Integration of biodiversity in impact assessment: *Impediments, opportunities and surprises*

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Structure of the presentation

- Two decades of experience of EIA practitioners (moving from no EIA to biodiversity centric EIAs)
- Tracking the links between development needs, regulatory support for environmental protection and EIA practice in India
- What have EIAs delivered? (Quick passes for developments, popular controversies, informed decisions and process reforms)
- What is the experience from the EIA practices over two decades (Mixed bag of challenges, surprises and opportunities)
- Where are we heading now? (bridging the divide between conservation and development)

India: One of the most diverse region of the world

The region contains some of the world's most ecologically productive and sensitive areas, including tropical forests, grasslands, mangroves, small islands and coral reefs

Also, the most populous region of the world

The region is home to over 80% of the more than one billion absolute poor in the world (people who earn less than a dollar per day).

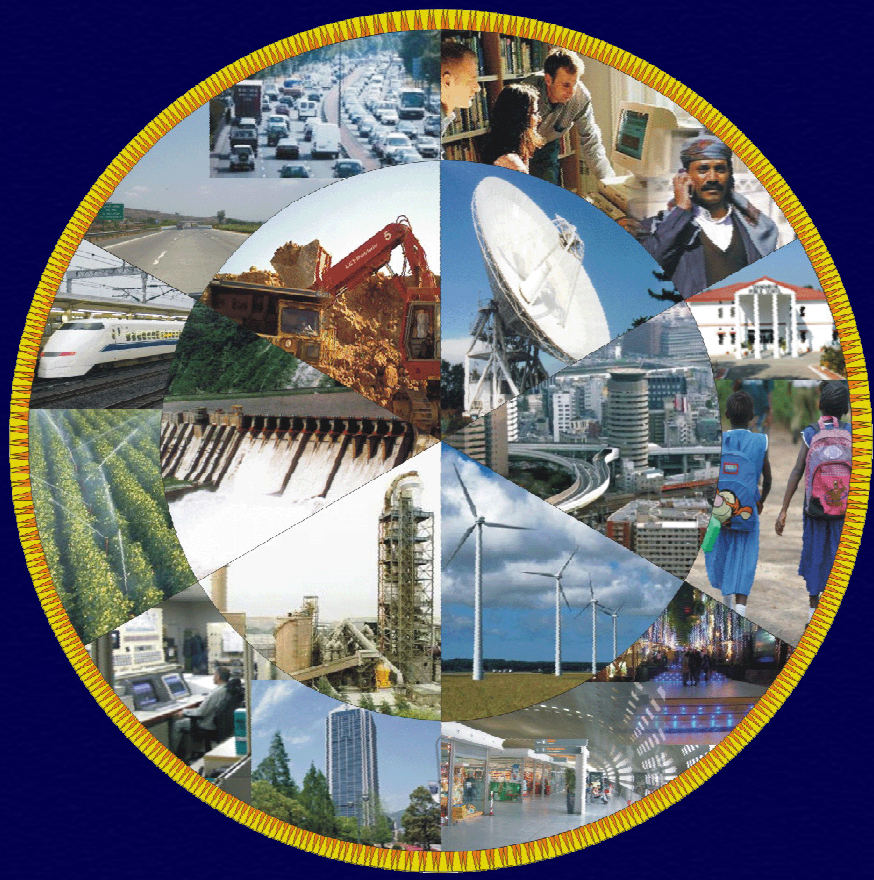
Key challenges for biodiversity conservation

16% of world's population; 14% of world's livestock population on about 2% of world's land area

Compromises with quality and quantity of land resources in changing scenarios of man-land ratio

Conflicting goals

Conservation of diverse and rich biodiversity



Economic development to meet the MDGS

Lopsided development and the development process itself contributed to the deterioration of environmental situation and triggered the process of EIA

Progressive trends in EIA

Pre 80s	EIA was only a voluntary effort for incorporating environmental consideration in select projects
	Formal EIAs initiated for donor funded projects
Mid 80s	The regulatory framework for EIA was established
Mid 90s	EIA became a mandatory requirement for incorporating environmental considerations in development planning
Today	EIA has become an important mainstreaming tool for integrating environmental concerns in development decisions
	Importance of biodiversity inclusive impact assessment well recognized by decision makers

Outcome of EIAs: Practitioners' delight and despair

1: EIA of Bodhghat Hydroelectric Project

The first ever EIA for considering biodiversity even without formal EIA process in place (1989)

Location : Bastar District, MP

Concrete gravity dam height : 90 m

Concrete gravity dam length: 1720 m

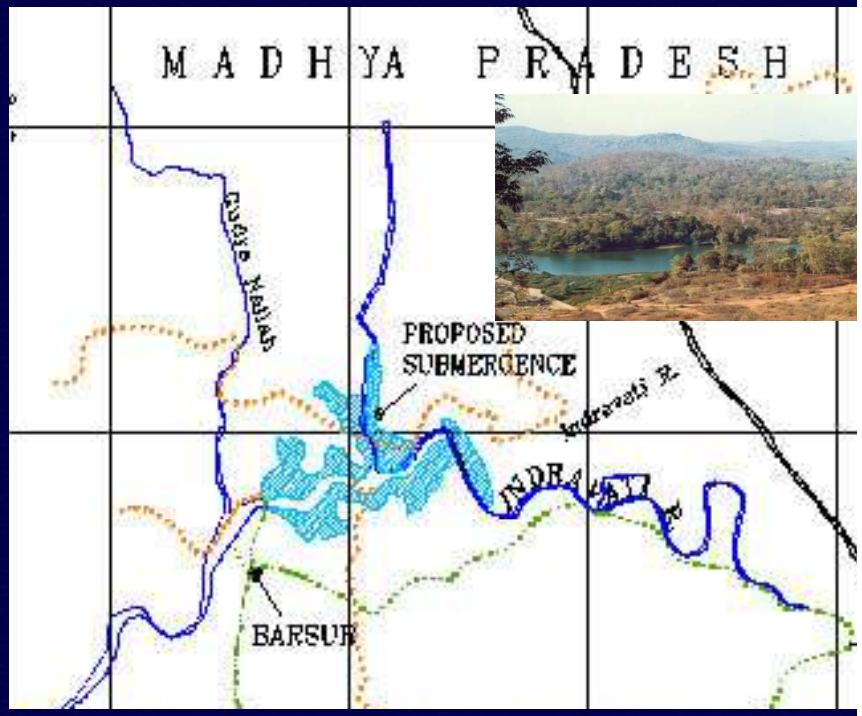
Power generation: 400 MW

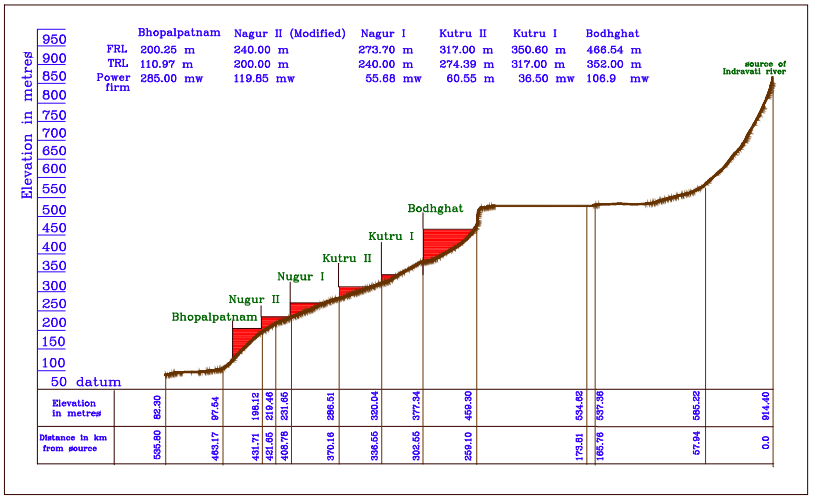
Total area under submergence: 13783.147 ha

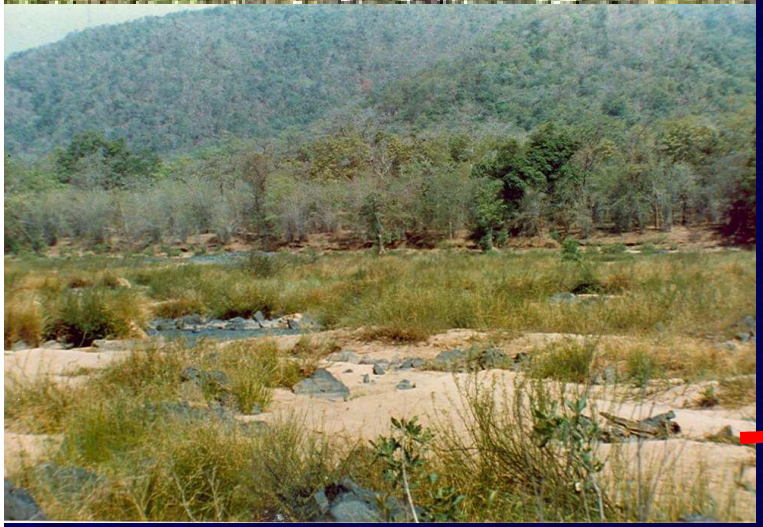
Forest area under submergence: 5704.332 ha

Rehabilitation: 42 villages (1748 families)

This dam was conceived as a precurser to a series of other dams (Kutru I & II, Nugur I & II, Bhopalpatnam & Inchampallli)



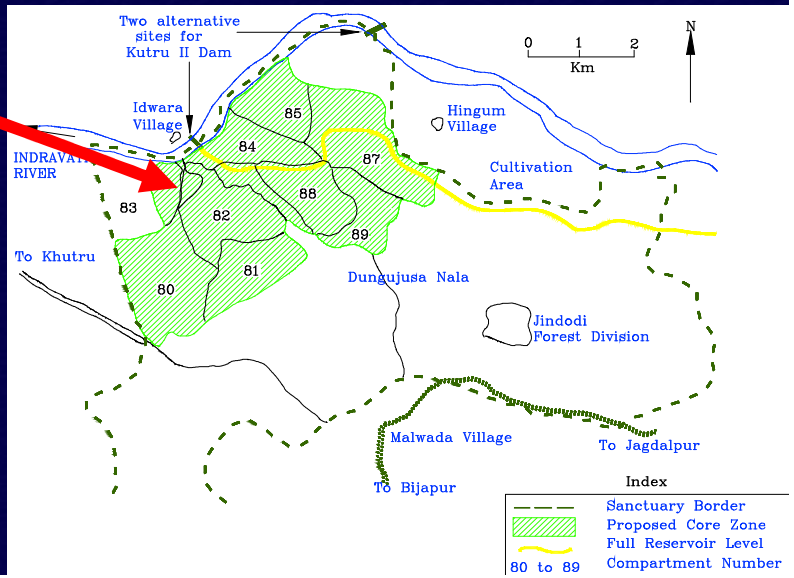




HABITAT of Indian wild buffalo (*Bubalis bubalis*) an highly endangered species.

Population of wild buffalo in Bastar - genetically the purest of all populations in the country.

Of the four relict populations known from Bastar district, two population occur in protected areas located in the vicinity of Bodhghat and associated projects.



Anticipated risk from the project :

Flooding of the riverbed grassland in the project that is used by one of the two Bastar population of buffaloes

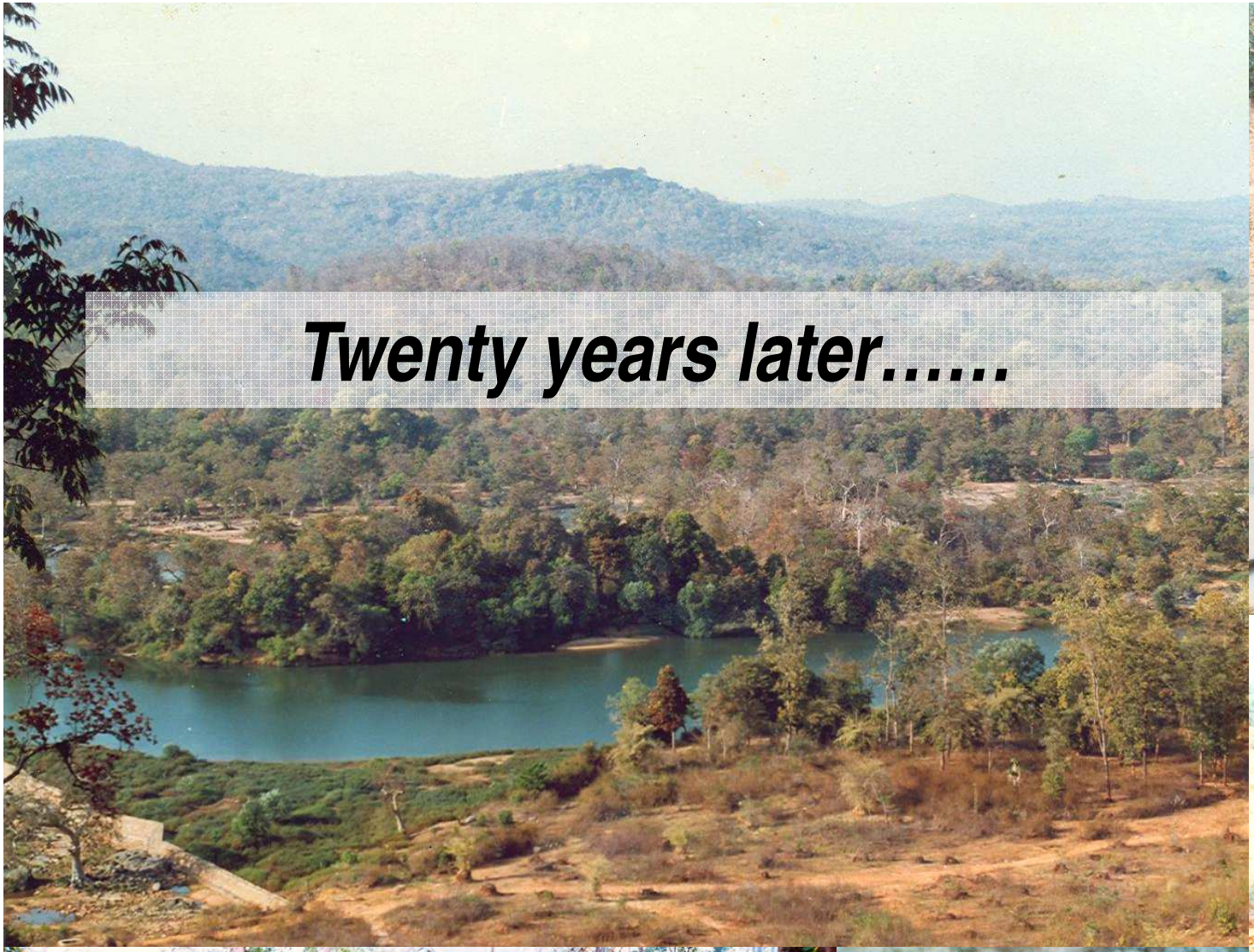
The outcome of EIA

Such a project that failed to ensure the ecological securities of natural ecosystems and posed threats to the conservation of critical gene pool resources of endangered species cannot be justified on the economic rationale alone

Environmental decision

The ecological prudence dictated the avoidance of such projects on the basis of the 'precautionary approach' in environmental assessment of development projects.

Twenty years later……



re gone and the
d a come back!

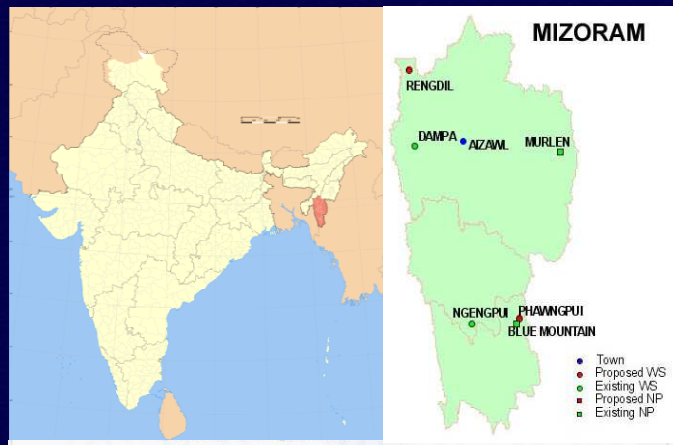
2: Ecological Assessment of the proposed Airport site at Lengpui, Mizoram

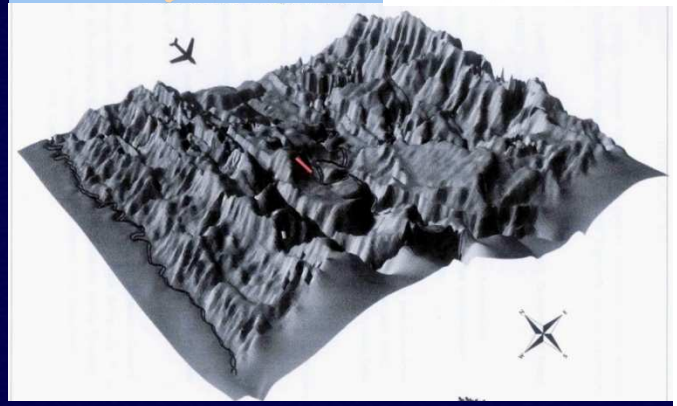
EIA which was conveniently avoided by downsizing the project subsequently became the necessary evil because of cost escalation

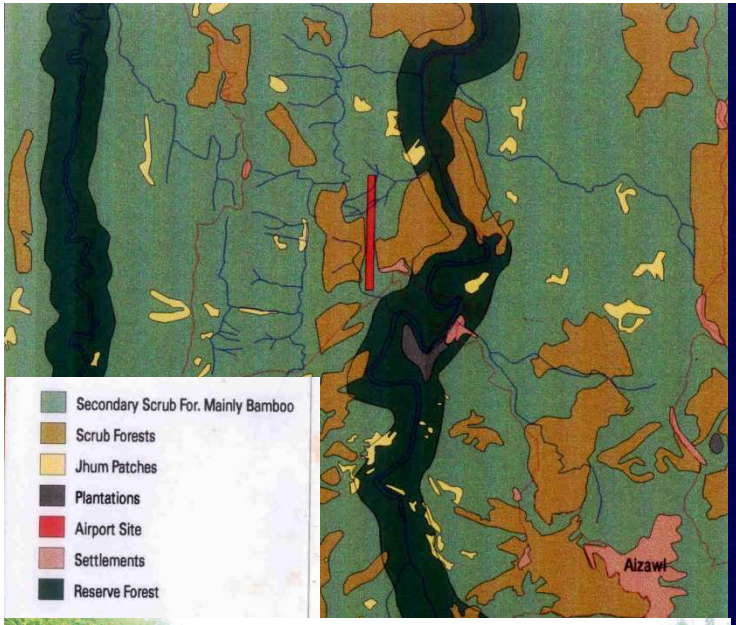
Justification- Airport necessary for promoting trade and commerce in the land locked region of Mizoram

Initial cost estimated – Rs 45 Crores (USD 11.25 million) No EIA was needed

Final estimated cost based on traffic grwoth until 2031 – Rs 70 Crores (USD 17.75 million) EIA became mandatory under law

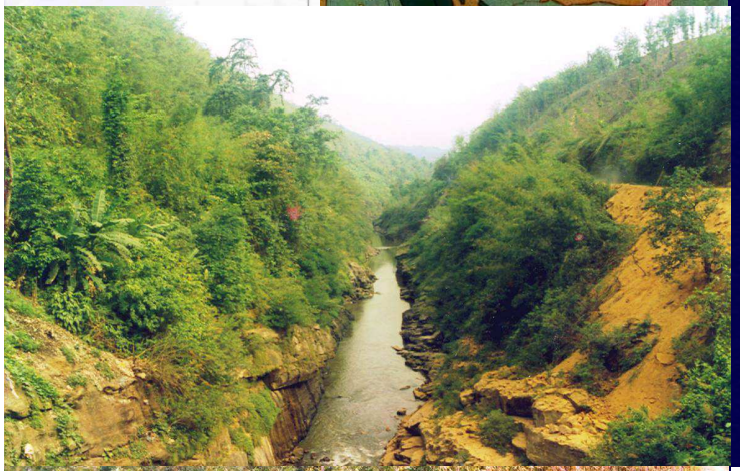






Ecology of the site

- The project area represents the remnants of tropical evergreen forests
- Large scale destruction of habitats due to slash and burn, urbanisation and resources exploitation of for forest based industries
- Primary forests along water courses
- Large chunks of land representing community forest are privately owned

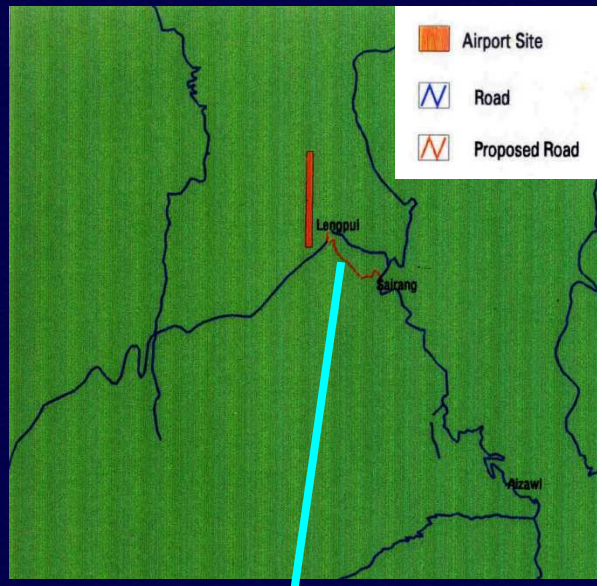


The runway was ready before the EIA was initiated

The important learning from the EIA

The road to airport posed greater threat to the ecology of the area due to the following:

- *Fragmentation of the natural wildlife habitats*
- *Increased erodability of soil along the road and consequent impact of siltation of water courses*
- *Improved access to pristine areas for illegal exploitation of rare orchids and medicinal plants*



It was too late to incorporate the results of EIA to reverse the decision on seeking alternative alignment for road.

The political backing saw the airport become functional in the shortest times.

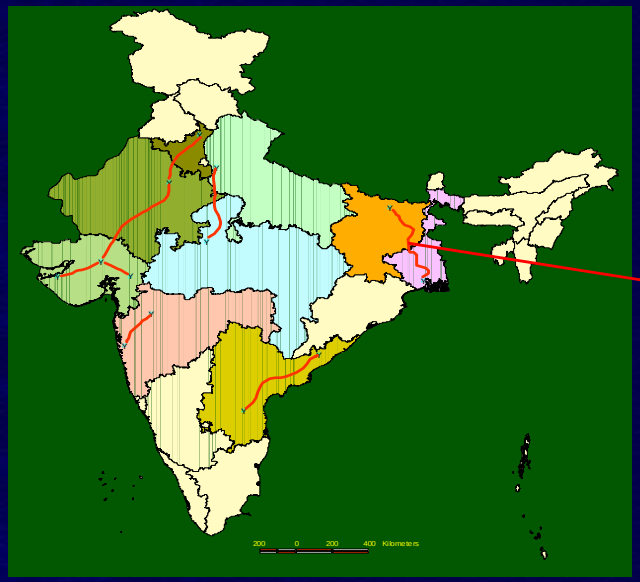
EIA was a formal exercise to authorize an ongoing development

3: Impact Assessment of Haldia-Barauni Pipeline Project on Wildlife Values

EIA provided dual benefits of good decision and value addition in biodiversity relevant information

560 km long pipeline

Major crossings: 5 Rivers and 3 forest blocks



Field surveys were conducted to evaluate the conservation values of the ecologically important habitats.

Results led to new findings on the distributional range of Gangetic Dolphin

The information made valuable addition to the distribution maps of Gangetic dolphin prepared by WWF India

http://www.tpadventure.com/images/dolphin.jpg

Outcome of EIA

Significance of the wildlife values of major rivers en route the proposed pipeline were greatly influenced by the new record on range of Dolphins

The significance of impacts was influenced by the presence of Dolphins

Aquatic fauna	Major rivers					
	Rupnarayan	Damodar	Ajoy	Kiul	Harohar	Ganges
Fishes	2	1	2	1	1	2
Turtles	1	0	1	0	1	1
Crocodiles	1	0	0	0	0	1
Migratory Birds	0	1	1	0	1	1
Mammals (Dolphin)	1	1	0	0	0	1
Total score	5	3	4	1	3	6

Score:

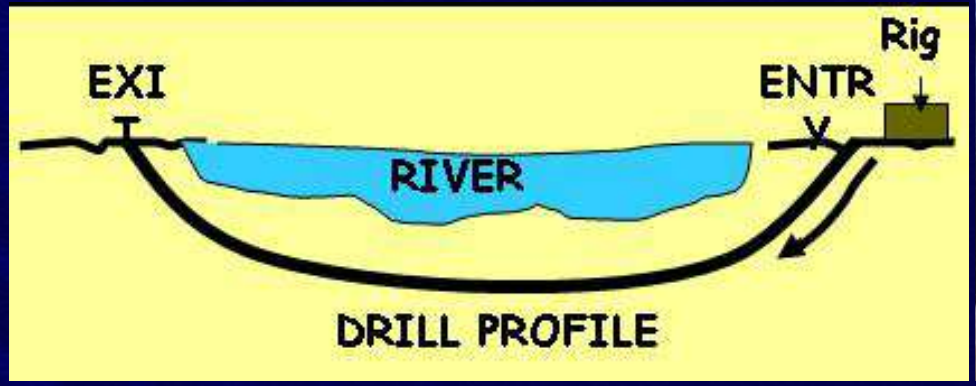
Fish -	***1 =<5 Spp, 2 = 6-10 spp, 3 =< 10***
Turtle-	***0 = Absent, 1 = Present***
Migratory water fowl	***0 = Absent, 1 = Present***
Aquatic mammals	***0 = Absent, 1 = Present***

Outcome of EIA

The conservation benefits of using alternative technology for river crossings proved effective in reducing the ecological impacts of the project

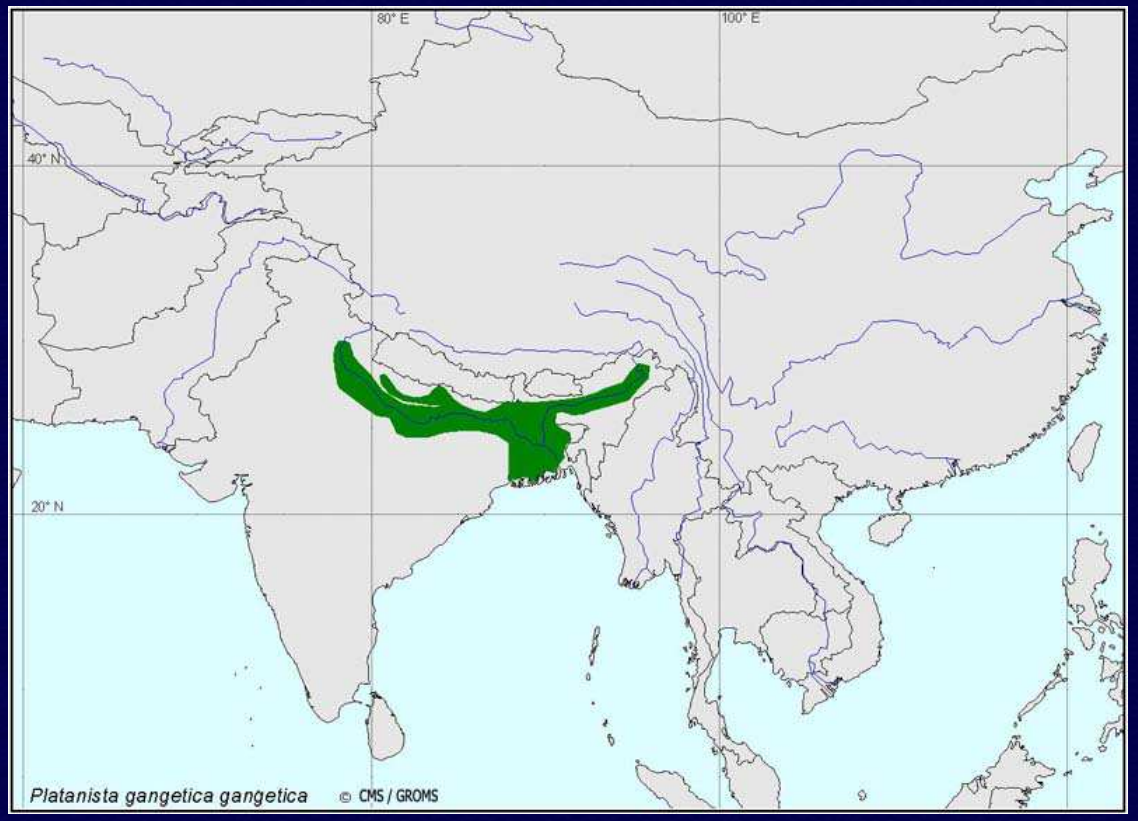
Rivers	Wildlife values	Wildlife values with CSF	Disturbance level	Construction Technology	Predicted impacts
Rupnarayan	5	22	0	HDD	√
Damoder	3	16	4	OCM	
Ajoy	4	12	2	HDD	√
Kiul	1	1	9	OCM	
Harohar	3	11	0	HDD	√
Ganges	6	27	3	HDD	√

HDD – Horizontal Directional Drilling; OCM – Open Cut Method



Outcome of EIA

Distribution range map of Gangetic Dolphins in India updated



4 : Mitigation planning for reducing the ecological impacts of Omkareshwar dam

The EIA recommendations led to a win- win situation but poor compliance negated the opportunities for conservation

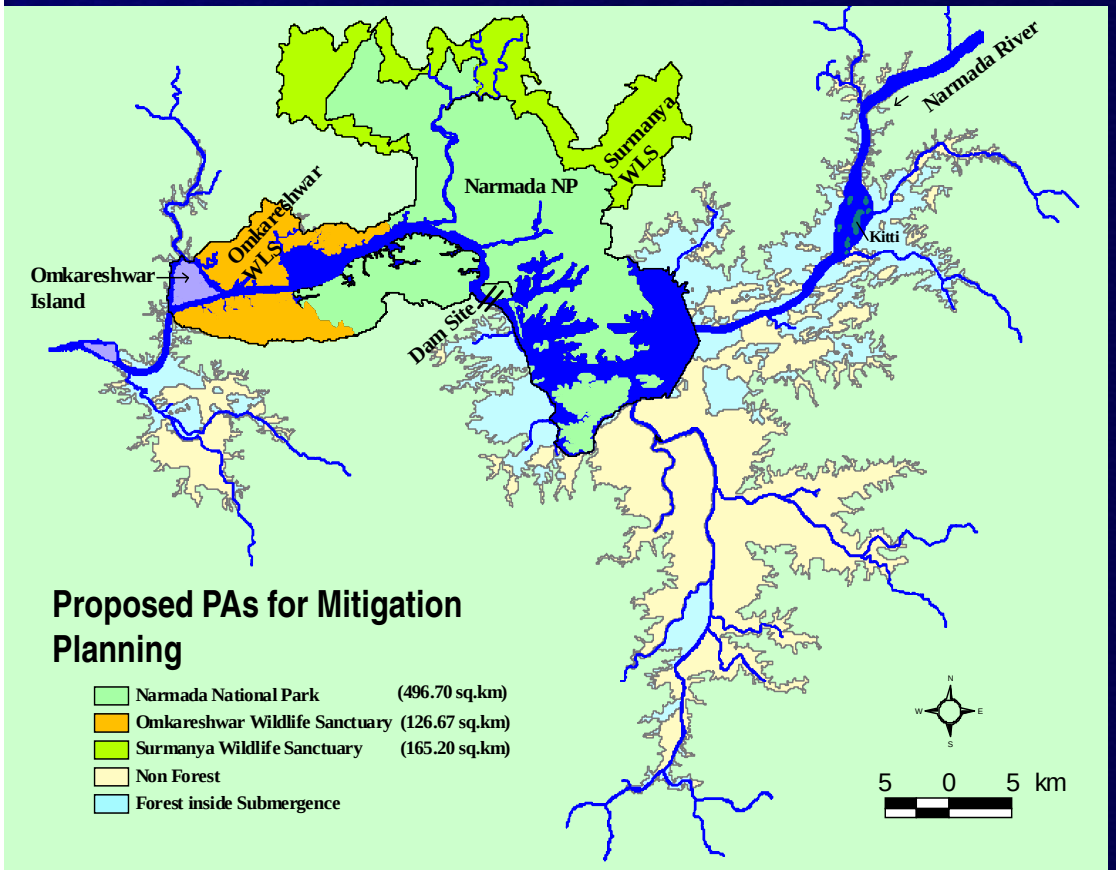
Project Setting

Dam height	:	91.4m
Dam length	:	576 m
Irrigation capacity	:	123,758 ha
Power generation	:	1,000 mw
Submergence	:	40,000 ha forest
Relocation	:	100,000 people

Key impacts

- Direct reduction in habitats for ungulates
- Chital: Loss of 99 habitat units
- Sambar: Loss of 80 habitat units
- Territorial conflicts among carnivores
- Impacts on of riverine birds/habitats., cormorants, darters, egrets, herons, storks, ibis and spoonbills due to conversion of lotic ecosystem to lentic reservoir ecosystem
- Loss of shallow feeding areas on the banks would affect lapwings, plovers, sandpipers and shanks
- Local extinction of softshell turtle *Chitra indica*

Mitigation planning



Constitution of three protected areas to compensate for the loss of wildlife habitats un the submergence area

Development of felling plan for facilitating the animal movement to refuge areas outside the submergence

Relocation of smooth coated otters to other stretches of the river

Felling proceeded the planning!

This case reflects the redundancy of the mitigation planning

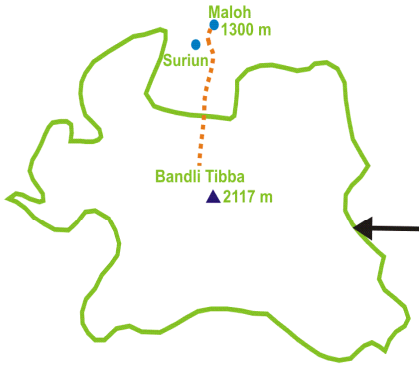
5 : EIA of the Mining project in Himachal Pradesh

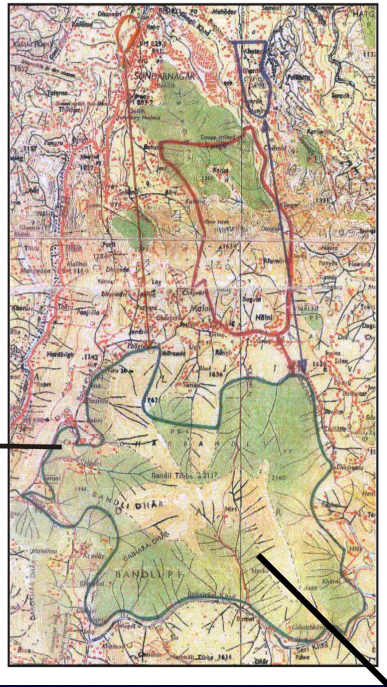
EIA provided opportunities of conservation through development

Mining of 147 million tonnes of limestone

Captive mine with a lease spread over an area of 726 ha

Mechanized opencast mining operations

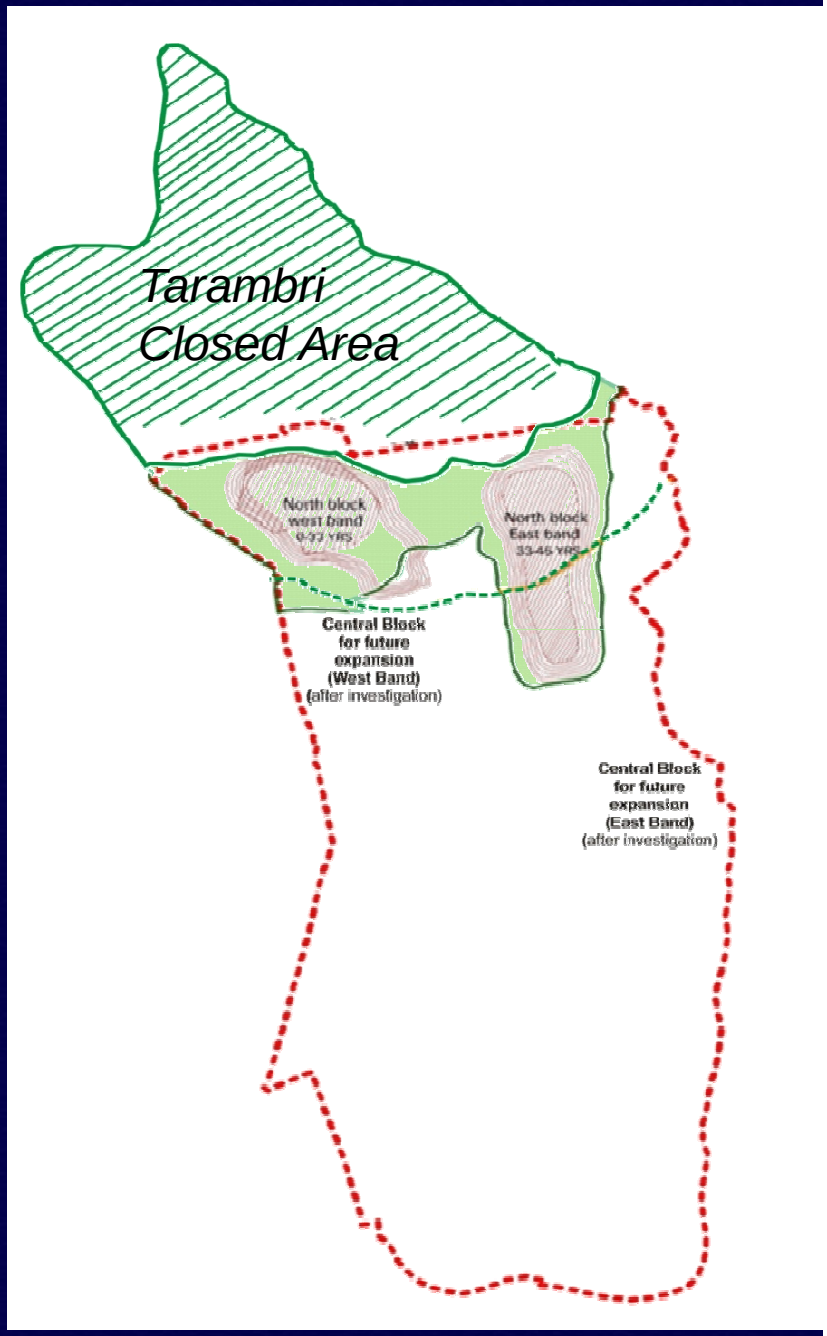




The EIA was used as mainstreaming tool for integrating the impacts of the mining project on biodiversity values of the PA and the closed area

The findings of the EIA

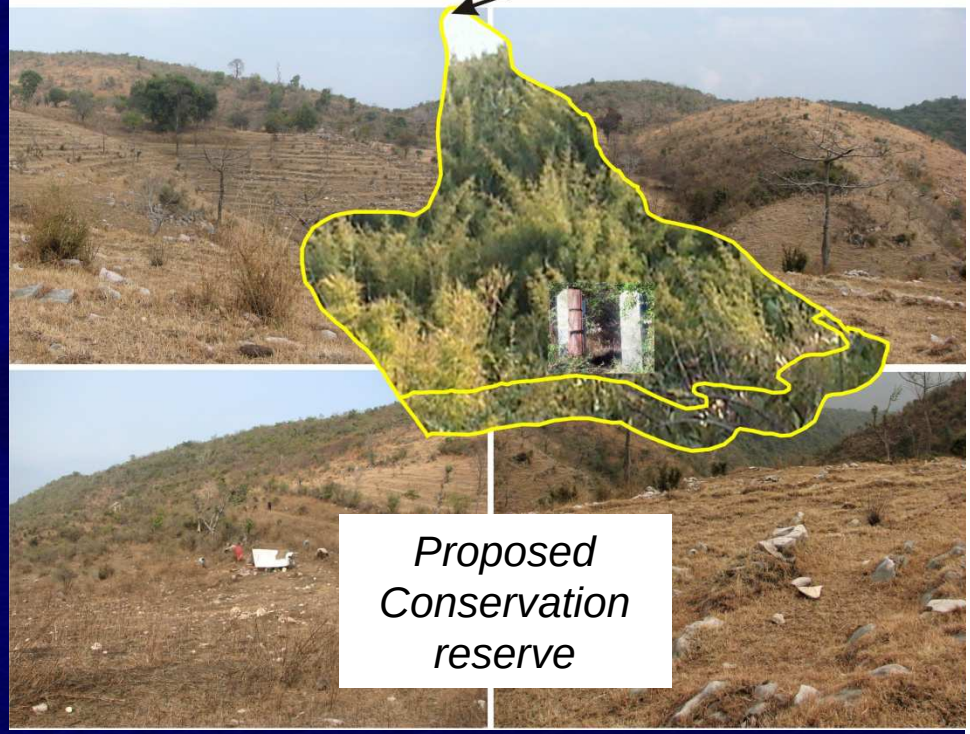
Considering the significance of Bandli WLS for conservation of rare and threatened species in restricted and specialized habitats, the mining was restricted within the area 800m below the closed area

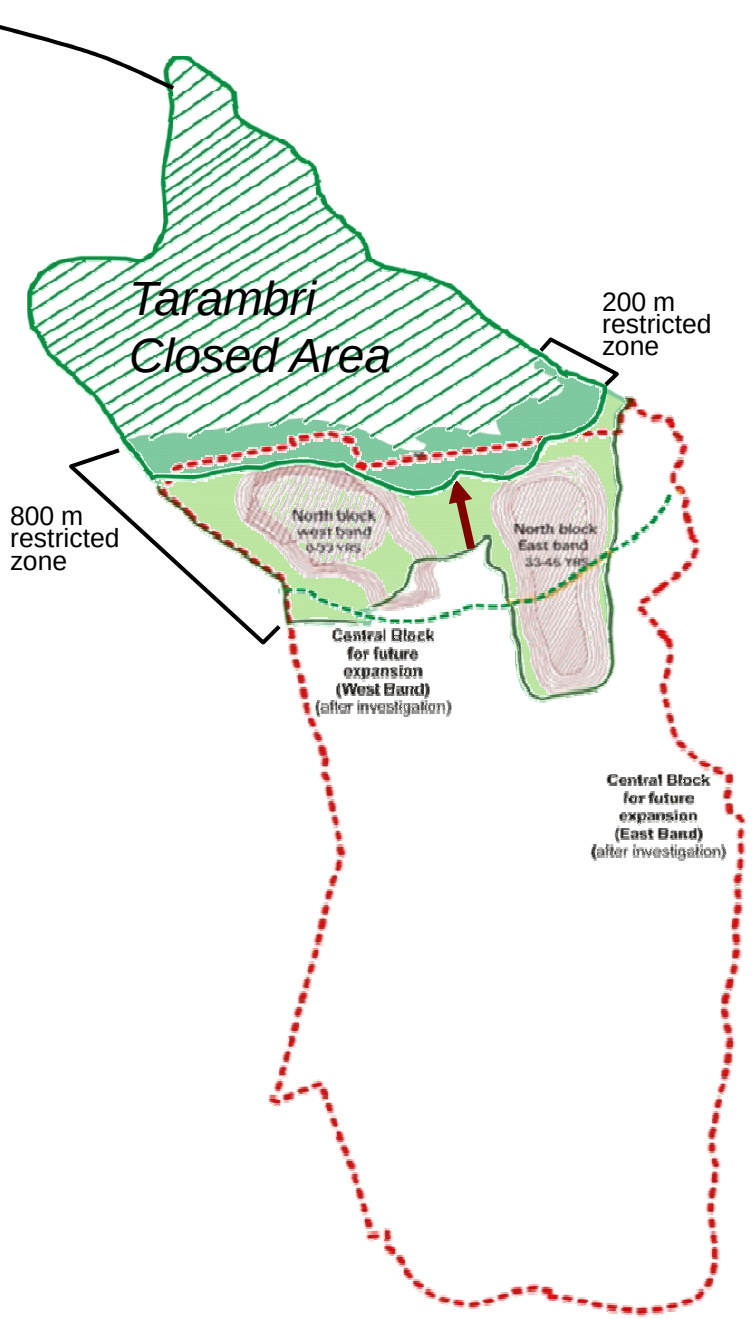


The mining restriction had an important bearing on the economics of the project

Blocks	Reserves on 2001 exploration (MT)	Reserves within 800km from Tarambri fenced boundary (MT)	Total available reserves (MT)
	(1)	(2)	(1) – (2)
North (West band)	59.95	55.44	4.51
North (East band)	43.04	27.29	15.75
Total	**102.99**	**82.73**	**20.26**
South Block (West band)	44.86	-	44.86
Grand Total:	**147.85**	**-**	**65.12**

The review of the condition had to be undertaken keeping in view the economic implications of restricting mining to defined zone





The major outcome me of the review

- *Roll back of the mining zone to 200*
- *Establishment of the conservation reserve*
- *Project authorities have committed the fund support for establishing and managing the Conservation Reserve*

EIA promotes conservation through development (a win-win situation)

Key conclusions

- Tree decades of EA experience suggests that impact assessment offers a mixed bag of pleasant and unpleasant experiences and outcomes for conservation.
- EIA is not a magic bullet or a panacea for generating ‘quick passes’ for development projects but a potent tool for rationalizing the development decisions.
- The outcome of EIAs is strongly linked to the decision making processes and the enabling legislative support.
- Non compliance of mitigation conditions reflect the redundancy of the impact assessment process and underscores its benefits as a mainstreaming tool.
- EIA has tremendous potential to promote conservation in developed environment

"Maturity is knowing when to be matured"

EIA is gradually maturing

Biodiversity-inclusive impact assessment is increasingly commanding the recognition that is needed at a global level