely Parsa, Kente, Basan, Salhi, Hariharpur, Fatehpur, Ghatbarra, Premnagar, Abhahypur, Chandan Nagar, Saidu, Siskam, Tara, Raghunathpur, Kantaroli, Mendra and Janardanpur.

Chattisgarh state government has promoted a joint venture company (ICPL) between M/s Indian Farmers Fertilizer Cooperative Limited (IFFCO) having 74% stake and rest with Chattisgarh State Electricity Board (CSEB) to implement the 1320 MW thermal power station. Mining operation will be done by another joint venture company between ICPL and CMDC in Tara central coal block.

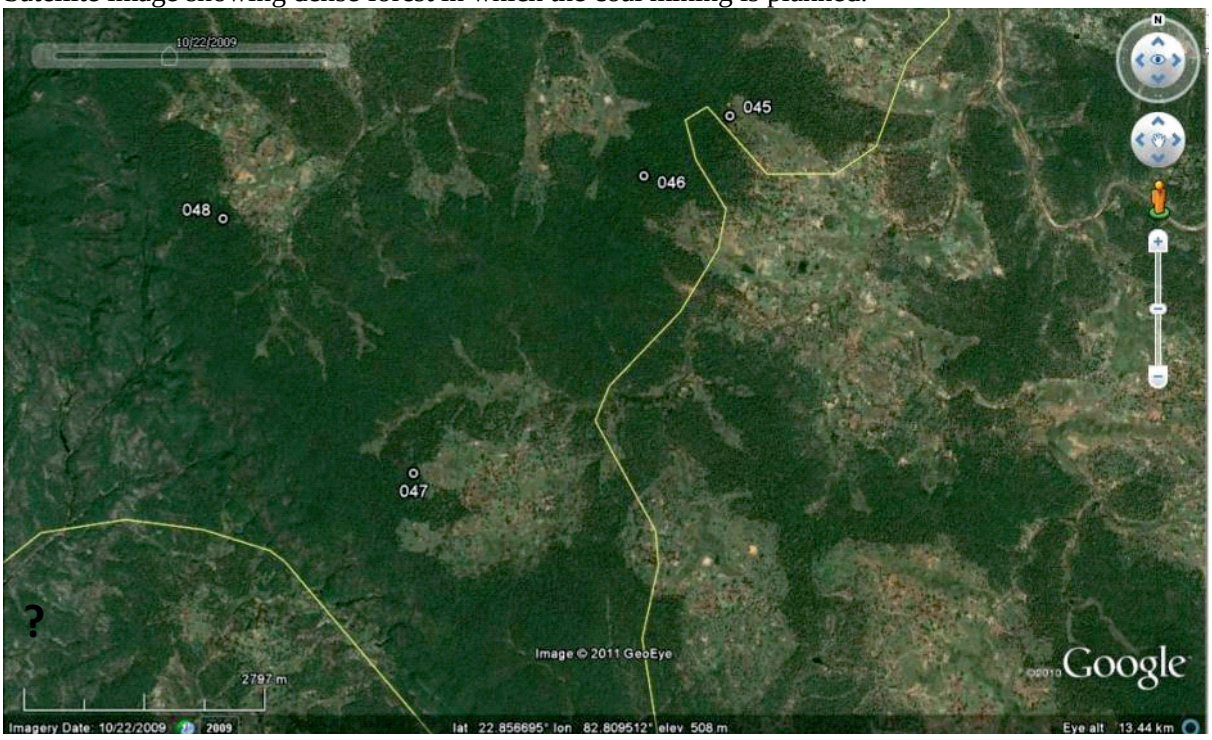
The two projects would require around 3200 Ha of forest area, while it would require around 5000Ha for its operations, staff colonies.

One of the affected villages Kantaroli has 139 households mostly belonging to the schedule tribes. The village consists of small and marginal farmers 121 families of Binjhuar, 12 Gond families, 1 family of a particularly vulnerable tribal group (PVTG) called Korba while it has 1 harijan and 4 families of OBC. The Land use of the village has 291.18 Ha under agriculture, 531.117 Ha is under the category culturable wasteland, 103.39 Ha is under grazing land, 18.35 Ha is waste land, while it has 1265 ha under forest. The demographic profile of the village shows that it has 267 women while 260 men. The main source of livelihood has been agriculture and minor forest produce, and people have never resorted to distress migration. The farmers cultivate Rice, Maize, Pulses, Mustard, Kulthi, minor millets and some of them also cultivate vegetable for a living. There are three tube wells and a pond for providing irrigation.

Forest produce plays a major role in their livelihood as they collect Mahul leaves, Mahua, Mushroom, Tendu patta, Char seeds, Bamboo shoots, sal seeds and many other minor produce. An estimate of the revenue per family of these produce put together comes out to be around Rs 30,000 per year. The families also collect Mahua seeds and extract oil for their self consumption.

The villagers are of the opinion that when mining does come they will surely lose their lands. According to them, "*this will certainly bring destruction to the village and doom the future of the people. The companies will procure profit and we will be reduced to margins*". They are aware of their rights under PESA and are apprehensive of any mining activity and some of them are organising themselves through the Gram Sabhas to ensure that they will not part away with their land.
The company is providing Rs 8 lakh/ha; Rs 10 lakh /Ha and Rs 12 lakh/Ha depending upon the land type, but the people have not yet accepted the offer.
On the other hand the process of recognition of rights under FRRA has not been completed as yet. There has been 132 Individual forest rights claims were submitted and only 45 claims have been granted. All the 3 claims of OTFD's were rejected. While there has been 6 CFR claims and none of them has been granted, on enquiry Hari Prasad of kantaroli said we have been told that it is under process.
Even though the Forest Advisory Council had rejected the environmental clearance but satisfied by some of the mitigation measures proposed by the company it was provided clearance. Even the FAC mentioned that the process of settlement of claims is not yet complete.
The people though are determined whether the claims are settled or rejected and not willing to give away their land, and they also have a role model nearby.
Premnagar village had been resisting the construction of power house, 11 times Gram sabha was convened but every time the people rejected the offer, thereafter a 5 member team from the village went and met the Governor of the state of Chattisgarh in the year 2007. Even thereafter due to the steadfast resolution of the villagers and the intervention of the state, it was relocated to Salka on 19 January 2009

Satellite image showing dense forest in which the coal mining is planned.



Satellite image showing devastation done by coal mines in other part of the district.

Annexure:

Forest Advisory Committee Report

Diversion of 1324.380 ha of forest land (originally proposed 2301.260 ha) for open cast coal mining at Tara coal block of Hasdeo-Arand Coalfield in favour of M/s Chhattisgarh Mineral Development Corporation in South Surguja Forest Division in Surguja district of Chhattisgarh. (F. No. 8-38/2009-FC)

The Committee reconsidered the revised proposal submitted by the State Government involving diversion of 1324.380 ha of forest land (57% of the original) against the original proposal of 2301.260 ha of forest land. It was also noted that the FAC in its meeting dated 17.09.2009 did not recommend the proposal as number of trees to be felled was very high, which does not justify diversion from the conservation point of view. The Committee listened to the Nodal Officer (FCA) of the State & the Project Proponent and noted the following contents of the revised proposal:

- the mining is planned mainly in the non-forest area, open forest and some part of moderately dense forest area, which would reduce about 65% less felling of trees.
- the dense forest area (> 0.4 crown density) has been excluded to maximum possible extent.
- the mine shall be operated for 25 years @ 6 MTPA against earlier plan of 45 years.
- the number of trees for felling reduced from 8.46 lakh to 1.18 lakh.
- all saplings below 60 cms g.b.h. shall be transplanted.
- the project belongs to the State Government and is directed to meet the energy requirement of the state.

The FAC also taken into consideration the observations of the sub-committee of the FAC, which visited the area recently. The Sub-committee consisted of Sh. A.K.Bansal, Dr. Mahesh Rangarajan and Shri Harish Chaudhary and its report is part of the minutes as Annexure. It concluded that:

A substantial portion of the very dense forest has been excluded from the area proposed for diversion. However, even after this revision area comprises sizable forest area, including dense forests.

Proposed transplanting of a large number of actively growing trees (70,112) having girth below 60 cm in the revised proposal does not appear to be a feasible preposition. It is unclear why this has been included given the level of expertise on the subject available in the state. Such transplanting is complex even in urban settings with small numbers of mature trees (<10 trees) and is certainly not feasible here.

The proposal is also inadvisable as transplanted trees especially in monocultures cannot perform the ecological functions of an intact forest.

The area of the open forest in the revised proposal is said to be 248.00 ha more than the area of open forest land included in the mining lease as per its original proposal. The representatives of the State Government could not explain this apparent discrepancy satisfactorily.

During the short visit of the sub-committee, it was not possible to ascertain the extent of presence of wildlife (fauna and avifauna). However, the area appears to be suitable and existing habitat for wild vertebrates including large mammals that are in schedule I of the Wildlife (Protection) Act. DFO, South Surguja Division, while forwarding the proposal for diversion of forest land in the Tara Coal Block, in his site inspection note dated 2nd May 2007 indicated that the area is rich in bio-diversity. These lists included Schedule-I Species (under the Wildlife Protection Act, 1972) such as the sloth bear and leopard. Their presence in turn indicates a population of wild prey species.

Previous reports of endangered species include a November 2005 sighting of a small herd of wild elephants that moved from Maheshpur to Salhi via Kantaroli, Abhaipur and Janardanpur. The elephants stayed in this area for nearly four days. The team headed by DGF&SS during their visit to the area on 27th & 28th August 2009 also confirmed the presence of elephants in the area.

Interaction with villagers, who are likely to be affected if the projects become operational, revealed inadequate knowledge about the R&R policy/measures. The process of the FRA, especially of settlement of community rights is not complete.

Based on the above findings/observations the sub-committee, the FAC does not recommend the diversion of the proposed forest area.

Diversion of 1898.328 ha of forest land for Parsa East and Kente Basan captive coal block open cast mining project in favour of M/s Rajasthan Rajya Vidyut Utpadan Nigam Limited in South Surguja Forest Division in Surguja district of Chhattisgarh. (F. No. 8-31/2010-FC)

The Committee reconsidered the proposal and noted that the Committee in its meeting dated 10.03.2011 decided to visit the site to have better appreciation of the proposal. The coal produced shall be used in two thermal power projects in Jhalawad district of Rajasthan. The Committee listened to the presentation made by theNodal Officer (FCA) of the State & the Project Proponent and noted the following:

the coal block is on the northern fringe of Hasdeo Arand.

the mining is planned in two phases with the aim of – sequential mining, scientific void management, planned felling of trees and afforestation, top soil management, and reclamation, etc.

in phase-I (15 years), total requirement of forest area is 762 ha (40% of total), where 1,25,547 trees will be affected.

in phase-II (16^{th} year onwards), total requirement of forest area will be 1136.328 ha, where 2,42,670 trees will be affected.

the reclamation of mined out area will start from 3^{rd} year onwards.

the project belongs to the State Government and is directed to meet the energy requirement of the state.

The FAC also taken into consideration the observations of the sub-committee of the FAC, which visited the area recently. The Sub-committee consisted of Shri A.K.Bansal, Dr. Mahesh Rangarajan and Shri Harish Chaudhary and its report is part of the minutes as Annexure. It concluded that:

The quality of the forest cover available in the Parsa East and Kante Basan coal block is poorer compared to area in the Tara coal block. However, as per the study jointly undertaken by the MoEF and MoC Gross Forest Cover is 52.95% and Weighted Forest Cover comes to 27.55 %.

During the short visit of the sub-committee, it was not possible to ascertain the extent of presence of wildlife (fauna and avifauna). However, the area appears to be suitable and existing habitat for wild vertebrates including large mammals that are in Schedule I of the Wildlife (Protection) Act. DFO, South Surguja Division, while forwarding the proposal for diversion of forest land in the Tara Coal Block, in his site inspection note dated 2^{nd} May 2007 indicated that the area is rich in bio-diversity. These lists included Schedule-I Species (under the Wildlife Protection Act, 1972) such as the sloth bear and leopard. Their presence in turn indicates a population of wild prey species.

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Based on the above findings/observations the sub-committee, the FAC does not recommend the diversion of the proposed forest area.

Western Ghats – Environmental and Forest Rights Concerns

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Introduction

The Western Ghats[1] is distinct for its inter-woven network of protected, reserved and community conserved forest areas comprising wildlife corridors spanning long distances, cutting across boundaries that segment it into States. The area has for long been, under a constant pressure from unplanned and unrestrained "developmental" activities like mining, thermal power plants, nuclear power plants, industries, commercial tourism and construction projects, notwithstanding the fragility of its ecosystem. These activities involve severe bio-physical disturbances affecting adversely the natural interactions within and among ecosystems. In the rural hinterland where resources exist, the numerous projects are devouring local communities' livelihoods that have been integral to their culture and the area's ecology. It is only after a prolonged struggle of communities and civil society against destructive activities that the Government of India constituted a Western Ghats Ecology Expert Panel (WGEEP) to address some of the issues. The Panel, headed by a distinguished scientist Madhav Gadgil, has submitted its report. Declaring entire Western Ghats as ecologically sensitive, the report defines three types of Ecologically Sensitive Zones (ESZs) and makes recommendations accordingly on restrictions to be put on various project activities in each zone. Though "Environment Impact Assessment Notification, 1994" issued under section 3 and rule 5 of Environment Protection Act, 1986 and several other notifications brought out by Ministry of Environment and Forest (MoEF) restrict certain project activities in specified ecologically sensitive areas, there are questions on the manner in which Environment Impact Assessments (EIAs) are being conducted.

Among other things, the Panel recommended that gram sabhas and panchayats be vested with rights and powers to look after their own ecological wealth. A demand from various quarters to institutionalize decentralized governance in rural areas led to the States legislating Panchayat Raj Acts following 73rd Amendment (1992) to the Constitution. In 1996 a separate legislation, Panchayat (Extension to Schedule Areas) Act -PESA, was passed by Parliament giving special powers to Gram Sabhas in the Scheduled areas which included among others, power to manage natural resources, community resources and to conserve and protect customs and traditions. Subsequently in 2006, the Government of India passed the Forest Rights Act (FRA) to recognize the rights of forest and other forest- dwellers, focusing on Scheduled Tribes and Other Forest Dwellers who have suffered immense loss and their rights never having been settled. There is an issue of making decentralization effective in the present socio-economic and overall policy environment in order to open a space for decentralized management of resources especially commons like forest and water. The Panchayat Raj Act especially PESA and FRA provide a legal backing that may be used to open that space.

Another issue making nature conservation compatible with decentralized management of natural resources to meet the bona fide livelihood needs of local communities. For instance, the National Tiger Conservation Authority drew a plan to move around 750 villages located in the 28 Tiger Reserves in the country to make inviolate space for the Tiger. These settlements / villages have to be relocated outside the Tiger Reserves. Similarly, there has been an increasing effort to integrate the core and buffer areas by altering or offering a changed situation in terms of communities' livelihoods (restricting activities that are non-compatible) and their interaction with forests in the buffer zones. The question is how far communities are involved in decision-making and in planning alternatives.

[1] The Western Ghats range extends from river Tapti in Gujarat in the north to Kanyakumari in the south, approximately 1,600 km in length and passes through six states of the Indian Union covering an area of about 1,62,000 sq. kms [http://westernghats-paimohan.blogspot.com/2008/07/geopolitical-profile.html]

The present case study takes up these issues as these emerged in the Western Ghats mainly focusing on environment and forest right concerns. After a brief description of Western Ghats in different States in the first section, the study gives the status of implementation of FRA and of environment clearance in the Ghats highlighting the various concerned issues through illustrative cases in the subsequent two sections. The last section makes certain recommendations for a better governance of the Western Ghats.

Western Ghats in Different States

Ghats in Gujarat, the northern limits of the Western Ghats, are well forested. The river Tapti originating in eastern Satpura range moves westwards flowing in a deep trench cutting through Surat in Gujarat. The Western Ghats (Sahyadri range) starts south of river Tapti near the border of Gujarat and Maharashtra. The districts Dang, Valsad and the newly carved out Tapi have some element of the Ghats. The Ghats moves into Maharashtra at the Kundaibari Pass in Dhule district. Maximum (around 900 sq. km.) forest land diversion in the State took place in districts Dhule and Kolhapur. The coastal belt of Maharashtra is witnessing spurt of projects like power plants (thermal, nuclear) and mining in a good mangrove areas in districts of Raigarh, Ratnagiri, Thane and Sindhudurg. Ratnagiri, especially, is home to export quality alphonso mangos where Jaigarh Thermal Power plant has been cleared by Ministry despite concerns of locals that it will adversely affect the production and quality. Jaitapur nuclear power plant is also in this district and more are in the pipeline.

The whole of Goa is included in the Western Ghats ecoregion. South Goa has very high intensity of mining. There are nearly 100 operational mines in Goa and several of them clearly violating the environmental norms and destroying the environment. The number of agencies seeking lease is over 400, which would completely destroy the small State- ecologically speaking.

Karnataka is situated on a tableland where the Western Ghats and the Eastern Ghats converge into B R Hills and the Nilgiri Hills complex. Forest land diverted for various activities is around 430.81 sq km[1] which means the State has lost almost 1% of the state's geographical area under forests to non-forest activities. There are a series of protected areas in the Ghats region of Karnataka around 12-13 out of 27 protected areas (Wildlife Sanctuaries, National Parks, Tiger Reserves). The threat is at two levels- one at the periphery of the protected areas where mining has been reported and another where resource availability like fuel and non-fuel minerals is there to fulfill demand of the proposed and existing industry.

Kerala is a narrow strip of land on the south west coast of the Indian subcontinent bounded by the Western Ghats on the east. It has a rich riverine ecology which sustains its agriculture and coastal plantations (cash crops). The forest villages in the State are being converted into revenue villages while extinguishing their rights in the forests. At present the process is underway and around 17350 titles over 89 square km. have been issued. More than 410.34 square kilometer of forest land has been diverted for non-forest activities since the enactment of FC Act.

The Western Ghats, after a run of 1,600 km through six states of the Indian union, end in Tamil Nadu just 20 km short of Kanyakumari. The Eastern and the Western Ghats meet in Tamil Nadu and run along the whole length of the western boundary of the state at a distance of 80 to 160 km from the Arabian Sea.

Implementation of Forest Rights Act

The Central Government sought the implementation status of FRA from the States in November 2009. The situation in the States comprising the Western Ghats is worrisome as indicated by the table below-

In a recent meeting, the Parliamentary Standing Committee on Social Justice and Empowerment expressed its disappointment at the sorry state of implementation of the Act, where out of a total number of claims i.e. 28, 49,000 from 17 States, as many as 12, 67,928 claims have been rejected. It also did not provide any clue about the levels at which these claims were rejected as the information supplied varies from State to State.

[1] India Infrastructure Report, 2009

The Minister, in his reply to a question in Rajya Sabha (December 2011), maintained that there are four critical reasons for rejection of claims – (i) other traditional forest dwellers (OTFDs) not able to prove occupation for 75 years as on 13.12.2005 (ii) non-occupation of forest land as on 13.12.2005 (iii) claims being made on land other than forest land and (iv) multiple claims.

State	Total claims received	Deeds distributed/ ready	Number of claims rejected
Gujarat	1,84,329 (1,76,242 individual and 8,087 community	5,668 distributed	528
Maharashtra	2,66,572	2,453 distributed	170
Goa	0	0	0
Karnataka	45,801	0	0
Kerala	35,620 (34,886 individual and 734 community).	23 distributed	9
Tamil Nadu	8,352	0	0

The issues raised by the States and the Ministry's response clearly indicate that the effort has been to confuse the communities rather than to proactively enable recognition of rights and thereby make right the "historical injustice" which the law purported to correct. Recent information on the implementation status indicates a more worrisome picture. The states have been giving various reasons for the slow performance of the settlement of rights. The major reasons stated by the various states in the Western Ghats are as follows:

Reasons given by states for delay in settlement of rights to the people under FRA 2006	
Kerala	Due to high density of forests, only manual survey is feasible. This, the state claims is taking time. Community claims are not being given priority as there is confusion on community rights with regard to facilities envisaged for right holders u/s 3(2) of the Act. But on the face of it the provision looks clear and there have been directions sent to the states regarding this.
Maharashtra	Large number of false cases encountered, hence the delay in resolving these.
Tamil Nadu	Pendency of High Court stay under which Committee formed is to verify beneficiaries by conducting field visits.
Karnataka	Rejection of OTFD claims is high (Over 88 per cent of total claims and over 90 per cent of rejected claims) No proof as forest dwellers i.e. 75 yrs. evidence; ST claimants also being excluded due to want of evidence as to whether they are forest dwellers.

The Ministry of Tribal Affairs (MoTA) response to the States on various concerns raised by them is –

- According to the MoTA the "implication of using the word 'primarily' is to include the STs and OTFDs who have either habitation, or patches of land for self-cultivation for livelihood, and would, therefore, be primarily spending most of their time either in temporary make shift structures or working on patches of land in such areas irrespective of whether their dwelling houses are outside the forest or forest land. Such STs and OTFDs who are not necessarily residing inside the forest but are depending on the forest for their bona fide livelihood needs would be covered under the definition of "forest dwelling STs and OTFDs."
- On consideration of the revenue land under the occupation of forest dwelling STs and OTFDs for determining the limit of an area of 4 hectares of forest land for habitation or for self-cultivation, the MoTA was of the view that the term "forest land" is defined in the Act and that the definition does not include revenue land. Therefore, the revenue land under the occupation of forest dwelling STs and OTFDs is not to be taken into account for determining the area limit of 4 hectares of forest land.

a) MoTA also stated that "the FRA Rules, 2008 provide that the Gram Sabha shall call for the claims and authorize the Forest Rights Committee to accept the claims. Such claims are to be made within a period of three months from the date of such calling. The period of three months for filing the claims is thus to be reckoned from the date of calling of claims after the constitution of the Forest Rights Committee. Gram Sabhas can consider undisputed cases provided the procedure as laid down in the Rule has been followed."

- MoTA also clarified that a claimant under the Act who already own some land other than forest land or when he is engaged in some occupation and is using the forest land under occupation for agriculture in addition to his occupation can be considered eligible for recognition and vesting of forest rights under the Act. It is for the Gram Sabha to examine, before passing a resolution and forwarding the same to SDLC for enabling the SDLC/DLC to adjudicate on the claim. Further, the Ministry of Law Justice (Department of Legal Affairs) is agreeable to the view that the Gram Sabha has to examine each case individually after taking into consideration all relevant factors including the findings of the Forest Rights Committee.
- MoTA has included forest lands which are used for activities ancillary to cultivation, such as, for keeping cattle, for winnowing and for other practices that are related to post-harvest activities under the category of "self cultivation". Each case has to be examined and decided individually by the Gram Sabha.
- MoTA also clarified that for seeking prior approval for diversion of forest land for non-forest purposes for certain facilities at least 1/3rd quorum of members of DLC is needed for taking a final decision in such cases.
- There is no fixed tenure for the District Level Committees (DLC) constituted under the Act. The DLCs can continue to exist for considering the cases relating to the diversion of forest land that are referred to it by the DFO for final decision, even after the process of recognition of forest rights is completed under the Act. Such DLCs can be re-constituted if such re-constitution is so warranted on account of election of Panchayat bodies and nomination of new members from Panchayat Institutions.
- There is no bar on time limit for processing cases of diversion of forest land as long as the forest land so diverted is less than one hectare in each case and such projects are recommended by the Gram Sabha.
- MoTA also clarified that the Act cannot be implemented in the Municipal Corporation areas of the State.
- The condition regarding three generations prescribed in the Act cannot be relaxed in the case of other traditional forest dwellers.
- Tribals in some settlements are demanding that land under cultivation should be assigned in their common name. However, in view of the provisions of the Act, such forest land under the occupation of the community of tribals shall be restricted to the area under actual occupation and shall in no case exceed an area of four hectares.
- MoTA was of the view that "there is no bar in the Act to the registration of the forest right conferred under the Act jointly in the name of both the spouses who are married inter-caste, provided the applicant is an ST or if not an ST, fulfils the criteria for a traditional forest dweller."
- The STs and OTFDs of one state are not be eligible for recognition and vesting of forest rights under the Act in the forests of another, according to MoTA.
- Quorum of two-thirds of all members of the Gram Sabha for the meeting of the Gram Sabha is mandatory.

Thus, it is clear that the state while suggesting that it will benefit the communities who have the actual rights, has kept the entire decision of diverting forest land under its control. Further it has a quorum that would enable it to decide faster. The other ploy being used is to divert forest land for mining and industrial purposes and declare these areas as urban settlements thereby denying the forest rights.

Environmental Clearances to Projects: Contextual Background

Western Ghats with its uniqueness of different ecological subsets i.e. coast, inland, hills, favourable climatic conditions and tourism destination has attracted a different portfolio of projects like thermal (inland and coast), nuclear, mining (both inland and coast), tourism and construction (hills, inland), connectivity (railways, roads), dams (river valley projects) – most of them seeing a suitability advantage of mobility and resources. Among these, construction projects under tourism take promotional advantage from the state while railway projects are not required to get environmental clearance from the MoEF,

even though these cut across long distances in the highly networked forests of the region. Accountability becomes greater once decisions are to be taken for a biodiversity hotspot regions but the process of environmental clearance is going on "as usual".

The MoEF had imposed a moratorium on 43 industrial clusters / critically polluted areas. Now the moratorium has been lifted from 25 such clusters and for the remaining 18 clusters, the moratorium is extended up to March 2012.[1] In April 2011[2], the moratorium to mine sand in Ratnagiri and Sindhudurg (non-CRZ zone) was proposed to be lifted due to want to sand for infrastructure projects but it was eventually extended to December 2011 after the report of the Western Ghats Ecology Expert Panel.

EIA related issues have been the focus of many of the environmental struggles in the Western Ghats. Examples in recent times where projects located in and around the Western Ghats have attracted national attention are the Nutrino Observatory planned in the Niligiris in Tamil Nadu but shifted due to opposition from conservationists[3]; the Kalsa Bhandura project involving the diversion of Mahdei River by Karnataka while reducing the flow to Goa[4], the Athirapally hydro electric project in Kerala's Thrissur district to the Railway projects such as the Chamrajnagar-Mettupalyam project in Tamil Nadu and Karnataka and the Hubli Ankola project at Karnataka to the recent stoppage of the Hankon Thermal power plant at Karwar in Karnataka to name only a few. The legal victory in stopping the Kudremukh Iron Ore Company after three decades of operation was among the most significant successes in recent time with respect to the Western Ghats. It is however interesting to note that not all of the above projects required an EIA although it is beyond doubt that most of them surely have environmental impacts.

There have been cases of faulty EIA reports and negligence to the cultural and archeological aspects which are found abundant in this region. Misinformation has become a norm which not only shows poor monitoring or backup but also it downplays the rights of the people. Poor quality of reports on key environmental aspects like water, air, flora and fauna, and discouraging people to attend public hearings and disregarding their opinions by not including them in the final EIA report are other problems.

There has been no stringent emphasis on stipulating prior conditions on ensuring Forest Rights claims before granting the Environment Clearance. This has left a void as the States are held responsible for implementing the FRA. Once assurance is given by the State on the state of settlement, clearance is granted if it is stuck on that account. Again, there has been no consistent and measurable monitoring and evaluation framework existing; it looks like a loose system wherein irregularities are high. If the environmental governance in the country with a measurable and time bound monitoring, reporting and compliance has to be placed in order, especially for regions which are ecologically sensitive like the Ghats and other regions, it should not be turned down merely on the excuse of human resources scarcity or self reporting. Pollution Control Boards (PCBs) need to look beyond the fee collection from consent procedures and move strictly to precautionary principle, only then there could be some rule in the house.

The EIA process as is in force broadly follows the following sequence: Screening, Scoping, Public Consultation, and Appraisal. The four-stage process introduced in 2006 also led to a division of power between the Central and State Government. The process as it exists essentially involves the project proponent applying to the concerned authorities at the Central and State Government level for prescription of Terms of Reference (TOR's) for preparation of EIA reports:

a. The preparation of EIA reports by Consultants engaged by the project proponent.
b. A public consultation at the project site or in close proximity to the project site for obtaining the views of local affected persons and others who have a plausible stake in the environmental impacts of the project.
c. The minutes of the public hearing proceedings are then sent to the Expert Appraisal Committee of the MoEF or the State Impact Assessment Authority (SIAA) for appraisal.

[1] MoEF OM - No. J-11013/5/2010-IA.II(I)
[2] MoEF OM – No. J-21011/58/2010-IA-I
[3] http://www.hindu.com/2009/11/21/stories/2009112154952000.htm
[4] http://www.downtoearth.org.in/node/8572

Problems in EIA Process

The process as it exists is fraught with serious problems. They can be briefly stated as follows:

1. **Poor Quality of EIA report:**

The quality of EIA report is generally poor. Based essentially on outdated secondary data, it rarely questions the project and proceeds on the assumption that approval is bound to take place. The overall thrust of the EIA report is to justify the project on larger social and economic goals. Recently the Supreme Court of India[1] observed:

> *"We would also like to point out that the environmental impact studies in this case were not conducted either by the MoEF or any organization under it or even by any agencies appointed by it. All the three studies that were finally placed before the Expert Appraisal Committee and which this Court has also taken into consideration, were made at the behest of the project proponents and by agencies of their choice. This Court would have been more comfortable if the environment impact studies were made by the MoEF or by any organization under it or at least by agencies appointed and recommended by it."*

The MoEF had last year initiated the step of accreditation of EIA consultants through the Quality Council of India and the National Accreditation Board for Education and Training. Although it is a step in the right direction, it can by no means guarantee an unbiased report since the EIA consultants will continue to be engaged and financed by the project proponent.

2. **Poor Quality of Appraisal:**

The quality of appraisal done by the Expert Appraisal Committees (EAC) is generally very poor. The fault for the same can be located at two levels:

a. ***The Composition of the EAC:*** The EAC's are generally composed of retired bureaucrats and representatives from various scientific institutions as well as academicians. There is a lack of independent ecologist, environmentalist and civil society representatives in the EAC. The EIA notification of 1994 did provide for independent ecologist and environmentalist including members of NGOs as part of the EAC. However the subsequent amendments in the notification had done away with the requirement for independent members who are environmentalist or civil society representatives and replaced it with the term 'Professionals'. What is of greater concern is the fact that at times EAC's were (and also is) constituted of persons who have a direct conflict of interest. The Delhi High Court[2] while considering the approval granted to a mine in Goa (Borga mines) critically looked at the composition of the EAC for mining projects. The High Court held as follows:

> *"As regards the EAC (Mines) it is surprising that the 12 member EAC was chaired by a person who happened to be Director of four mining companies. It matters little that the four mining companies are not in Goa. Appointing a person who has a direct interest in the promotion of the mining industry as Chairperson of the EAC (Mines) is in our view an unhealthy practice that will rob the EAC of its credibility since there is an obvious and direct conflict of interest."*

The situation has not changed much as even the present EAC's for thermal power plants and river valley projects reveal a clear conflict of interest and is clearly inimical to objective appraisal.

a) ***The manner in which EAC deliberation takes place:*** The EAC's present mode of functioning does not provide scope for critical appraisal or detailed scrutiny. Several projects are considered during a single day. In fact there are records of over 75 industrial projects being considered on a single day for appraisal. The results are quite evident. Hardly any detailed scrutiny takes place, minutes of the public hearings are rarely ever considered and projects are approved subject to general conditions which are applicable to all projects. Commenting on the manner in which appraisal are done by the EAC, the Delhi High Court[3] while considering the challenge to the environmental clearance granted to a mine in Goa made the following observation:

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[1] T. N Godavarman Thirumulpad vs Union of India I.A No 2609-2610 in W.P (C) No. 202 of 1995 decided on 3-12-2010

[2] Utkarsh Mandal Vs Ministry of Environment and Forest. Order dated 26-11-2009

[3] Uttakarsh Mandal Vs Ministry of Environment and Forest

"As regards the functioning of the EAC, from the response of the MoEF to the RTI application referred to hereinbefore, it appears that the EAC granted as many as 410 mining approvals in the first six months of 2009. This is indeed a very large number of approvals in a fairly short time. We were informed that the EAC usually takes up the applications seeking environmental clearance in bulk and several projects are given clearance in one day. This comes across as an unsatisfactory state of affairs. The unseemly rush to grant environmental clearances for several mining projects in a single day should not be at the cost of environment itself. The spirit of the EAC has to be respected. We do not see how more than five applications for EIA clearance can be taken up for consideration at a single meeting of the EAC. This is another matter which deserves serious consideration at the hands of MoEF. "

Unfortunately, responses obtained using the Right to Information Act shows that no serious consideration was given to the suggestions given by the High Court and projects far in excess of five continue to be appraised by the EAC.

1. Poor level of Compliance and Monitoring for projects:

The existing monitoring and compliance mechanism of the MoEF is extremely weak. While approving a project a number of conditions are imposed but there is very limited monitoring so as to ensure that the conditions are complied with. This takes place both with forest as well as environmental clearances issued by the MoEF. While considering the challenge to the environmental clearance granted of the Shakti Bauxite Mine at Salcete and Quapem Taluk, South Goa, the National Environment Appellate Authority[1] observed the following with respect to the monitoring system of the MoEF:

"It is necessary to point out the weakness in existing monitoring system in practice in the MoEF….the Monitoring Mechanism as practiced in the MoEF, as on date, appears to be weak. It has many pitfalls such as lack of effective follow up on compliance with conditions imposed in EC order….It is imperative that the existing Monitoring System is examined, so far as it relates to implementation of conditions attached to the EC order, pitfalls identified and necessary remedial action taken so as to achieve broad objectives of the Environment (Protection) Act, 1986."

2. Cumulative Impacts of Projects are ignored

While individual projects are considered on the basis of the assurance that the project will not pollute beyond "permissible limits", the cumulative impact of projects in a valley or a region are neither studied nor demanded by the appraisal process. In fact the current process does not even have a mechanism to know if there are other projects in the region that will adversely affect the environment.

3. Despite Poor History of Compliance the Promoter is granted clearance for new projects

Some industries and establishments have a documented history of poor compliance. An example is of the Vedanta group, which includes mines in the Western Ghats. Despite this the new projects are cleared without questioning the intent or ability of the promoter. Same is the case with the Nuclear Power Corporation which has shown poor record in Kaiga but is now being considered for a mega nuclear power project in Jaitapur. Instead of penalizing and barring such agencies and securing better performance in existing units, the clearance of new projects weakens the whole process.

4. **Unfair Sequencing of the Clearance Processes**

In most projects, the land is either acquired or purchased first and the process for seeking environmental and forest clearances is initiated. This is in violation of the procedure for free and informed consent from the affected people. Having lost their land, there is very little interest and meaning left of the public hearing process under the EIA regime.

Project Cases

In order to draw up a framework for environmental governance related reforms in the Western Ghats it is essential to focus on some of the projects granted approval under the EIA process in recent years. The

[1] Chandrakant Kavelekar vs Ministry of Environment and Forest, Appeal No. 11 of 2008, order dated 31-5-2009

cases are not limited only to projects located directly within the Western Ghats but also those in proximity to it. These will help identify key shortcoming of the EIA process, as it exists today:

1200 MW JSW Thermal Power Plant at Ratnagiri, Maharashtra

The MoEF granted environmental clearance on 17th May, 2007 to the 1200 MW coal-based Thermal Power Project (TPP) of JSW Energy Ltd in Jaigarh, Maharashtra. This was challenged before various judicial (Bombay and Delhi High Court) as well as quasi judicial forums (National Environmental Appellate Authority). The legal challenges were done by local farmers groups as well as affected persons especially mango farmers. These legal fights led to a detailed judgment by the Delhi High Court in the case of Bhikaji Nalwade Vs Union of India. The Delhi High Court directed the MoEF to re-examine the environmental clearances since the appraisal by the Expert Appraisal Committee (EAC) was found to be inadequate. It further stated that "it is imperative to focus on the procedure followed while according environmental clearance, since it identifies the principle shortcoming in the process of appraisal as is currently followed by the EAC."

The Court took note of the fact that the project proposal was considered in the EAC meeting held from 9-10 January 2007, during which the Committee sought further information on several points. The EAC noted that "the proposal may be considered further only after the study on the impact of the project on alphonso mango plantations has been completed and the report submitted in addition to the information as mentioned above. Till such time the proposal may be kept in abeyance." Despite this observation, the EAC in its meeting held on March 2007 considered the Project. The minutes of this meeting reflect the reliance placed by the proponent on a preliminary report submitted by the Konkan Krishi Vidyapeeth, Dapoli (KKVD). The report of the KKVD concludes that "*Based on the impact assessment studies conducted by the EQMS India Pvt. Ltd., New Delhi and prediction levels of pollutant mentioned by Maharashtra Pollution Control Board and Central Pollution Control Board, New Delhi, it appears that the activities to be undertaken by JSWERL for power generation at Jaigarh are not likely to affect horticultural plantation and mango plantation in particular as well as marine life significantly provided JSWERL's strictly maintains its adherence to its commitments made for preventing environmental pollution from time to time in long run. However, Alphonso mango being the choicest variety of mango and a premium quality, branded variety in national and international market is necessary to undertake detail study for a period of 4 years to evaluate impact. Similar type of research is also necessary for marine fisheries."* After taking this on record, the Committee recommended the Project for approval.

The Delhi High Court found a contradiction in the minutes of the two meetings of the EAC. In the first meeting, it had been decided that the application would be kept in abeyance for six months till the report of the KKVD was complete. The minutes of this meeting also record that as per the preliminary report submitted by KKVD it would take four years to undertake a detailed study to effectively evaluate the impact of the project. The report of KKVD was extremely guarded and cautious and was not based on studies done by them. Certain facts were brought to light by the Petitioner before the Court which proved that KKVD was not fully equipped to undertake a detailed study of the nature required to assess the impact of the project on the mangoes. The Court found that the EAC was aware and conscious of the fact that no scientific study with certainty was available on the basis of which it could be stated that the increase in the pollution levels and release of gases as a result of the Project would not cause any damage to the ecosystem in the area and the mango plantations. Yet it recommended the project for approval. The Delhi High Court therefore directed the EAC to re-examine the clearance granted to the Project after considering the reports of KKVD on the basis of the data collected and analyzed by them. The Court asked the EAC to keep in mind the principles of sustainable development as explained by the Supreme Court in mind while re-examining the issue. The Project would not be made operational till the EAC had granted an approval after re-examination. However, the Court allowed the Project Proponent to undertake tests and trials until then.

Subsequently, the Project was granted environmental clearance in 2010 by the MoEF. This has now been challenged before the National Green Tribunal by the same petitioner on the ground that the project has again been approved without studies having being completed. It is interesting to note that one of the

grounds for granting environmental clearance for the second time was "in view of the visit of the Sub Group of the EAC". An inspection of the Project site was carried out by a group headed by Prof (Dr.) CR Babu and the recommendations were placed before the EAC in its December 2009 meeting. The minutes of this meeting report Prof CR Babu's statement that "emission from TPP can be drawn more or less parallel with vehicular emissions. Hence in the absence of existing operating TPPs in Ratnagiri, the Sub-Group observed that Mango plantations in the vicinity of major roads where heavy vehicular traffic are present seem very healthier than those further away from town. It was felt that the reason could be that SO_2 emission gets converted into sulphate and NO_x into nitrate form, which may be good for the mangoes or other vegetations." Prof. Babu also stated that, "impact on flowering and fruiting due to vehicular emissions even if drawn parallel to TPP emission however, needs to be studied for which KKVD is to complete the study". Prof. Babu further stated that the representations of NGOs and locals seem motivated and are apparently biased. He stated that impact zone, if any, cannot be beyond a maximum of 5 km from the source of emission.

The manner in which the Environmental Clearance was dealt by the EAC and MoEF as well as the subsequent litigation reveals that the EAC failed to carry out detailed scrutiny of the project despite being located in an ecologically fragile area. The EAC recognized the fact that the studies are yet to be complete and yet recommended the project for approval. The MoEF did not independently verify the facts and merely accepted the recommendation of the EAC unmindful of the large scale concern of the local farmers and fisherfolks. The High Court order recognized the shortcoming in the working of the EAC and directed the MoEF to do a reappraisal. The MoEF is yet to insist on the four year study before the project is made operational. In fact the project was subsequently made operational based on MoEF approval. The High Court noted that the approval granted to the project was not in accordance with the precautionary principle. It needs to be emphasised that the approval to JSW was not an isolated case and such approval without adherence to the precautionary principle is more of a norm than an exception.

Mining at Village Pirna by Sesa Goa, Bardez, North Goa – Conflict of interest in EAC

Ms Sesa Goa (a Vedanta owned company) is located at Village Pirna and Nadora in Bardez Taluk, North Goa. The project was granted environmental clearance by the MoEF on 09-06.2009. This clearance was challenged before the National Environment Appellate Authority (NEAA), New Delhi by a local group called Pirna Naroda Nagrik Kruti Samiti.

The main ground for challenge was that at the Public Hearing held for the project, there was 100 per cent opposition on behalf of the local people to the mining project. Yet the Expert Appraisal Committee decided to overlook the opposition and in a mechanical fashion recommended for grant of environmental clearance. The minutes of the EAC meeting did not reveal that the EAC even bothered to look at the minutes of the Public Hearing. Further, the EAC at the time was headed by one Mr. M.L Majumdar who himself was on the board of four mining companies and therefore the decision was biased as held by the Delhi High Court in the case of Uttakarsh Mandal vs. MoEF.

SESA Goa however took the stand that 53 people supported the project. The NEAA on the other hand did not accept this contention since none of the 53 persons supporting the project were present at the Public Hearing. The NEAA in its order directed that the MoEF should constitute a Sub Committee of the EAC to visit the area and examine the reasons for the opposition to the mining and reexamine its impact on agriculture, horticulture, school children, health, habitation, river and ground water etc., and also in view of the fact that the MoEF has imposed a moratorium on mining in Goa. The NEAA further directed that the Sub Committee should have three environment experts and one mining expert and advance intimation be given to the persons of the area who opposed the project.

Mining in Ratnagiri by Ashapura Minechem Ltd – Large portions of EIA report copied verbatim

The environmental clearance for a bauxite mining project located in Ratnagiri, Maharashtra, to be operated by Ashapura Minechem Ltd, a listed Indian firm that is on the verge of starting the mine was signed off on 29 December 2006. On the face of it, the clearance, given by the MoEF on the recommendation of an internal Expert Appraisal Committee (EAC) on mining, consisting of 11 members,

was fairly routine but vital to Ashapura moving ahead on the project. But, it turned out that the critical EIA, the basis on which the expert group gave its approval, was based on data simply copied from a Russian bauxite mine report that had nothing to do with Ratnagiri's vegetation or ecology. The EIA was a critical element of the process of granting the license to Ashapura.

EIA Response Centre through an RTI filed on 22 August obtained a copy of the EIA, on the basis of which the project was cleared. ERC then sent the EIA to E-law, a US-based global network of environmental lawyers, for comparison with other EIAs. E-Law discovered that large portions of the Ratnagiri EIA were actually copied from a Russian EIA for a bauxite mine. "The Indian EIA is a pirated version of another one for a proposal by a Russian aluminum company to mine bauxite in the Komi Republic of Russia. It was submitted to the European Bank for Reconstruction and Development in April 2004," according to Mark Chernaik, a lawyer who works with E-law. Apart from the obvious mistakes on vegetation, there are numerous examples in the Ratnagiri EIA of text copied verbatim from the Russian report, including variables in surface water quality, precipitation, bird and mammal densities, and number of species and impacts of the project.

EIA Study for Mining Project of Careamol Mine, South Goa

The MoEF granted environmental clearance on 18-07-2007 to the mining project of Jaisinh Mangall at village Pirla, Quapem taluk, South Goa district. Mining was proposed to be carried out on an area of 98.76 ha. A local farmers association - Gomantak Shetkar Sanghatan - challenged the project before the National Environment Appellate Authority. The ground for challenge was that the mining lease is close to Village Pirla and thereby will have adverse impact on the people and the environment. The Rapid EIA report had concealed the presence of natural forest in the area and also the fact that the area had good agricultural land, plantation of coconut etc. There were rock carvings within 500 metres downstream of the lease area. Mining will change its landscape and would affect the plan of the state in developing the area into a cultural tourism destination.

The Goa State Agricultural Marketing Board had objected to the grant of mining rights since the area is cultivated with crops such as coconut, cashew, areca nut, and banana. The Public Hearing for projects was held more than 50 kms from the project site thereby making it difficult for the affected people to attend the same.

The issue was examined by the NEAA and it observed as follows:

"The Authority also perused the minutes of the 12th EAC meeting which examined the report of the Sub Committee sent to assess the impact of mining on wildlife and forest. The Sub Committee seems to have noted the presence of well-vegetated slopes and the rest of the area containing moderately thick vegetation but the EAC had failed to consider the impact of mining on it and also on agriculture and other plantation crops in the area including dairying and archaeological site located in the vicinity. The objections raised by the people during the Public Hearing have also not been considered by the EAC in its deliberations."

The NEAA conducted a site visit of the area and noted the presence of thick forest growth and also three streams. It concluded that removal of vegetation followed by excavation will cause serious impacts on river flow and on adjoining agricultural lands. The NEAA concluded:

"'The authority has thus come to the conclusion that the EAC has failed to appreciate the vital impact of mining on the livelihood of the people of the area and the long term impacts on the ecology and environment. It was also observed that the mitigative measures and the safeguards proposed can hardly take care or compensate the damage mining would cause to the area in the short and long term. Authority also feels that the contribution of this inferior iron ore to the states exchequer does not call for striking a balance between development and environment protection of the area."

Hubli-Ankola Railway Line – Work begins in spite of no clearance to diversion of forest land

The construction of the long pending railway line from Hubli to Ankola, Karnataka, has been stayed by the Supreme Court's Central Empowered Committee (CEC) for violating the Forest Conservation Act, 1980 (FCA). The 168-km broad-gauge line, earlier the Hubli-Karwar project, will cost an approximate Rs 1,153.08 crore and require 1,384.40 ha of land, of which 965 ha is reserved forest and 173 ha categorised

as wetland. The MoEF rejected the project proposal a few months back under the Forest Conservation Act. The Karnataka Chief Conservator of Forests says the project will harm the hydrological system of major rivers in the Western Ghats.

But even without the approval of the Centre, work on the project, a joint venture between the Ministry of Railways and the Karnataka Rail Infrastructure Development Enterprise, has commenced in 40 km of the stretch. This stretch includes 1.1 km of forest land, for which the proposal has been rejected. Under FC Act, in case a proposal for diversion of forest land is rejected, work cannot begin even on non-forest land. Besides, this track is meant only for freight. It will help only the iron and manganese mines of the Bellary-Hospet region for transportation of minerals to Goa, Tadri and Dharwar ports.

Centre for Environmental Sciences (CES), Indian Institute of Science that conducted the scientific survey has said that it was possible to lay the line with minimum impact on environment and wildlife. The team, which held a public hearing, on the line in Bangalore, opined that the railway line was better than having a four-lane highway between Hubli and Ankola, as the highway will use up more than 20 times the forest area than used by the railway line. "The damage to the environment in terms of destruction of trees, wildlife corridor, and sub-terrain water veins can be minimised by using modern techniques of construction since, in most of the distance in the environmentally sensitive areas, the railway line would pass through tunnels, there would be no danger of cutting across the wildlife corridor or destruction of trees," said scientist VN Nayak of Uttara Kannada Vijnana Kendra at Karwar. He said that the issues that came up for public hearing in Bangalore revolved mostly around the environmental aspects, but the antagonists of the railway line had forgotten the environmental damage the four-lane highway would inflict on the region. "The savings on fuel and environmental damage caused by the exhaust of the thousands of vehicles passing on the highway was far more damaging than the fuel used and pollution created by railway engines. Since the highway would be nothing less than 100 metres wide and not less than 180 km between Ankola and Hubli, the wildlife corridors will be permanently severed and forests cannot be regenerated in the area."

The above studies are only illustrative. It is a fact that only a fraction of projects are actually challenged before appropriate forums and the fact that few of the decisions of the Government can withstand judicial scrutiny is testimony to the poor level of appraisal that takes place. The reality is that no appraisal takes place. Projects are approved without going through the EIA report or the Public Hearing proceedings. No site visits are carried out and no independent members are present during the deliberation. It is therefore no surprise that most projects are approved by the MoEF despite its impact on the ecology. The Western Ghats is unfortunately facing the brunt of this environmental maladministration.

Towards Better Governance

Western Ghats occupy without doubt a key role in the maintenance of local and global biodiversity and have been considered as a biodiversity hotspot. Way back in the year 2000, the Supreme Court[1] while examining the issue of deforestation observed that there should not be any further depletion of forest cover in the sensitive areas such as the Himalayas and the Western Ghats. It is therefore imperative that the flaws in the existing mechanisms have to be critically addressed and a road map evolved. Today the MoEF is at crossroads without the ability to withstand the diverse pressures. The exponential increase in the number of projects and the "lackadaisical"[2] manner the Ministry has been performing demands significant public involvement to ensure that due diligence prevails. Further, there are several international covenants to which India is a signatory whose adherence is imperative in the context of the globalizing world.

Reforms in the existing clearance procedure

At present, projects requiring prior environmental clearances from the MoEF are required to be appraised by sector specific EACs. At present the following EACs are in existence: EAC for Thermal, Industry,

[1] T. N Godavarman Thirumulpad Vs Union of India. I.A 424 in W.P 202 of 1995. Order dated 8-1-2001

[2] CEC Commenting on MoEF in Lanjigarh case

Mining, Infrastructure, CRZ, New Construction projects, River Valley and Hydroelectric projects. Projects are evaluated in terms of site specific factors without considering the overall geographical location of the site. Thus a mine project or industrial project is considered irrespective of its larger location.

Given the sensitivity of the Western Ghats it is recommended that specific Terms of Reference (TORs) should be framed for preparation of EIA reports for projects located in it. This is critical given the fact that at present model TORs are framed, which do not take into account the larger geographical landscape. This should be prepared by experts including civil society members which make it imperative to focus on likely ecological and social impacts of the proposed project. Given the cultural significance of forests and natural features such as rivers and lake, Cultural Impact Assessment (as mentioned in the Akwe kon guideline of the Convention on Biological Diversity) should be followed.

The TORs should be available for public comments so that issues which might have been overlooked are included.

A special Western Ghats Expert Appraisal Committee should be set up (or may be part of the function of the proposed Western Ghats Authority) to further appraise a project after it is recommended by the Sector specific EAC. The Western Ghats EAC will have the power to examine the in principle approval in the light of cumulative impacts of the project and sensitivity of the particular site and the net adverse impact likely due to addition of a new project. The Western Ghats EAC should have the power to reject any project which has obtained an "in principle" approval from the sector specific EAC. It is essential that the EAC is composed of people well versed with environmental and social issues concerning the Western Ghats and have a proved track record in environmental protection and sensitivity to social issues. The Western Ghats EAC shall have jurisdiction not over Environmental clearance but also over approvals granted under the Forest (Conservation) Act, 1980 and the Wildlife (Protection) Act, 1972. Detailed guidelines should be put in place mandating the requirement for site visits before a final decision is taken. Cumulative Impact Assessments and Carrying Capacity studies should be made mandatory for all projects.

Inclusion of projects having significant impacts within the ambit of the EIA

The EIA notification as is in force excludes a number of projects from its purview. In the context of Western Ghats, many projects which have had significant impacts are not within the scope of the existing EIA regime e.g. the exclusion of irrigation projects such as the Kalsa Bhandura projects (which involves diversion of the West flowing Mahadei river to enhance the flow of water to the East flowing Malaprabha river) points to serious lacunae in the EIA system. Railway projects such as the Chamrajnagar Mettupallayam Broad gauge project between Tamil Nadu and Karnataka[1] and the Hubli Ankola Railway Line in Karnataka do not require any Environment Impact Assessments to be done. In both the instances, work on the project was stopped due to opposition by the Forest Department of the respective states as well as intervention of the Central Empowered Committee of the Supreme Court of India. But the larger environmental issues remain unaddressed. Recently the Central Government has initiated steps to revive both the projects and this is an issue of serious concern since existing EIA regimes are not applicable to railway projects[2].

There are a range of other projects which needs to be included with the scope of EIA although prima facie they may seem to be ecologically friendly. Examples of such projects are: mini hydel projects, windmills, tourism projects and resorts specially located within or in proximity of forest land and other ecologically sensitive areas. A comprehensive list needs to be prepared keeping the ecological sensitivity of the Western Ghats in view.

Need for Redressal Mechanisms: Appropriate Grievance redressal mechanisms needs to be put in place for the Western Ghats. If one analyses the appeals filed before the National Environment Appellate

[1] http://www.hindu.com/2010/11/25/stories/2010112555450300.htm

[2] http://www.deccanherald.com/content/127802/hubli-ankola-railway-line-report.html

Authority it is clear that the maximum number of cases have been filed from the Western Ghats region. It is clear that projects in the Western Ghats are legally opposed by affected communities and civil society groups. Given this fact it is essential that a dedicated grievance redressal mechanism is set up for disputes concerning the grant of forest, environment and wildlife clearances. In view of this, it is proposed that the proposed Western Ghats Authority be empowered under Section 5 of the Environment (Protection) Act, 1986 to issue directions. The other suggestion is to set up a dedicated bench of the National Green Tribunal for the Western Ghats. Given the wide jurisdiction of the National Green Tribunal on laws such as the Forest (Conservation) Act, Environment (Protection) Act, 1986 and the Biological Diversity Act, 2002, the bench for the Western Ghats comprising of judicial and expert members familiar with the environmental issues of the Western Ghats will help deliver justice on matters concerning the environment and also help in ensuring uniformity of judicial decisions with respect to the western Ghats.

Proper Sequencing of the Steps Required for Approval of Projects

There is a need to ensure that a *fait accompli* situation is not created with respect to projects seeking approval. Under the present law, the EIA process is largely independent of other approvals. Project proponents either acquire the land (e.g. Jaitapur Nuclear power project) or purchase the same (most mining projects) from the farmers or other landowners. The Public Hearing and Environment Clearance process generally is initiated after the process of purchase and acquisition of land has been completed. In such a situation, it cannot be expected that people will be free in expressing their views about a proposed project. The EIA process and Public Hearing is rendered a farce in such a situation. In respect of Forest clearance also a similar situation takes place wherein despite the project being located in a forest area, the environmental clearance is obtained first. Also it has been noted that in many instances, work begins in the non-forestland with the hope of obtaining approval for the forestland based on the expenditure incurred on the forestland. This has been the case of the Hubli Ankola Railway line in Karnataka as well as the Kalsa Bhandura irrigation project in Karnataka. The EIA Notification states as follows with respect to clearances from other regulatory bodies:

Clearances from other regulatory bodies or authorities shall not be required prior to receipt of applications for prior environmental clearance of projects or activities, or screening, or scoping, or appraisal, or decision by the regulatory authority concerned, unless any of these is sequentially dependent on such clearance either due to a requirement of law, or for necessary technical reasons.

If one focuses on the last two lines, it is clear that unless the project is approved by the MoEF no work can begin hence there is no need for land to be either purchased or acquired prior to an environmental clearance being obtained. Once land is acquired or purchased it is unlikely that the participation and decision-making can be fair and informed. There is thus a need to stipulate the logical sequence to be followed for seeking approval.

Regional Plans to be Given Priority

The EIA process does not take into account the fact whether a particular project is permissible in accordance with the local land use plan. Although, the Regional Plans have at times statutory backing they are largely ignored in the environmental planning and decision-making process. The questionnaire and the forms to be submitted along with the environmental clearance application mandatorily requires that the project proponent has to mention clearly as to whether the proposed project is in accordance with the approved management plan, it is unfortunately largely ignored in the appraisal process[1].

[1] Thus the Regional Plan, Ratnagiri- Sindhudurg resource Region 1981-2001 prepared by the Ratnagiri Sindhudurg Regional Planning Board recognizes that the Ratnagiri-Sindhudurg region is a very ecologically sensitive region and therefore any development activity undertaken in this region has to be necessarily developed keeping in view the ecological considerations. It is specifically mentioned that in the plan that good agricultural lands or lands with good agro-horticultural potential may not be deprived of their potential while locating industries in the region. It is further stated that legislative support could be provided to ensure that the rich ecosystem of the area is further enriched by industrial developments and not destroyed. However, despite this specific mention in the Regional Plan about the kind of activities, Environmental Clearances have been approved without any consideration of the Regional Plan.

Polavaram Dam: Displacement, Environmental Impacts and Forest Rights

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The Polavaram dam over the river Godavari with impacts spreading over three States has been in the limelight for all the wrong reasons – from displacement, discouraging public participation, causing irreparable ecological loss and inability to guarantee rights to the people as acknowledged within the framework of our Constitution. It not only submerges over 300 villages but also has serious implications for forest and environmental governance. This report, after describing the faulty environmental and forest clearances and their outcomes, indicates alternatives some of which virtually obviate the need for massive submergence. This calls for intervention from other regulatory institutions seeking to improve ecological governance. This report is based on field information, analysis of toposheets & other maps and from proceedings of litigations on the project.

Seventy years have passed since the first proposal to make a dam on the Godavari in Andhra Pradesh was conceived. In all these years it has given rise to many controversies and conflicts. The project is still a subject of several litigations.

The Andhra Pradesh government is making valiant efforts to make progress on the dam. It played a huge trick in 2005 by convincing the world that the dam and the water carrying canals were indeed different projects. Thus it found a way to invest in the canals, which receive much less attention in our environmental governance regime. Contractors were generously given advances to initiate work on different segments and the canal works have moved significantly ahead, despite several segments yet to be initiated.

The impacts of the project as it is currently being designed would be colossal. Nearly 350 habitations would be lost forever, over 4000 ha of forests will be lost; habitats of several species including some endangered will be gone forever.

While a number of reports and studies have been undertaken on this subject, this narrative hopes to highlight the various elements that would constitute the body of activities by the State and other players that could be called “ecological governance”.

Godavari River and the Polavaram Dam

The Godavari is the largest river in south India and the second largest in the Indian union. It rises in the Sahyadri Ranges, at an altitude of 1200 m above mean sea level near Triambakeshwar in the Nasik district of Maharashtra and flows across the Deccan plateau from the Western to Eastern Ghats. Rising in the Western Ghats about 80 km from the shore of the Arabian sea, it flows for a total length of about 1500 km in a general South – Eastern direction through the States of Maharashtra and Andhra Pradesh before it joins the Bay of Bengal, about 90 km to the south of Rajahmundry. Maharashtra, Chhattisgarh, Karnataka, Orissa and Andhra Pradesh are the five riparian States.

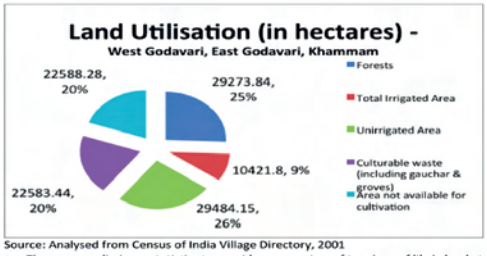
Mr. Sonthi Ramamurthi, Advisor to the Madras Government on Godavari River, conceived a project called Ramapadasagar in 1942. Its initial purpose included navigation as an important element. As investigations were initiated the project evolved into a much larger endeavour. The objective of navigation was abandoned and power was treated as a subsidiary component and irrigation of the already well-irrigated areas remained the key objective. Popularly known as Polavaram dam this was later rechristened Indira Sagar Multipurpose Project. It is by far the largest project in India in terms of geographical displacement of disadvantaged groups, i.e. indigenous people or tribals in the Scheduled districts of three states viz. Andhra Pradesh, Orissa and Chhattisgarh. With the current outlay of nearly Rs. 20,000 crores, the Polavaram dam will have a thin sheet of water covering a very vast region (MMDL to FRL 5m) and making a very large area bound to be periodically inundated.

The State of Andhra Pradesh conceded in the Appellate Authority that the impacts of the dam would be as

follows as per the 2001 Census-

Villages and Population affected under submergence (units in numbers)			
State	Villages	Families	Population
Andhra Pradesh	276	44,574	1,77,275
Chhattisgarh	16	2,335	11,766
Orissa	11	1,002	6,316

This does not include other affected people such as those in the cut-off zones in each of the rivers and streams where submergence and back-water effects would take place. Neither does it look at downstream communities that would be affected by the reduced flow of water and will have implications even for the coastal fisher folk and thus extend beyond the affected region as discontinued systems of forests, productive land and the key elements of the ecosystem including wildlife corridors. Khammam district will be most affected with 205 out of total 276 submergence villages of Andhra Pradesh.
Current land utilization in the three districts gives an overall glimpse of land utilization which will be partly or wholly submerged under the Polavaram dam project.



Other contrasting factor is the large number of marginal land holdings in the three districts, almost 20 per cent of the total land holdings and similar area is under marginal land holdings which are less than or equal to 1 hectare. The total Scheduled Caste population comprises 16.79 per cent of the total population among 188 villages. Also, 37.86 per cent of the Scheduled Tribe population comprises a considerable proportion of total population in the identified villages.

Godavari River Water Dispute and the Bachawat Award

The Godavari river water usage was determined by the Godavari Water Disputes Tribunal (GWDT) headed by Justice R S Bachawat as the Polavaram project was a matter of contention under the Inter State Water Disputes Act 1956. The Committee gave its final award on the project on 7th July 1980.
The Committee noted that Andhra Pradesh proposes to construct the Polavaram Project for the purpose of:

(1) Irrigating large tracts of land in its territory by a canal taking off on the right, up to Krishna river and the other canal on the left upto Visakhapatnam and also by lift canals on both sides;
(2) Making available water for domestic and industrial purposes in its territory;
(3) Production of power; and
(4) Diverting water of the river Godavari into the Krishna river so that the water thus made available may be used for irrigating lands in the Krishna Delta and as a consequence more water may be available upstream of Nagarjunasagar to be utilized by the three States namely, Andhra Pradesh, Karnataka and Maharashtra.

There are a number of reports concerning the dam and its design and various other aspects of it and there are variations among them. However even before the Tribunal award, the State of Andhra Pradesh had submitted Polavaram Project Report Volume I, May 1978 (Exhibit APG-360) for the consideration of Central Water Commission (CWC). Another project report called the Polavaram Project Stage I of March 1978 (Exhibit No. APG-364) had also been submitted by the State of Andhra Pradesh to the CWC for securing clearance. These were filed before the Tribunal.
Some basic features of the Project (dam at Polavaram) as presented in the Report (March 1978) are:

(a) FRL: + 150.00.
(b) Spillway crest level: + 94.00.
(c) Height of gates: 42 feet i.e., from EL. 94.00 to EL. 136.00.

(d) Breast wall from EL 136 to EL 150 and above.
(e) Number of gates: 50 of size 50 feet X 42 feet.
(f) MDDL: + 145.00.
(g) Live storage of the reservoir 28.31 T.M.C. between EL. + 145.00 and + 150.00.
(h) Two canals, one on the right bank and the other on the left bank, each with a full supply capacity of 10,000 cusecs.

The States of Maharashtra and Karnataka had been agitating for utilization of more waters of the Krishna by diversion of Godavari water into the Krishna. To resolve this dispute, Andhra Pradesh entered into the Agreement (Annexure "C" to the Final Order) with Karnataka on the 4th August 1978. To this Agreement Maharashtra is also a party. Clause 7 of Agreement provides as follows:

"(a) Subject to the clearance of Polavaram Project by the Central Water Commission for FRL/MWL plus 150 feet, the State of Andhra Pradesh agrees that a quantity of 80 T.M.C. at 75 per cent dependability of Godavari waters from Polavaram Project can be diverted into Krishna river above Vijayawada Anicut displacing the discharges from Nagarjunasagar Project for Krishna Delta, thus enabling the use of the said 80 T.M.C. for projects upstream of Nagarjunasagar.

(b) The States of Andhra Pradesh and Karnataka agree that the said quantity of 80 T.M.C. shall be shared in the proportion of Andhra Pradesh 45 T.M.C., Karnataka and Maharashtra together 35 T.M.C.

(c) Andhra Pradesh agrees to submit the Polavaram Project report to Central Water Commission within three months of reaching an overall agreement on Godavari waters among the five party States.

(d) Andhra Pradesh agrees to bear the cost of diversion fully.

(e) Maharashtra and Karnataka are at liberty to utilize their share of 35 T.M.C. mentioned in sub-para 7 (b) above from the date of clearance of the Polavaram Project by Central Water Commission with FRL/MWL of plus 150 feet irrespective of the actual diversion taking place.

(f) It is also agreed that if the diversion at 75 per cent dependability as stated in clause (a) above exceeds the said quantity of 80 T.M.C. due to diversion of Godavari waters from the proposed Polavaram Project into Krishna river, further diminishing the releases from Nagarjunasagar Project such excess quantity shall also be shared between the three states in the same proportion as in subclause (b) above".

Subsequently, the Tribunal recognised that a FRL/MWL of +150 ft cannot be sustained with submergence in other upstream states at the same level. The Tribunal then considered the matter from the standpoint that the CWC may take the view that in spite of making provision for observing the safeguards, the excess submergence due to backwater effect could not reasonably be controlled except by lowering the FRL/MWL of the Polavaram Project. Under such circumstances there were two alternatives before the Tribunal. One was not to permit excess submergence in Madhya Pradesh and Orissa and amend the Agreement dated the 4th August, 1978 in such a manner that the benefit granted to the States of Maharashtra and Karnataka remained intact. The other was to permit excess submergence of the lands of the States of Madhya Pradesh and Orissa and keep Clause 7 of the said agreement as it was. For reasons given in the Report, the Tribunal thought fit to choose the first alternative.

Considering all the aspects of the matter, the Tribunal directed that the Agreement of 4th August, 1978 between the States of Karnataka and Andhra Pradesh be modified as follows:

(1) In Clause 7 (a), after the words "FRL/MWL plus 150 feet" and in Clause 7 (e), after the words, "with FRL/MWL of plus 150" the following words be added "or such other FRL/MWL as the Central Water Commission may find necessary and technically feasible keeping in view that as far as possible (i) all the areas of the State of Andhra Pradesh mentioned in the Polavaram Project Report of May, 1978 and Polavaram Project Stage-I of March, 1978 are brought under irrigation, (ii) the other benefits mentioned in the said reports of the State of Andhra Pradesh are realized, and (iii) water to the extent of 80 T.M.C. or more is diverted to the river Krishna".

(2) After Clause 7 (a), the following proviso be added: "Provided that the excess submergence over and above the natural submergence due to all effects including backwater effect on account of the construction of the Polavaram Dam does not exceed the limits mentioned in the Agreement dated the 7th August, 1978 between the States of Maharashtra, Madhya Pradesh and Andhra Pradesh and the Agreement dated the 15th December, 1978 between the States of Andhra Pradesh and Orissa or in any other agreement that may be entered into hereafter."

After hearing the contentions of the different parties, the Tribunal stated - "It is in the national interest that the Polavaram Dam be constructed with F.R.L./M.W.L. + 150 feet. It is also considered by the Government of India that this is technically feasible…***The only thing that remains to be worked out is how to design the dam and fix its operation schedule so that as far as possible the excess submergence of the areas of the States of Madhya Pradesh and Orissa does not exceed R.L + 150 feet due to all effects including backwater effect."***

While the Andhra Pradesh Government contends that the current design is within the framework of the award, Chhattisgarh and Orissa have contested the design and the specific fact that the only safeguard they can have in the absence of any control over the design and operation of the dam is that the backwater effects should be limited to +150 RL.

The Challenge of the Forest Clearance

The manner of the grant of the forest clearance for such a vast area was a matter of contention as an Impleadment Petition was made under the on-going Godavarman Case and referred to the Central Empowered Committee (CEC).The Applicants opposing the project, who have also been supported by the State of Orissa, have taken a stand that as per the Bachawat Award dated 7.7.1980, the project has to be designed by the Central Water Commission and Operation Schedule has to be given by it alone in view of effects of the back water on area of submergence in the State of Andhra Pradesh, Chhattisgarh and Orissa. The Central Water and Power Research Station, Pune, an organization of the Central Water Commission is the competent authority to conduct model studies to arrive at the correct back water levels. The CEC observed "The Polavaram Multipurpose Project being constructed at an estimated cost of Rs. 12,590.70 crores involves the use of 3833.39 ha of forest area, out of which 3,731.07 ha falls in Andhra Pradesh, 102.16 ha in the State of Orissa and the balance 0.16 ha in Chhattisgarh. The project involves use of 187.29 ha of forest area falling in Papikonda Wildlife Sanctuary in Andhra Pradesh. It also involves use of 1553 ha of non-forest area within the said sanctuary."

The forest area required for the project in the State of Andhra Pradesh is virgin mixed deciduous forest of Eastern Ghat which is very important from the ecological point of view. The area contains endangered species such as Tiger, Panther, Gaur, Wild Dog, Sloth Bear, Barking Deer and other fauna. Many important species of flora are found in the area. It is a unique and rich wilderness of this country.

As per the applicant, also supported by the State of Orissa, the project work has been started without obtaining approval under the Forest Conservation Act (F.C. Act) for the forestland falling in the State of Chhattisgarh and Orissa. This is in violation of the guidelines issued for the implementation of the F.C. Act. The proposal for seeking approval under Section 2 of the F.C. Act necessarily has to be filed in the prescribed pro forma by all the concerned States and not only by the State of Andhra Pradesh. In the absence of model studies, the exact extent of forest area required for the project cannot be assessed.This exercise has not been done so far and therefore the correct assessment of submergence of forest land, private land, displacement of village population and adverse environmental impact assessment cannot be made in any of the three affected States. The commencement of the work on the project without obtaining the clearance from the CWC is in violation of the Hon'ble Supreme Court's judgment in the case of the State of Karnataka vs. the State of Andhra Pradesh reported in (2000) 9 SCC 572 at Para 52 page 641 (f).

On the other hand, the State of Andhra Pradesh has taken the view that all issues pertaining to the construction of the Polavaram Project have been settled by the Agreement dated 2.4.1980 entered into by the State of Andhra Pradesh with the States of Orissa and Chhattisgarh and by the Bachawat Award dated 7.7.1980. As per the Award, the States of Orissa and Chhattisgarh have the option of either seeking compensation for land affected above + 150 feet level or for the construction of embankment at the

project cost. In case the latter option is exercised, no land above + 150 feet level will be affected in either of these two States. This will also prevent requirement of forest land coming under submergence in these States. In any case it will be ensured that use of forest land for the project is undertaken only after obtaining the requisite approval under the F.C. Act.

As per the applicants, the detailed survey of the wildlife and the adverse impact on the same because of part submergence of the sanctuary area has not been carried out. The project proponents have shown different figures before different authorities. Since the actual submergence after the construction of the dam may go up by another 80 to 110 feet, the adverse impact of the project on the flora and fauna can be assessed only if an independent body like the Wildlife Institute of India, Dehradun, carries out studies.

The forest area going under submergence is very rich from the point of view of biodiversity and contains a number of red listed species. It has wrongly been stated in the EIA report that there are no endangered species of flora found in the submergence area. A unique dwarf breed of goat commonly known locally as the "*KanchuMekha*" originates in the region coming under submergence.

During the site visit it was also observed by the CEC that the forest area coming under submergence is virgin mixed deciduous forest of Eastern Ghat which is most sensitive, rich and important from the ecological point of view. The diversion of the above forest land should be permitted only after other alternatives have been explored and the proposed area has been found to be the best alternative which cannot be avoided /foregone. In such a situation adequate compensation for the loss of the forest area is required to be made by adding adjoining virgin forest area to the sanctuary and by a series of special protection measures for the area.

The applicants opposing the project on the grounds that it has been designed and is being implemented without proper assessment and examination of the alternatives, which will result in much lesser submergence and displacement of tribal communities and would also be relatively cost effective, have pleaded for it.

It has been confirmed by the State of Andhra Pradesh that it commenced the project work on the non-forest land. During the course of the hearing, the Applicant State was advised by the CEC to stop the work on the ground that the guidelines issued by the MoEF for implementation of the F.C. Act prohibit undertaking of project work on the non-forest land pending approval under the F.C. Act. The project work is reported to have since been stopped. (As of 15.11.2006)

The Challenge of the Environmental Clearance

The manner in which the Environmental Clearance was granted was also a matter of contest. An appeal was filed at the National Environmental Appellate Authority (NEAA). That although the project is to have its impact on the neighbouring states of Chhattisgarh and Orissa, there is no specific information about these impacts. Nor has there been a public hearing in either of the States. There is no information regarding the likely affected people and the R&R plans for them in the EIA. According to the latest estimates, the number of villages to go under submergence now is 276 from Andhra Pradesh, 13 from Chhattisgarh and 10 from Orissa. Number of affected families also has gone up to 27,798 from Andhra Pradesh, 1,372 from Chhattisgarh and 814 from Orissa.

The procedure for site clearance was not followed. As per the EIA Notification, the location of major Irrigation Project Site is required to be cleared regarding its suitability or otherwise by the Ministry of Environment and Forest, while initiating any investigation and surveys of the project. The Site Clearance shall be valid for a period of five years for commencing the construction. As per the information made available to the public, no such Site Clearance seems to have been obtained for the proposed Polavaram Project.

As per the Guidance and Checklist given in EIA Manual January 2001, the Environment/ Ecological Impact Assessment did not cover important aspects like -

a) No project option or alternate sites considered for meeting the proposed development by the project;
    1. Disturbance and destruction of vegetation, wildlife destroyed or displaced, wildlife habitat reduced, ecologically sensitive areas -wildlife sanctuaries, tribal settlements; and

a) Ecological Inventory of most endemic and endangered species affected by the project Impact on ecology, people and community.

That Impact Assessment Agency (IAA) i.e., MoEF, which is required to evaluate and assess the impacts of the project, ignoring the guidelines of EIA Manual, has reduced the entire EIA Process of Polavaram project to mere ritual and formality, which can be judged from the following facts:

i. Adequacy and Authenticity of EIA Report, EMP etc., submitted by the project proponent, which are questionable, have not been subjected to thorough scrutiny;
ii. Viable alternative to proposed project to mitigate submergence of Reserve Forests; and
iii. Tribal habitats and their displacement, has not been examined and evaluated.

The formality of conducting public hearing was completed on 10-10-05, in spite of the fact that the project was overwhelmingly opposed by the public. The project proposal along with the proceedings of Public Hearings and NOC of Andhra Pradesh Pollution Control Board has been received by MoEF on 17-10-05, saying that the project is favoured in the Public Hearing.

The project proposal was considered by the Expert Committee of MoEF on River Valley Projects, which met on 19-10-05 (within two days of receipt of the proposal) and recommended Environmental Clearance, subject to submission of information on corrected list of Flora & Fauna, FCC (original) of land use and land cover, soil data, R&R information etc. These were reported to have been submitted on 20-10-05, the very next day of Expert Committee meeting.

The MoEF accorded Environmental Clearance to theProject proposal on 25-10-05, even without Forest Clearance and other clearances from National Wildlife Board regarding Papikonda Wildlife Sanctuary, within 15 days from the date of conducting Public Hearings, 8 days from the date of receiving the proposal and 6 days from the date of Expert Committee recommending Clearance subject tosubmission of certain information.

The Polavaram Project EIA is based on outdated studies, as the report was prepared in 1985. The project relies on hydrological, forest and environment and design clearances made as far back as 1980. It then expected 150,697 people to be displaced from 226 villages. Since then the population has grown considerably. The data contained in executive summary of EIA regarding number of villages and population to be displaced does not tally with 2001 census figures and is far from ground realities. Further investigations are needed. As the present EIA is not comprehensive and contains inadequate or misleading data, the authenticity of the report is questionable and needs to be put to a thorough scrutiny.

There was serious opposition at the Public Hearing. The people likely to be affected by the submergence, mostly tribal people, have not been informed about details of the project since the executive summary of the so called EIA report has not been made available to them in their local language. They are also not aware of the rehabilitation packages being offered, and in short the State administration has totally failed to make the affected people in remote villages understand the implications of the Polavaram Project. The people are by and large kept in the dark about the project. This is a serious concern. The current Government of Andhra Pradesh estimates that the Polavaram will submerge 117,034 people (Irrigation Department, Indirasagar Project, Document released by GoAP for Public debate on 5-6-2005). Earlier the Planning Commission estimated that the Polavaram dam would displace 154,484 people with 10.2 per cent belonging to the Scheduled Castes and 52.9 per cent to Scheduled Tribes. The official count for the Sardar Sarovar dam in Gujarat is less than Polavaram at 150,720 people with 62 per cent belonging to tribal communities.

The main part of the area of submergence falls under the Scheduled (Agency) Area with tribal people belonging to Koya, Koyadora and Kondareddy communities. A few settlements exist with a population of more than 2000 people but most are significantly smaller hamlets. The command area and thus the beneficiary from Polavaram is predominately the plains where non-tribal are in clear majority. The Polavaram project like any other major project that has been planned by the Irrigation Department, perpetuates the plight of tribal population of being on the losing side of development.

The Polavaram Left Canal is currently being built to run parallel to the one coming from Tadipudi Lift Irrigation Project, is some parts as close as 400 m from each other. This would double the area of displacement estimated at 6600 acres in total as well as use up twice the resources for the constructions.

The size of displacement caused by the left and right main canal should not be ignored given the length and size of them. The left canal is 163 km in length with an unknown width. More than 2000 farmers in 10 villages with less than an acre of farm land are likely to be affected by the newly started construction of Polavaram 7th reach canal. People displaced by canals have historically not been considered as Project Affected Persons (PAP) in any dam project in Andhra Pradesh.

In view of the above the Appellant raised the following grounds in support of the Appeal -

(i) The procedure prescribed for issue of Site Clearance Order was not followed by Impact Assessment Authority (MoEF);

(ii) The Environment Impact Assessment Report (EIA Report) prepared was based on outdated data;

(iii) The Environment Impact Assessment made by Ministry of Environment and Forests was inadequate, and it ignored the guidelines of the EIA Manual thereby reducing the entire EIA process to mere ritual and formality in this case;

(iv) The Public Hearing conducted on 10.10.2005 did not follow the prescribed procedure and it was therefore defective and incomplete; and

(v) The Project will adversely affect large number of people, displacing 154,484 persons with 10.2 percent belonging to Scheduled Castes and 52.9 percent belonging to Scheduled Tribes but mainly benefiting the people from plains at the cost of the Scheduled Castes and Tribes as well as small and marginal farmers and submerging vast area of land including forest.

Based on the above grounds, the appellant prayed for the following:

a) Pass an order staying the operation of Environment Clearance Order granted for the project;
b) Pass an order directing that a proper EIA be re-done taking into account all the relevant factors, providing complete information about the nature of impact due to the project and taking necessary mitigative measures;
c) Pass an order declaring the Public Hearing conducted on 10.10.2005 as null and void and directing a fresh Public Hearing to be conducted following the prescribed procedure, specifically providing adequate information and documents in local language to the affected people; and
d) Pass an order directing issue of a fresh Environment Clearance Order on merits only after completing the above formalities.

Having due regard to the facts and material placed before it and arguments and counter arguments put forward by the counsels of the different parties to the appeal, the following orders are passed by the Authority-

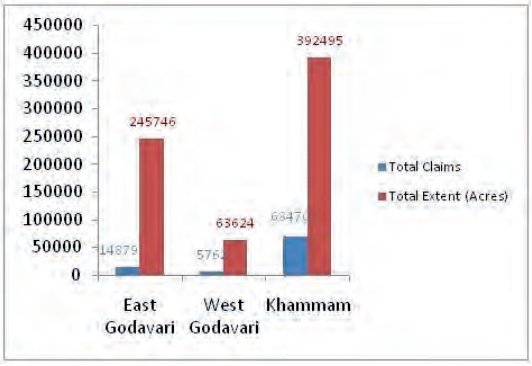
(a) The appeal is partially allowed to the extent that the impugned Environment Clearance Order No. J-12011/74/2005-IA.I dated 25.10.2005 issued by Respondent -1 (MoEF, GOI) is quashed on the ground that the impugned order was passed taking into consideration the Public Hearing which by itself was incomplete as it was not conducted in affected areas of Orissa and Chhattisgarh resulting in denial of access to information and opportunities to the affected people to express their views/opinions etc. on the Environmental Impact of the Project and consequential violation of Principles of Natural Justice; and

(b) The Respondent -3 (GoAP) is at liberty to restart the process of Public Hearing from the stage at which the infirmity has crept in, complete the process of and proceed further in accordance with the provisions of the relevant EIA Notifications in force. The Andhra Pradesh Government approached the A.P. High Court to keep the order suspended as it would have meant all the activities relating to the project had to be stopped.

Forest Rights Act

The Scheduled Tribes and Other Forest Dwellers Act was enacted in 2006 with an avowed objective of undoing the historical injustices done to forest dwelling communities. The law itself was an outcome of struggles by several communities and institutions supporting them and the growing impossibility of industrialization in these regions due to strong objections from the communities. In brief, the law provides for individual and community rights to be established over land and resources traditionally being utilized by the communities and to also enable their own management rights over these resources.

In Andhra Pradesh, Tribal Welfare Department is the nodal agency looking towards implementation of Forest Rights Act. The large submergence of scheduled region under the Polavaram Dam project is incidental to design but demands a much better performance and prioritization of PESA and FRA before the physical works on the dam site begins. Already, the works over left and right canal (running length of almost 375 Kms) has begun and contractors have been identified and works awarded for various sections. As per one government memo, the number of forest interface villages is around 3030 in the three primary affected districts coming under submergence. As of now only few villages in the affected zone have been taken up for settling the claims.



District	No. of Forest Interface Villages	No. of Villagescovered Under RoFR Act	Left Over
Khammam	2143	633	1510
W Godavari	156	50	106
E Godavari	731	245	486
Total	3030	928	2102

Source: Government Memo No. 355/LTR-1/2008 dated 13.01.2011
Accessed http://www.aptribes.gov.in/pdfs/rofrgmc355_13012011.pdf on 22 October 2011

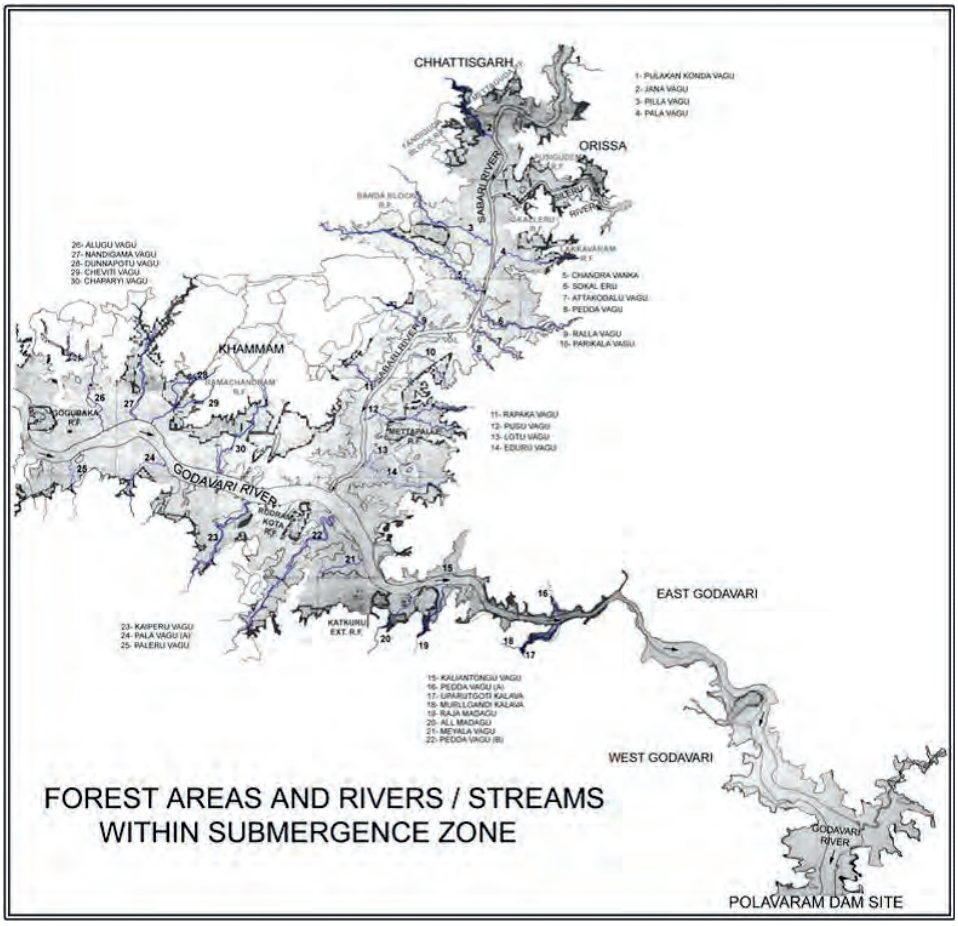
District Wise Claims (Individual & Community) & Extent Accepted and Rejected at SDLC/DLC Level(41 community claims in West Godavari were rejected by DLC)

District	Individual Claims	Extent in Acres	Community Claims No.	Extent in Acres	Total Claims	Total Extent
East Godavari						
Certificates Issued	7490	28836	369	210009	7859	238845
Actual claims identified at beginning	14059	35489	820	210257	14879	245746
Difference or Rejection	-6569	-6653	-451	-248	-7020	-6901
West Godavari						
Certificates Issued	1189	2645	130	51689	1319	54334
Actual claims identified at beginning	5474	12001	305	51689	5779	63690
Difference or Rejection	-4285	-9356	-175	0	-4460	-9356
Khammam						
Certificates Issued	31961	114082	144	96304	32105	210386
Actual claims identified at beginning	67790	289914	680	102581	68470	392495
Difference or Rejection	-35829	-175832	-536	-6277	-36365	-182109
TOTAL Certificates Issued (all three districts)	**40640**	**145563**	**643**	**358002**	**41283**	**503565**

The Panchayat (Extension to the Scheduled Area) Act, 1996, popularly known as PESA, makes it mandatory to consult the Gram Sabha in scheduled area for acquisition of land, rehabilitation and resettlement. Clause 4(2) of the V Schedule of the Constitution of India makes it mandatory for the State Governments to consult the Tribal Advisory Councils on all matters pertaining to the welfare and advance of the Scheduled Tribes in the State as may be referred to them by the Governor.

The present project will affect the life of the Scheduled Tribes in all the three States. It is therefore the Constitutional obligation on the part of the States of Chhattisgarh and Orissa to seek the advice of the Tribal Advisory Council before giving their comments for the project. The project is being implemented without obtaining permission from the National Commission for Scheduled Tribes and Scheduled Castes. The rehabilitation and resettlement package has not been approved by the Ministry of Tribal Affairs

The State of Andhra Pradesh has taken a view that it will abide by the provisions of the R&R package as approved by the Ministry of Tribal Affairs. The land belonging to the tribals could be acquired for undertaking developmental activities and such acquisition does not result in diminution of scheduled areas or cessation of that part of land in the scheduled area. It also does not result in alteration of scheduled areas. Such acquisition of land cannot be termed as contrary to Para (6) of Schedule V of the Constitution of India.



The meeting of the Tribal Advisory Council (TAG), which was convened on 1.7.2005 discussed the A.P. R&R Policy, 2005 and resolved that (a) Scheduled Tribes shall be given land in the ayacut and (b) it shall ensure prohibition of transfer of land in ayacut and other irrigation project. The R&R Policy is being suitably modified accordingly to provide land for land compensation to tribals in the command area or in other areas. During the 97th TAG meeting conducted on 27.2.2006 more than 80 per cent of the members agreed for the construction of the project with better implementation of R&R Policy. A report on the project was furnished to the Chairman, National Commission for Scheduled Tribes on 29.10.2005. The members of the Commission, after visiting the State, expressed satisfaction on the R&R policy.

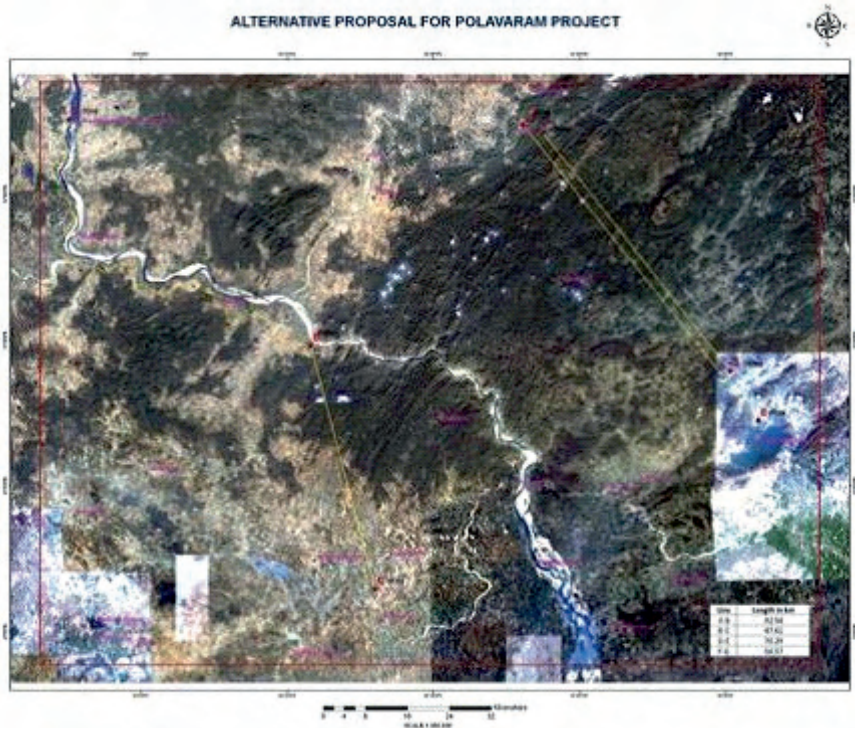
The Andhra Pradesh Government claims that Gram Sabhas have been conducted in all the Village Panchayats and most of the villages have favoured the project. The project affected scheduled tribes persons are being resettled in the Schedule V area only. They are being provided with land to land compensation in scheduled area only by upholding their political, constitutional and social rights.

The socio-economic survey for the Polavaram project in Andhra revealed that consultations at the ground level were completely missing. Even the gram panchayats and local Mandal Parishads did not have any information about the extent of submergence or what government plans had in store for them. http://www.csdindia.org/projects/documents/SocialImpactAssessment.pdf

The Central Government gave the clearance on 28.07.2010 following a compliance report by GoAP but stated that "this approval, however, is based on the clear understanding that the GoAP will take all steps to ensure that no submergence of forest land on account of this project would take place in Orissa and Chhattisgarh. Further, it is also based on the assurance of GoAP that there are no forest rights that need to be settled under the FRA Act, 2006 in the project area and that the approved R&R package would be implemented by the State Government in a time bound, transparent and *pari passu* manner".

Safety of Dam and Alternatives

The dam break analysis made in the EIA is incomplete since the assumptions made for dam break and peak maximum flood and geological flood foundation and the design of the earth dam and the spillway are totally against the engineering practices. Many experts including the erstwhile Water Resources Minister, Mr. K.L. Rao, have expressed their concern about the suitability of the site for the construction of the dam. The spillway capacity is inadequate. The normal rule of thumb is to design spillway 1.5-2 times of the probable maximum flood which is not being followed. Because of diversion of water to the right in a width of 900 m and blocking the main course of the river by earth-cum-rock fill, the dam will not be able to withstand the high force of the river. No rock for foundation is available until great depths. The local black soil is not suitable for the construction of earth-cum-rock fill dam. The soil from the other areas will only lead to additional costs.



Shri T Hanumantha Rao's concept of Low Barrages

The concept of the alternative proposals is to obtain a usable (live) storage of 75 T.M.C. at a number of low barrages, instead of at one place at Polavaram Dam. The storages created in these low barrages will entirely be 'Live' since water can be drawn up to bed level (similar to flow in an unobstructed river) and hence there will be no dead storage or MDDL. The cost as per the alternative proposals (Rs. 7143 crores) would be lesser than the cost of original Polavaram (Rs. 8713.09 crores) and far lesser than Rs.19, 108.53 crores currently estimated. Also the number of villages submerged would be 72 as against 276 in the original Polavaram dam proposal as well as 345 which is there in the current design. Generation of hydropower would be higher at 1038 MW and 960 MW of original Polavaram proposal.

SHRI.M.DHARMA RAO's alternate proposal

The alternate proposal envisages a comprehensive utilization of the existing projects which are in the active consideration of the government in the Godavari valley. In this proposal it is not necessary to construct the Polavaram reservoir as now proposed. The alternate proposals envisages construction of barrages and number of small balancing reservoirs across many streams joining Godavari and will be storing water throughout the year. Therefore it contributes to the improvement of ground water in the entire delta systems and will be stabilizing the ayacut of Godavari and Krishna deltas.

The proposed canals in the left and right flank will have dead length for a certain stretch but cost of these canals including barrages, balancing reservoirs and tunnels will be far less than the construction cost of Polavaram reservoir and cost of rehabilitation of villages and people. As the proposals avoid huge submergence of lands, forest and displacement of 300 villages and two lakhs of people, it will be acceptable to the people. There will be no section in the society opposing the alternate proposals as it may involve submergence of only 4 or 5 villages, that is to say the entire displacement of tribal people and

ɔmergence of 300 villages is avoided and all the envisaged benefits can be achieved without creating any acrimony in the society and all sections will welcome the proposals. Further, one more important aspect is that there is no submergence in the neighbouring States and there are no interstate problems.

Way Ahead

The Polavaram Project is currently steeped in controversies and will be a monumental failure of governance if the project goes ahead with the existing design and is the cause for displacement of a large number of people, perhaps around 1 lakh families. The number of cases that have now accumulated on the project and the Supreme Court's insistence that the work should not be stopped with a caveat that it could be broken down reflects very poorly on every arm of governance.

Therefore, it is important in the interest of the nation and particularly a huge number of tribals who would be affected by the mammoth project that an alternative design be focused upon. While the two technical alternatives within the framework of the current project have been described there is also a very radical proposal by Shri.K.Sriramakrishnaiah.

His study revealed that about 600 T.M.C. can be pumped without any head works across the Godavari. Utilising streams as carriers of pumped water and swapping of water from one system to the other has resulted in considerable economy, least disturbance to the environment and needs less maintenance. The scheme to irrigate 58 lakh acres, providing 40 T.M.C. for drinking and industries, 10 T.M.C. to Hyderabad and 40 T.M.C. to Rayalaseema is made out after detailed study of levels and topography.

The Godavari flows almost close to the northern border. The water is to be transported to higher levels negotiating the rising topography and over long distances. Lift irrigation is therefore a must and distances to be reached are great. The following strategies are evolved and adopted -

1. Use of natural water courses to function as canal systems.
2. Low head pumping arrangements.
3. Storage reservoirs submerging only unproductive lands without much rehabilitation problems.
4. Swapping of waters from one system to the other.
5. Beneficiaries' participation and management from investigation to execution and operation.

The cost per acre is as low as Rs.11, 000 to 12,000. The total power required during 4 to 5 months of rainy season is about 3000 MW, which can be managed over a period of 15 to 20 years. All clearances can easily be obtained since no inter-state problems are involved and only limited problems relating to environment are involved. Water supply to the Hyderabad city can be had at 30 to 50 per cent of the cost of bringing water from the Nagarjunasagar.

New financial instruments need to be developed. The beneficiaries can finance the scheme, if only suitable steps like enactments of the required acts, and create the required atmosphere. The government can act as friend, philosopher and guide, generously lending financial, administrative and technical support when needed at the right time.

The current controversies could be resolved only when a serious attempt is made by the Andhra Pradesh Government and the Central Government to evolve a mechanism to sincerely evaluate the alternate models and to come up with a process by which the displacement and ecological havoc to be caused by the project is minimized.

Regulatory institutions of the Government must be suomoto seized of this, rather than placing even this intellectual and judicial burden on the very same population.

SPWD's Mission

"To prevent arrest and reverse
degradation of
life support systems,
particularly land and water
so as to expand
livelihood opportunities
in a sustainable
and equitable manner
through people's participation"

Society for Promotion of Wastelands Development

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