

HOW COAL MINING IS

TRASHING TIGERLAND



GREENPEACE

ग्रीनपीस

www.greenpeace.org/india

**Author**

Ashish Fernandes

**Research coordination & North
Karanpura case study**

Kanchi Kohli

Research

Aishwarya Madineni, Vikal Samdariya, Arundhati
Muthu and Preethi Herman

GIS Analysis

Ecoinformatics Lab, ATREE (Kiran M.C., Madhura
Niphadkar, Aneesh A., Pranita Sambhus)

Acknowledgments

Sudiep Shrivastava for detailed inputs on the
Hasdeo-Arand and Mandraigarh sections, Kishor
Rithe for inputs on the Wardha and Kamptee
sections, Bulu Imam and Justin Imam for their
expertise on the North Karanpura section, Biswajit
Mohanty for feedback on the Talcher and Ib Valley
sections and Belinda Wright for feedback
on the Sohagpur and Singrauli sections.

Contact

Ashish Fernandes
ashish.fernandes@greenpeace.org

Nandikesh Sivalingam
nandikesh.sivalingam@greenpeace.org

Photo Editor

Sudhanshu Malhotra

Design

Aditi Bahri

Cover image

© Harshad Barve / Greenpeace

Image

Forests of Sanjay Dubri Tiger
Reserve near Singrauli coalfield
© Dhritiman Mukherjee / Greenpeace

Printed on 100% recycled paper.

CONTENTS

Executive Summary	01	9. Hasdeo-Arand (Chhattisgarh)	51
Introduction	09	10. West Bokaro (Jharkhand)	55
Central India, Tigers, Corridors and Coal		11. North Karanpura (Jharkhand)	60
How Coal is Trashing Tigerland	17	Case Study I	63
Methodology	21	The North Karanpura Valley - On the edge	
Coalfield Analysis	25	12. Wardha (Maharashtra)	00
1. Singrauli (Madhya Pradesh - Chhattisgarh)	27	13. Kamptee (Maharashtra)	00
2. Sohagpur (Madhya Pradesh - Chhattisgarh)	33	Case Study II	87
3. Sonhat (Chhattisgarh)	35	Chandrapur's tigers - Encircled by coal	
4. Tatapani (Chhattisgarh)	37	Alternatives: Efficiency and Renewables	101
5. Auranga (Jharkhand)	39	References	109
6. Talcher (Odisha)	41	Glossary	110
7. Ib Valley (Odisha)	47	Endnotes	111
8. Mandraigarh (Chhattisgarh)	49		

EXECUTIVE SUMMARY

As India's national animal, the Royal Bengal Tiger *Panthera tigris* has ostensibly been a conservation priority for current and past governments. This report makes the case that the biggest threat to the long term survival of the Royal Bengal Tiger in its largest contiguous landscape- Central India- has thus far been overlooked by the Indian government and its administrative machinery. That threat is coal mining and its related infrastructure. Coal mining strikes a dual blow to biodiversity: aside from its role in causing climate change, coal extraction and evacuation results in the destruction and fragmentation of standing forests, with implications for both wildlife and forest-dependent communities.

In the last five years, India has witnessed an unprecedented increase in new coal mines and the establishment of coal-fired thermal power plants. From 2007 to 2011, the coal mine lease area and coal production capacity have approximately doubled compared to pre-2007 levels.¹ Virtually all new coal mining, and most of the planned power plants are located in a region broadly referred to as Central India – covering the states of Madhya Pradesh, Chhattisgarh, Jharkhand and parts of Odisha and eastern Maharashtra. This same region is also India's largest contiguous tiger landscape, and coal fields here are in proximity to at least 10 Tiger Reserves.² Proposed coal mining threatens tiger habitat directly, and will also fragment forest contiguity between Tiger Reserves and Protected Areas.

We do not intend to go into the complicated and often controversial politics of tiger conservation and its checkered history in India. However, if saving the tiger and other wildlife is in fact a national priority, the government cannot ignore the threat posed by coal mining in Central India. At the same time, the forest areas under discussion are also a critical livelihood resource for forest-dependent populations, including indigenous *adivasi* communities. It is well documented that the destruction of forest resources push such communities into deprivation, causes forced migration and further increases anthropogenic pressure on remnant forest areas.

This report contains a landscape-level analysis of ongoing and



Water source at Sanjay Dubri Tiger Reserve near Singrauli coalfield
© Dhritiman Mukherjee / Greenpeace



proposed coal development in Central India. With the aid of GIS tools, maps of 13 major coal fields at various stages of exploitation have been overlaid with forest cover. On this base, GIS data depicting official records of tiger presence, presence of other mega-fauna (leopard and elephant), locations of Protected Areas/Tiger Reserves and finally, both identified and potential wildlife corridors were overlaid. In cases where field evidence of wildlife presence contradicts official data, this has also been marked.

The picture that emerges is stark. If India is to continue on its current path of increasing reliance on coal for electricity, it will mean the eventual fragmentation and destruction of large areas of forest habitat, the loss of vital connecting corridors for the tiger and other species, destruction of important watersheds for peninsular India's major rivers, and the displacement and further impoverishment of large numbers of forest-dependent communities.

India's Planning Commission projects coal requirements for electricity generation in 2031-2032 to range between 1475 and 1659 million tonnes, assuming a GDP growth of 8 to 9%.³ This is more than double the current coal consumption of approximately 650 mtpa.⁴ Given the high cost of importing coal, the bulk of this demand would need to be met by domestic coal production. Coal India has recently announced plans to ramp up its domestic production from 435 mtpa in 2011 to 615 mtpa in 2017.⁵ Given the current state of the coal mining sector, dependent as it is on shallow surface coal extracted through open-cast mining, this will in effect mean that virtually all forest areas in these 13 coalfields, and many more besides, will need to be opened up to facilitate mining.

Taken together with a rapid acceleration in the pace of forest clearances for coal mining over the last decade,⁶ this implies the rapid destruction and fragmentation of large areas of forests within high priority landscapes that have been scientifically identified as crucial for sustaining tigers.

KEY FINDINGS

The GIS analysis conducted by the Ecoinformatics Lab at the Ashoka Trust for Research in Ecology and Environment (ATREE), Bangalore, tells us that mining existing forest areas in these 13 coalfields alone will mean:

- 1** The destruction of over one million hectares (1,104,000 ha.) of standing forest, of which over 739,000 ha. is dense forest (canopy density of 40% and above).⁷
- 2** In the 13 coalfields combined, over 354,000 ha. lies within the 10 km. buffer of a Protected Area. This has both ecological and legal implications; by order of the Supreme Court of India, any mining here requires the permission of the National Board for Wildlife.
- 3** Over 186,600 ha. within these 13 coalfields showed tiger presence according to official data.
- 4** Over 277,600 ha. within these coalfields showed leopard presence and 55,900 ha. showed elephant presence, according to official data.
- 5** Connecting corridors between several of the major Protected Areas in central India will be either severed or heavily disturbed by coal mining and related infrastructure. Specifically, corridors in the Bandhavgarh-Sanjay-Palamau Tiger Reserve belt, corridors between Palamau-Lawalong-Hazaribagh, between Tadoba and Bor-Umred-Karandla, Pench and Bor, Pench and Satpura, Tadoba and Kawal, Tadoba and Chaprala/Indravati and Satkosia Gorge and Simlipal stand to be affected. The 13 coalfields analysed will impact no fewer than 8 tiger reserves to varying degrees due to the loss of connecting corridors as a result of coal mining. These 8 tiger reserves themselves harbor an estimated 230 tigers, and connecting corridors are essential for their long term survival.

Successive governments, including the current one headed by Dr. Manmohan Singh, have repeatedly stated that ensuring the survival of the tiger is a national priority. Yet, the coal boom currently underway - very much a creature of this government's making -

will ravage a large part of Central India's tiger habitat. In the recent past, the Prime Minister's Office, and the Prime Minister himself, have actively undermined any attempt to keep mining activities out of important forest areas,⁸ and have even lobbied actively in favour of mining projects by private companies in rich forest areas.⁹

LAND SCAM IN THE NAME OF ENERGY SECURITY?

India is experiencing a massive land grab under the guise of providing energy security. Consider the following statistics:

The Ministry of Environment & Forests has already granted clearances for 830 mtpa of coal, and 200 GW of power, far in excess of official targets for the 12th Five year Plan (2012-2017).¹⁰ The Approach

Coal India has recently announced plans to ramp up its domestic production from 435 mtpa in 2011 to 615 mtpa in 2017.

Paper for the 12th Five Year Plan specifies a target of 100 GW of new power generation capacity.¹¹

Coal India Limited already has access to over 200,000 ha. of coal bearing areas, including 55,000 ha. of forest land.¹² CIL is reluctant or unable to fully extract all coal reserves in its existing mines, and hence would rather seek fresh leases to increase production. Given that clearances have already been granted for quantities of coal extraction that exceed plan targets, why are the Coal Ministry, Coal India Limited







Nigahi Mines in Singrauli
© Greenpeace / Sudhanshu Malhotra



and other branches of government continuing to clamour for faster clearances for additional coal mines and power projects?

In 2010, the Coal Ministry had proposed to the Ministry of Environment and Forests a planning approach of determining areas to be kept off limits to coal mining (No Go proposal) in the hope of speeding up the clearance process. However, as soon as the analysis of coal blocks revealed a large number in dense forest areas, the Coal Ministry did a turn around and opposed the No Go classification,¹³ supported by private industry and the Prime Minister's Office.¹⁴ As a result, the coal industry continues to be plagued by uncertainty, with some allocated coal blocks facing the threat of denial of forest clearance on account of their forest impacts.

At the same time, the industry seeks to generate *fait accompli* situations, wherein the power plant is built even before forest clearance for the mine is obtained. On the basis of sunk investments, pressure is applied on regulatory authorities to grant forest and environmental clearances for the linked mining block. This is clearly seen in the ongoing controversy over the Mahan block in Singrauli,¹⁵ and Adani Power's renewed attempts to secure clearance for the Lohara block in Chandrapur.¹⁶ This in turn results in legal challenges and protests on the ground, and further uncertainty for the sector.

A scientifically robust and participative process to determine forest areas that are once and for all kept off limits to coal mining will serve the interests of both "sides" in this debate – those concerned about the social and environmental impacts of mining, and those seeking greater regulatory certainty in the energy sector. Outside of these critical "no go" areas, proposals can be considered on a case to case basis, after due application of legal processes under the Environment Protection Act, Forest Rights Act, Forest Conservation Act and other applicable laws.

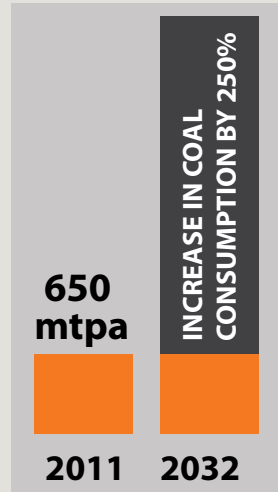
On this basis, Greenpeace makes the following demands of the Indian government:

- 1** An immediate moratorium on forest clearances for coal mining. Given that clearances in excess of government targets have already been granted, the logic behind an immediate moratorium on all further forest clearances for coal mining is impeccable. This period should be utilised to: (1) Assess independently the quantum of coal that remains in existing (broken) mines, and (2) Re-assess India's extractable coal reserves and legitimate coal requirements in light of the rapid energy potential inherent in energy efficiency and renewable technologies.
- 2** Exclude all wildlife, forest corridors and areas inhabited by endangered species from existing coal fields/coal blocks.
- 3** Exclude from coal mining areas of forest with high livelihood dependence.
- 4** No forest clearance must be granted without both the Ministry of Environment and Ministry of Tribal Affairs first ensuring that the Forest Rights Act is implemented in letter and spirit.
- 5** Open for public input the process of determining criteria for areas that will be kept off limits to mining, power plants and supporting infrastructure.



TRASHING TIGERLAND

COAL MINING DESTROYING FORESTS



Since 2007: coal production capacity has doubled
 Since 2007: Over 26,000 hectares of forest sacrificed for coal mining

2X or 3X domestic coal production = **HUGE INCREASE IN FOREST DESTRUCTION**

INDIA'S COAL LIKELY TO LAST ONLY 30-40 YEARS!

- Over 80% of India's proved coal reserves lie in Central India – much of it under forest
- Coal India Limited already has over 200,000 ha. of coal leases, including 55,000 ha. of forest.
- Estimated coal reserves under CIL control - 64 billion tonnes
- Environment ministry admits to already permitting more coal production than needed till 2017.

- Central India's forests are also home to 35% of India's tigers
- India's tiger's population critical - just 1700
- Greenpeace analysed 13 coalfields out of over 40 in Central India

At risk: 1 million + hectares of forest in these 13 coalfields. That's almost twice the area of India's top 5 metros combined!
 Of this, at least:



277,600 ha.
Leopard-inhabited



55,900 ha.
Elephant-inhabited



180,000 ha.
Tiger-inhabited

8 Tiger Reserves affected

Who's destroying forests for coal?

- Coal India Limited – mines 80% of India's coal
- Jindal, Adani, Reliance, Essar, TATA + many more
- Billions of tonnes of coal allotted to private players without competitive auctions
- Government auditor says loss to the country of over \$200 billion

India does not need to lock itself into coal, and destroy its forests & the communities & wildlife that depend on them. There are win-win alternatives.

IT'S TIME FOR AN ENERGY REVOLUTION!



15%

Energy Efficiency measures can save 255 billion kWh. By 2020, India can generate 15% of its electricity from renewable sources



1/10th

Decentralised RE systems can provide electricity to remote villages at 1/10th the cost

Our Choice: Clean Energy & Green Forests OR More Coal Mines & Barren Wastelands.

WHAT'S THE SOLUTION?

Join the movement to save our forests from the coal mafia

Ask the government for:

A moratorium on diverting forests for coal

Criteria for closing forests to miners – based on biodiversity value & dependence of forest-dwellers

An Energy Revolution!

INTRODUCTION

1.1 CLINGING TO SURVIVAL

The population of the Royal Bengal Tiger *Panthera tigris* remains critical, at approximately 1700. (Jhala et al, NTCA, 2011) In 2005, after years of denial, the government of India accepted that India's national animal was in crisis, following an exposé that big cats had been extirpated from the Sariska Tiger Reserve in Rajasthan.¹⁷ In response to the ensuing public outcry, Prime Minister Manmohan Singh set up a Tiger Task Force.¹⁸ Since then, there has been an

avalanche of public support to “save the tiger”, billions of rupees spent on very visible media campaigns, and much debate and discussion around scientific methodologies used to estimate tiger populations. However, there has been little discussion of - and no progress towards tackling - the biggest long term threat to tigers and their habitat, that posed

by industrial activity and the supporting infrastructure it requires. Chief among these is the threat posed by mining for coal, iron ore, bauxite, diamonds and other minerals in the tiger's range.

Large-scale mineral extraction in forest areas also has a track record of impoverishing communities dependent on forests and small-scale agriculture, and jeopardizing water sources. As such, the expansion of mining in forest areas presents a threat to more than just the tiger – the central Indian forests are a crucial livelihood

resource for forest-dependent communities and watersheds for important rivers (Mahanadi, Tapti, Narmada, Indravati, Godavari, Mahanadi, Damodar), on which millions depend. While these issues are critical and must be addressed, this report will focus primarily on the threat that coal mining poses to biodiversity and endangered species.

1.2 THE CENTRAL INDIAN LANDSCAPE

India's tiger occupied forests are divided into six landscape complexes, the largest of which is the Central Indian landscape. This landscape is bounded by the Aravalli Range in the north-west, the Satpura Range in the south, Chota Nagpur plateau in the north-east and the Odisha hills in the south-east. (Jhala et al, 2011)

Central India is a globally significant landscape in terms of tiger conservation. Not only does it have the largest area of tiger occupied forest, (39,017 sq. km.), it also has the largest tiger population. (Jhala et al, 2011) The region is characterized by tropical dry deciduous forests with tropical moist deciduous forests in the eastern part and tropical thorn forest in the northern regions, according to Champion & Seth's 1968 classification.¹⁹ It is also home to a large percentage of India's Scheduled Tribe population, most of whom are forest-dependent. The states under discussion here (Jharkhand, Odisha, Chhattisgarh, Madhya Pradesh and Maharashtra) are home to approximately half of India's Scheduled Tribe population.²⁰

Tiger populations within a landscape complex are likely to share a common gene pool as these tiger habitats are connected or were recently connected to each other. Within the Central India landscape complex are several “units” with one or more breeding populations of tigers, known as source populations. Many Tiger Reserves harbour source populations. Since the size of Tiger Reserves in India is relatively small due to human population densities, most source tiger populations are considered relatively small. For such small, breeding tiger populations to survive, there must be *in situ* protection, and

The central Indian forests are a crucial livelihood resource for forest-dependent communities and watersheds for important rivers on which millions depend.



Pugmarks of Bengal Tiger, Sanjay Dubri
Tiger Reserve near Singrauli coalfield
© Dhritiman Mukherjee / Greenpeace



Anpara thermal power plant on the outskirts of Dibulganj, Uttar Pradesh. © Greenpeace / Sudhanshu Malhotra

they must also remain connected to each other through habitat corridors. Such connectivity is known to enhance the long term probability of the survival of these populations (Jhala et al, 2011). However, most habitat corridors in Central India are not identified, and even if identified, do not receive the same level of “safeguards” against industrial use as do Protected Areas. As a result, corridors are being lost to industrial uses such as mining, even though legal options to protect them (without displacing resident communities or adversely affecting their forest rights) exist.

1.3 FRAGMENTED FORESTS AND THE IMPORTANCE OF CORRIDORS

As a result of population pressure and the rapid pace of industrialisation, India has very few intact forest landscapes. Many (but not all) intact areas of reasonable size are within the Protected Area network. There are also many significant areas of forest in India that are not under the PA network, but are deserving of protection from fragmentation and destruction on account of their biodiversity, hydrological and livelihood benefits, as well as their role in the climate cycle. Forest areas play an important role in carbon sequestration - trapping atmospheric carbon in the biomass contained in forests.

Fragmentation caused by intrusions such as coal mines and related infrastructure into otherwise intact forest blocks has far-reaching impacts, beyond just the area of forest land that is directly converted. There exists a body of scientific evidence to confirm that habitat fragmentation is largely deleterious to biodiversity conservation. Fragmentation disrupts demographic functioning and the genetic make up of populations, and drastically reduces long-term population viability in plants and animals.²¹

As fragmentation increases, corridors take on even greater importance. Corridors and forest patches provide ‘stepping stones’ and continuity between larger forest blocks. This is essential for species that range large areas - particularly tigers, elephants and leopards - as well as for basic ecosystem functions such as



Chinkara at Sanjay Dubri Tiger Reserve
© Dhritiman Mukherjee / Greenpeace

pollination and seed dispersal. The beneficial effects of corridors are not limited merely to their own habitat area; corridors also have positive impacts on plant populations and community interactions in fragmented landscapes.²²

It is these areas that are most at threat from industrial uses such as mines, dams and related infrastructure - roads, railway lines, thermal power plants, power lines, canals and so on. Lacking the higher degree of legal protection afforded by the Wildlife Protection Act of 1972, forest blocks outside Protected Areas are seen as easier to “sacrifice” for industrial or infrastructure uses. Between 2002 and 2011, the Ministry of Environment and Forests has diverted 400,687 ha. of forest land for non-forest purposes- mining and power projects accounted for 38% of this.²³

LEGAL OPTIONS

TO PROTECT TIGER HABITAT OUTSIDE PROTECTED AREAS FROM MINING



© Dhritiman Mukherjee / Greenpeace

A. PROTECTION FOR CORRIDORS AND NON-PROTECTED-AREA WILDLIFE HABITAT UNDER THE NATIONAL FOREST POLICY 1988

The National Forest Policy 1988, issued by Government of India, provides in para 4.5 on Wildlife Conservation that: “Forest Management should take special care of the needs of wildlife conservation, and forest management plans should include prescriptions for this purpose. It is especially essential to provide for “corridors” linking the protected areas in order to maintain genetic continuity between artificially separated sub-sections of migrant wildlife.”

The Supreme Court, in its Lafarge Umiyam Mining (P) Ltd. vs. Union of India, (2011)7 SCC 338 judgment has ruled that the forest policy has to govern grant of forest clearances under the FC Act. “...we hereby declare that the National Forest Policy, 1988 which lays down far-reaching principles must necessarily govern the grant of permissions under Section 2 of the Forest (Conservation) Act, 1980 as the same provides the road map to ecological protection and improvement under the Environment

(Protection) Act, 1986. The principles/guidelines mentioned the National Forest Policy, 1988 should be read as part of the provisions of the Environment (Protection) Act, 1986 read together with Forest (Conservation) Act, 1980...”

Read together, this necessarily means that corridors and wildlife habitat should not be diverted to industrial uses.

B. BUFFER ZONE AROUND TIGER RESERVES, NATIONAL PARKS AND SANCTUARIES

State governments must declare buffer zones for existing tiger reserves in accordance with the 2006 amendment of the Wildlife Protection Act. This buffer is meant to regulate industrial activity around the core of a tiger reserve, where “a lesser degree of habitat protection is required to ensure the integrity of the critical tiger habitat with adequate dispersal for tiger species, and which aim at promoting co-existence between wildlife and human activity with due recognition of the livelihood, developmental, social and cultural rights of the local people, wherein the limits of



such areas are determined on the basis of scientific and objective criteria in consultation with the concerned Gram Sabha and an Expert Committee constituted for the purpose.”

As a guideline, the Supreme Court has suggested a 10 km area to be notified as an Ecologically Sensitive Zone around all Protected Areas under the Environment Protection Act 1986. However, many state governments are reluctant to declare buffer areas because of the constraints it imposes on industrial activities, including mining. However, all projects within 10 km of the boundary of a national park or sanctuary (even if they fall outside the notified buffer) have to be referred to the Standing Committee of the National Board for Wildlife for approval.

Para 4.2 of the Ministry of Environment and Forest’s guidelines for declaration of eco-sensitive zones around national parks and sanctuaries states: “In case where sensitive corridors, connectivity and ecologically important patches, crucial for landscape linkage, are even beyond 10 km width, these should be included in the Eco-Sensitive Zone.” Thus there is no reason to limit the ESZ to a 10 km, buffer – important corridors and landscape links can also be brought under the ESZ to restrict destructive industrial activity in these areas.

C. POWER OF THE NATIONAL TIGER CONSERVATION AUTHORITY TO PROTECT CORRIDORS

380.(g) of the Wildlife Protection Act, 1972 (2006 amendment) specifies that one of the powers of the National Tiger Conservation Authority is to “ensure that the tiger reserves and areas linking one protected area or tiger reserve with another protected area or tiger reserve are not diverted for ecologically unsustainable uses, except in public interest and with the approval of the National Board for Wildlife and on the advice of the Tiger Conservation Authority”.

Pugmarks of Bengal Tiger, Sanjay Dubri
Tiger Reserve near Singrauli coalfield
© Dhritiman Mukherjee / Greenpeace

THE FOREST LIE

INDIA IS LOSING NATIVE FORESTS, GAINING PLANTATIONS

According to the FAO, in 2005 India ranked 10th amongst the most forested nations of the world.²⁴ The Forest Survey of India (FSI) calculates that the country had 69.20 million ha. of forest in 2009 (defined as 'all the lands, more than one hectare in area, with a tree canopy density of more than 10%'), making up 21.02% of the geographical area of the country.²⁵

FSI statistics paint a rosy picture, appearing to show an increase in forest cover. However, analyses from numerous independent researchers show that there is in fact significant deforestation and forest degradation occurring in India. India has already lost more than 70% of its original native forest cover.^{26 27} Recent research shows that remaining native forests in India are declining at a rapid pace - from 1.5% to 2.7% per year, once the gain in "forest" area from plantations is discounted.²⁸

Plantations and afforestation to compensate for the diversion of forest land usually involve either monocultures or a limited variety of species. Since FSI assessments do not distinguish native forests from tree plantations, India is actually seeing its native forests being cleared and replaced by monoculture plantations of mostly exotic or fast growing species such as eucalyptus, acacia, rubber, teak, bamboo or pine. Afforested areas thus do not yield the biodiversity, livelihood or carbon sequestration benefits of a mature, diverse natural forest. Proposed coal blocks are almost always located in natural forest areas (not plantations), with higher biodiversity values.

Coal mining is thus contributing to the loss of India's native forests.

CARBON SINK OR SOURCE?

At the international climate negotiations, the Indian government has put forward the role played by India's forests as a CO₂ sink, and the potential for further increasing the carbon stock in India's forests, in an attempt to tap REDD+ funds. As with the forest cover statistics, estimates of ongoing carbon sequestration by Indian government agencies are at odds with those of independent researchers.

Independent estimates in 2011 indicate that the carbon stock in India's forest biomass decreased continuously from 2003 onwards, despite slight increase in forest cover.²⁹ This contradicts the Indian Council for Forestry Research and Education which in 2009 had calculated that the carbon stock in India's forests increased marginally from 1995 to 2005, by 38 mt of carbon or 138 mt of CO₂ equivalent annually.³⁰

A loss in carbon stock makes sense when looked at in conjunction with increased rates of forest land diversion (almost always natural diverse forests) for industrial use over the last decade. Statements from Coal Minister Sriprakash Jaiswal or from Coal India Limited that coal mining does not impact the country's forest resources negatively do not stand up to scrutiny. From 2002 to 2011, the Ministry of Environment and Forests has granted permission for the diversion of 400,687 hectares of forest land, with more land being diverted during the XIth Five Year Plan than in any other. If the regularization of encroachments is excluded, mining and power projects account for the bulk of this diversion- 38%.³¹



HOW COAL IS TRASHING TIGERLAND

Most of Central India was historically covered with tiger-inhabited forests. In the 19th and 20th centuries, tiger ranges across Central India grew increasingly fragmented as natural forest areas decreased in size, first due to timber extraction, tiger hunting and the spread of agriculture, and more recently, due to industrial and infrastructure demands. Despite this, most tiger reserves still have connectivity and hence the potential to sustain meta-populations. (Jhala et al, 2008).

The majority of India's untapped coal reserves lie in the central Indian landscape - across a wide belt encompassing northeastern Andhra Pradesh, eastern Maharashtra, Madhya Pradesh, Chhattisgarh, Odisha and Jharkhand.



Greenpeace activists hand over petitions from 112,000 people from across the country to the coal minister, Shri Prakash Jaiswal, November 2011.
© Greenpeace / Sudhanshu Malhotra

There are many active coalfields and coal mines in these states, and proposals for many more. All of India's major coalfields (those with coal reserves over one billion tones) fall within this area. Corridors linking eight tiger reserves (Bandhavagarh, Sanjay-Dubri, Palamau, Kanha, Achanakmarh, Satkosia, Simlipal, Tadoba-Andhari) stand to be impacted to varying degrees, according to the analysis in this report. There is reason to believe that the Satpura, Pench and Kawal Tiger Reserves deserve to be added to this list as well. The National Tiger Conservation Authority (Jhala et al, 2011) has deemed "immigration" of tigers necessary for the genetic and demographic viability of populations in all these reserves. Coal India Limited is active in all of these areas through its subsidiaries, except for the state of Andhra Pradesh, where another Public Sector Unit, Singareni Collieries Company Limited operates.

A look at landscapes where coal mining is well established (such as Singrauli or Chandrapur) demonstrates clearly the industry's devastating impact on forests. The case of Chandrapur and the Tadoba-Andhari Tiger Reserve ³² is probably best known, but there are other locations where the problem is already, or will soon be, equally severe. If India continues its reliance on coal to meet its energy needs, the destruction already seen in these areas will be multiplied exponentially across much of Central India.

As this analysis shows, coal mining poses the single largest threat to forest contiguity in this landscape. Government emphasis on increasing coal-fired power is leading to a boom in coal mining and increasing demand for forest land. Coal mining is already posing a serious threat to forest ecosystems and wildlife corridors in some places (Chandrapur, North Karanpura, Talcher) but this is the proverbial tip of the iceberg, given the scale of coal mining expansion required to meet targets set by the Planning Commission, Power and Coal Ministries and the Government of India, as explained earlier.

While all the coalfields are situated in or near tiger landscapes, several also pose a danger to the Asian elephant and its corridors. Recent decades have seen an increase in elephant-human conflict



A goods train carrying coal from Singrauli. © Greenpeace / Sudhanshu Malhotra

throughout the pachyderm's extant range. Every year over 400 people - mostly cultivators or labourers - lose their lives to elephants. In turn, more than half of the 100 elephants killed each year are by farmers defending their crops.³³ Several government task forces, most recently the Ministry of Environment and Forests Elephant Task Force in 2010, have stated unambiguously that the future of the Asian elephant depends on securing elephant landscapes, both through the consolidation of habitats and maintaining the integrity of corridors: "Bereft of critical corridors, the populations of elephants

in strictly protected habitats will be isolated and much more vulnerable even in the medium term."

Open cast mining, particularly in Jharkhand and Odisha, has dealt a severe blow to elephant conservation, leading to movement of elephants into Chhattisgarh and West Bengal. The Coal Ministry and the government of Chhattisgarh are now proposing to increase coal mining in hitherto unbroken elephant habitat (see sections on Hasdeo-Arand and Mandraigarh).

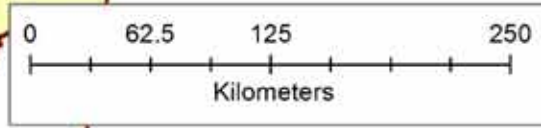
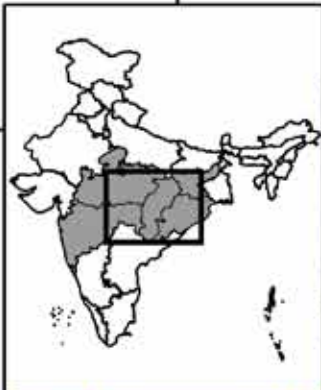
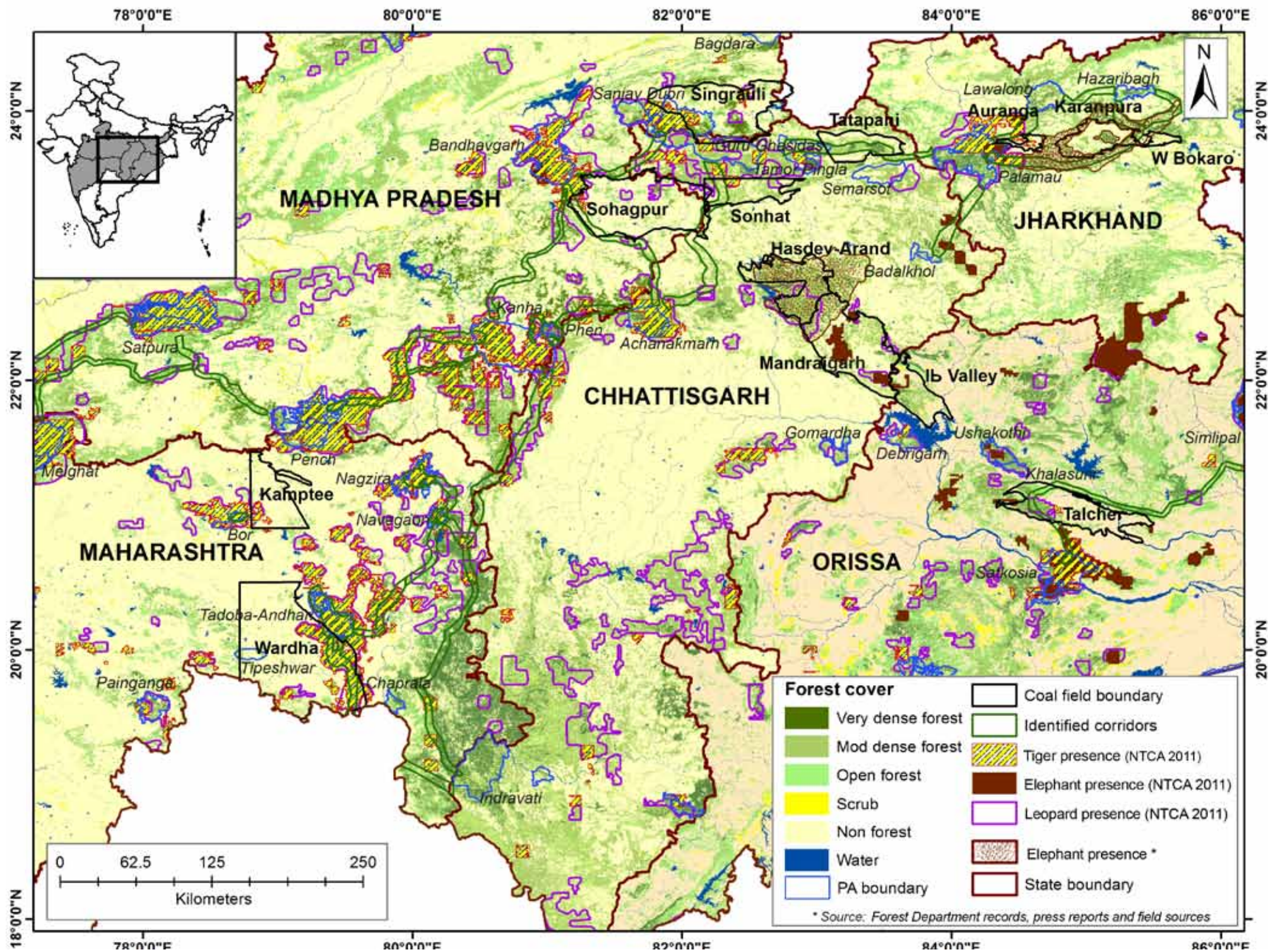
Two areas are examined at in greater detail for their impacts on tiger and elephant movement respectively – the Wardha coalfield near the Tadoba-Andhari Tiger Reserve, Maharashtra and the North Karanpura coal field near the Palamau Tiger Reserve and Hazaribagh National Park in Jharkhand. The Hasdeo-Arand coalfield has also been looked at in some detail due to the peculiar political machinations around this densely forested area.



Nilgai at Sanjay Dubri Tiger Reserve near Singrauli coalfield
© Greenpeace / Harikrishna Katragadda

KEY FINDINGS

- 1** Over one million hectares (1,104,000 ha.) of standing forest, of which over 739,000 ha. is dense forest (canopy density of 40% and above)³⁴ falls within these 13 coalfields.
- 2** Over 186,600 ha. within these 13 coalfields showed tiger presence according to official data.
- 3** Over 277,600 ha. within these coalfields showed leopard presence and 55,900 ha. showed elephant presence, according to official data.
- 4** Over 354,000 ha. lies within the 10 km. buffer of a Protected Area.
- 5** Connecting corridors between several of the major Protected Areas in central India will be either severed or heavily disturbed by coal mining and related infrastructure. Specifically, corridors in the Bandhavgarh-Sanjay-Palamau Tiger Reserve belt, corridors between Palamau-Lawalong-Hazaribagh, between Tadoba and Bor-Umred-Karandla, Pench and Bor, Pench and Satpura, Tadoba and Kawal, Tadoba and Chaprala/Indravati and Satkosia Gorge and Simlipal stand to be affected. The 13 coalfields analysed will impact no fewer than 8 tiger reserves to varying degrees due to the loss of connecting corridors as a result of coal mining. These 8 tiger reserves themselves harbor an estimated 230 tigers, and connecting corridors are essential for their long term survival.



78°0'0"E 80°0'0"E 82°0'0"E 84°0'0"E 86°0'0"E

24°0'0"N 22°0'0"N 20°0'0"N 18°0'0"N

MADHYA PRADESH

CHHATTISGARH

MAHARASHTRA

ORISSA

JHARKHAND

Bagdara, Santay Dabri, Singrauli, Tatapani, Lawaloni, Hazaribagh, Auranga, Karanpura, W Bokaro, Palamau, Semarsot, Tamor Pingla, Gurughasidas, Sonhat, Hasdev Arand, Badalkhol, Mandragarh, Ib Valley, Gomardha, Ushakothi, Debrigarh, Simlipal, Khalasuri, Talcher, Satkosia, Kanha, Pheni, Achanakmath, Nagzira, Navagaon, Kaptree, Bor, Tadoba-Andhari, Wardha, Tipeshwar, Painganga, Chaprati, Indravati, Melghat, Satpura

METHODOLOGY

COALFIELD MAPS

Scanned copies of the forest cover maps of the 13 coal fields prepared by Forest Survey of India - CMPDI were used as the base maps. These maps were obtained by Greenpeace from the MoEF and had formed the basis of the MoEF and Ministry of Coal's joint "No Go" exercise in 2010. The 13 coal fields in question are: West Bokaro, North Karanpura, Auranga, Singrauli, Sohagpur, Tatapani, Sonhat, Talcher, Ib Valley, Hasdeo-Arand, Mandraigarh, Wardha and Kamptee.

The maps contain boundaries of coal fields, coal blocks, unblocked areas, road and rail networks and important places along with forest cover of the area. The scale of the scanned maps varied from 1:50,000 to a maximum of 1:200,000, with most at a 1:175,000 scale. The maps were georeferenced using the coordinates provided in the maps, in Erdas Imagine software. From each map, boundaries of coal fields and coal blocks were digitized using ArcGIS software and topology was created.

WILDLIFE HABITAT MAPS

The presence/absence maps of tiger, elephant and leopard prepared by the Wildlife Institute of India/National Tiger Conservation Authority were used to derive the GIS layers of wildlife presence. The tiger presence maps were available for the years 2006 and 2011. For the other two species, maps were available only for the year 2011. This data was collected in 2009-10 by the Wildlife Institute of India in the second country-wide assessment of tigers, co-predators and prey. The maps cover the entire area of the 5 central Indian states. The scanned images of these maps were obtained by Greenpeace through Right to Information requests.

The tiger presence map of 2006 was at taluk (an administrative division) scale, indicating the presence or absence of tiger in each

taluk. Due to the difference in scale compared to 2011 maps, the 2006 data was not used. All other maps showed the actual distribution of wildlife records. The scanned images of 2011 maps were geo-referenced using ERDAS Imagine software and the wildlife presence were digitized and topology was created using ArcGIS software.

CORRIDORS

Greenpeace provided to ATREE a map of identified and potential wildlife corridors in .kml format. These corridors were mapped based on those already identified by NTCA in its 2011 report. In the case of the North Karanpura coalfield, the corridors are based on unpublished research done by CISMHE, Delhi University, and information from the field. The potential corridor linking Sanjay-Dubri and Achanakmarh was apparent when analyzing forest cover. This .kml file was converted into .shp file format and corrected using the tiger habitats, forest cover and Protected Area maps.

FOREST COVER MAPS

The forest cover maps of each of the 5 states were obtained by Greenpeace from Forest Survey of India (FSI). The maps were available as georeferenced raster images in Erdas Imagine format and had a pixel resolution of 24m. The maps were converted to vector format using the auto vectorisation procedure available in the ET Geowizards plugin for ArcGIS.

PROTECTED AREA MAPS

The study area has around 72 protected areas. The ATREE spatial archive has a majority of the boundaries in vector GIS format. Greenpeace collected scanned maps of 11 PAs

from WII. These maps were geo-referenced and digitised. Boundaries of 8 PAs were downloaded from the website protectedplanet.net. Recent changes in terms of boundaries (example, Bor, Navegaon and Nagzira extensions, or the new Umred-Karandla Sanctuary) are not reflected in the maps. A standard 10 km. buffer around PA boundaries has been shown.

DATA ANALYSIS

The area of each coal field and the coal blocks were calculated. The area of tiger, leopard and elephant habitats in each coal field also was calculated through an overlay analysis. Similarly, extent of various forest types in each of the 13 coal fields was estimated. Further, a 10 km. buffer was created around each PA in the region. Area of coal fields falling within this 10 km. buffer was estimated. The results are provided in the table below.

	AREA (sq.km)												
	Singrauli	Sohagpur	Sonhat	Tatapani	Auranga	Talcher	lb Valley	Mandraigarh*	Hasdev-Arand	North Karanpura	West Bokaro	Wardha	Kamptee
Coal Field	3458.62	4354.24	1278.39	1137.27	228.38	2342.45	1236.95	3474.1	1878.13	1186.68	200.85		1765.57
Demarcated Coal Blocks	667.65	1268.65	328.84	119.07	87.76	753.86	514.71	1191.3	464.17	607.71	148	824.94	614.09
Tiger habitat (2011)	289.14	69.42	62.38	0	15.78	24.72	0	0	0	0	0		103.42
Leopard habitat (2011)	181.08	341	194.52	0	0	225.56	0	370.3	0	0	0		68.11
Elephant habitat (2011)	0	0	0	0	0	13.57	57.44	488.69	0	0	0	0	0
10 km. buffer around PA	1736.74	4.49	65.81	364.97	57.66	57.01	10.82	0	0	0	0		115.24
VDF	314.2	42.11	0.25	93.75	0.47	118.01	83.54	123.95	115.88	45.37	5.77	397.39	1.97
MDF	695.65	359.36	533.85	295.25	30.59	487.45	374.45	1109.46	1175.95	157.83	24.67	737.07	68.4
OF	445.31	511.18	300.89	179.46	27.32	340.26	146.24	493.67	210.28	211.37	23.65	666.13	91.61
Scrub	14.05	8.11	0.65	0	6.91	18.02	38.4	1	0	10.73	9.36	27.62	21.65
Non-forest	1824.39	3388.47	436.6	561.52	158.13	1350.44	568.83	1722.24	361.37	750.64	135.96		1557.32
Water	39.05	38.3	4.76	7.28	4.96	28.27	25.48	24.5	14.66	10.75	1.44	68.71	24.6

* Mandraigarh, Hasdeo-Arand and N. Karanpura areas all show significant differences between the NTCA report and Forest Department Working Plans or field reports, which indicate elephant presence in all three, and occasional tiger reports as well.

VDF: Very Dense Forest (canopy cover $\geq 70\%$), **MDF:** Moderately Dense Forest (canopy cover $\geq 40\%$), **OF:** Open Forest (canopy cover = 10 to 40%)

Forest cover in the entire coalfield (both blocked and unblocked areas) is looked at in order to provide a future guide to planners and field-level groups as to future conflicts.

PREPARATION OF FINAL MAPS

A series of maps were prepared using the GIS layers. For each coal field, maps depicting the overlap of coal field and coal blocks with areas showing tiger, leopard and elephant presence were prepared. In a few areas, such as Hasdeo-Arand, Mandraigarh and North Karanpura, it became clear that the official maps differed widely from local reports of elephant or tiger presence in the area. Where there was strong corroboration from the field of the

presence of these species, Greenpeace has reflected this in the relevant maps by the addition of another layer, and the source of the data has been indicated. However, this has not been included in the spatial analysis shown in the table.

The maps also show the wildlife corridors, Protected Areas and the 10 km. buffer around adjacent Protected Areas. The forest type map derived from FSI maps were used as a background layer. Wildlife habitat maps for each of the three species

were also prepared, showing the wildlife corridors and PAs in the region. Additionally a study area map with coal fields, PAs, wildlife habitats and corridors was also prepared.

DIFFERENCE BETWEEN THIS AND THE “NO GO” ANALYSIS

There are key differences between the GIS analysis undertaken by Greenpeace and ATREE as compared to the “No Go” analysis

performed by the MoEF and Ministry of Coal.

The No Go analysis only looked at 9 coal fields and the forest cover density in demarcated coal blocks within them. On the other hand, this analysis looks at 13 coalfields in their entirety and overlays forest cover, tiger, elephant and leopard presence, identified and likely corridors, and the presence of Protected Areas. Forest cover in the entire coalfield (both blocked and unblocked areas) is looked at in order to provide a guide to planners and field-level groups as to future conflicts.

LIMITATIONS

This exercise is meant to provide a picture of the threat that coal mining poses to the Central Indian landscape. As with any such exercise, there are certain limitations; chief among them is that only 13 coal fields in the central Indian landscape have been analysed. There are at least 26 additional coalfields of varying size in the Central Indian region. There are likely to be many active or proposed mines in or near wildlife reserves/habitats that pose an ecological threat which are not part of these 13 coalfields and so are not reflected in this report. Notable exceptions include coal fields such as Umaria, South Karanpura, PENCH-KANHAN, RAJMAGHAL, KORBA, NAND AND UMRED. These fields were not analysed as the Central Mine Planning & Design Institute Limited (CMPDIL) refused RTI requests from Greenpeace for any coalfield maps³⁶ and the MoEF did not have maps for all coalfields. CMPDI’s refusal has been appealed by Greenpeace.

The second limitation is that coal-related infrastructure such as railway lines, roads, location of power plants, transmission lines etc have not been factored in. Such linear infrastructure has serious impacts on connectivity and integrity of forest landscapes, a fact that has been raised repeatedly by the Standing Committee of the National Board for Wildlife and several state wildlife boards.

Thirdly, there are significant swathes of insurgency affected forest (particularly in Jharkhand and Chhattisgarh) for which data on wildlife presence does not exist as there is little or no wildlife monitoring.



Local NGOs and Greenpeace activists study coal mining and forest maps, Chandrapur © Dhiraj Singh / Greenpeace

Yet many of these same areas are being opened up for coal mining. Relying purely on existing data sets might give one the false security that these coal-bearing areas are of little or no ecological value.

Greenpeace hopes that others can build upon this effort by further refining the data, filling in gaps which might exist and addressing lacunae. To this end the data sources used here are freely available from Greenpeace India on request. Since these are all government data sources they are also available from the respective government departments/ ministries, but, obtaining 'public' data under Right to Information is sometimes a long and tedious process.



Mining overburden, Northern Coalfields Limited, Singrauli
© Greenpeace / Sudhanshu Malhotra



COALFIELD ANALYSIS

Almost all of the coal fields analysed pose a threat – albeit to varying degrees – to wildlife habitat and corridors.

The following pages enumerate the specific threats to landscape connectivity posed by each of the 13 coalfields analysed. These 13 coalfields account for over 25 billion of the 99.4 billion tonnes of proved non-coking coal reserves in the Gondwana basin.³⁷

Cumulatively, at a landscape level, these coal operations will jeopardise connectivity between key tiger reserves/ Protected Areas (source populations) such as between the Kanha-Phen-Achanakmarh cluster and the Sanjay Dubri-Guru Ghasidas cluster, between Bandhavgarh and the Sanjay Dubri-Guru Ghasidas cluster, between Sanjay Dubri-Guru Ghasidas and Palamau, between Palamau and the Hazaribagh-Lawalong belt, between Satkosia Gorge and Simlipal, between Tadoba-Andhari and Kawal and Tadoba-Andhari and Chaprala/Indravati. Some of these populations already have tenuous connectivity; additional mining in the critical areas will exacerbate the situation.

SINGRAULI COALFIELDS

Madhya Pradesh, Chhattisgarh & Uttar Pradesh

Proved Reserves³⁸
5.214 billion tonnes³⁹

Corridor threatened

Sanjay Dubri Tiger Reserve and Guru Ghasidas National Park to Bagdara Wildlife Sanctuary

Corridor identified by

GIS analysis and field level reports

Total area

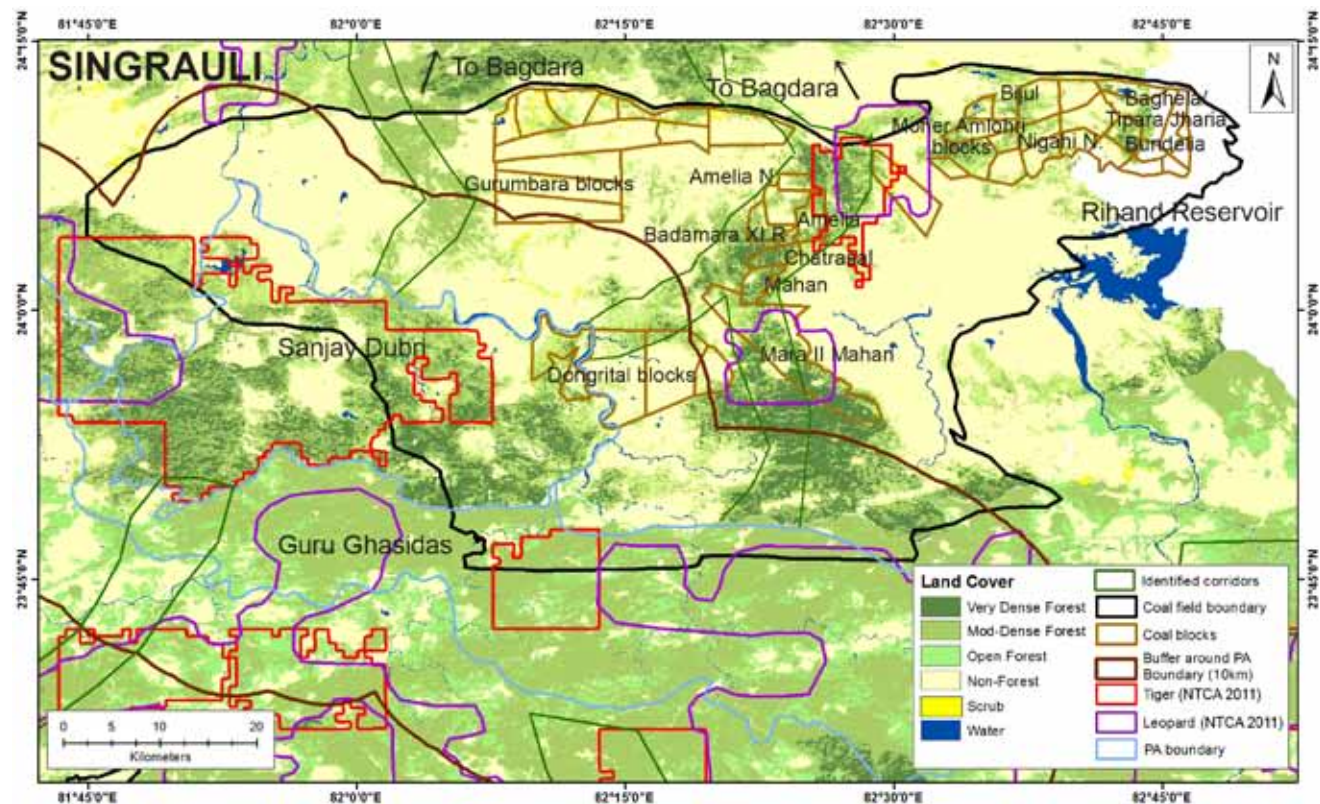
3458 sq. km.

Forest cover⁴⁰

1455 sq. km. (does not include portion of coalfield in Uttar Pradesh)

Endangered species

Tiger, leopard. Field level reports indicate irregular elephant movement in some parts. 289 sq. km. of the coalfield recorded tiger presence, and 181 sq. km. showed leopard presence in 2010.



A large portion of the Singrauli coalfield lies within the Sanjay Dubri National Park and the Guru Ghasidas National Park. One coal block (West Dongrital) has even been demarcated inside the Sanjay Dubri Tiger Reserve. Others such as Dongrital, Dongrital II, Silwari and Gurumbara South lie within the 10 km. buffer from the Tiger Reserve. Cumulatively, over 1,700 sq. km. of the coalfield lies within a 10 km. buffer of one or other Protected Area (PA).

Some of the demarcated coal blocks threaten the forest connectivity between the Sanjay Dubri/Guru Ghasidas cluster to the Bagdara Wildlife Sanctuary to the north.

This connectivity occurs through two main and somewhat parallel forest corridors – the Dongrital-Mahan-Chatrasal-Amelia corridor and another forest corridor to the west of the Gurumbara coal blocks. These are visible in the map above.

The NTCA's 2011 tiger presence data shows tiger presence to the immediate north of the Mahan-Chatrasal-Amelia blocks, a strong indicator of tiger movement through the area from Sanjay Dubri. Villagers in Amelia and Berdaha village report sighting tigers irregularly, and leopards every two to three months. Similarly, elephant movement was reported over a two week period in December 2011 from the



View of Singrauli region
© Greenpeace / Sudhanshu Malhotra

Piderwah, Bandha, Budher, Jamgarhi and Amelia villages near the Mahan block.

The map of Singrauli coalfield needs to be re-drawn to exclude any areas falling within the Sanjay Dubri Tiger Reserve and the Guru Ghasidas National Park and a 10 km. buffer from the PAs. Ongoing mining operations within either of these Protected Areas, or within a 10 km. radius need to be halted and the permission of the National Board for Wildlife sought, in keeping with the Supreme Court order on buffer zones for Protected Areas, and the Ministry of Environment and Forest's own guidelines.⁴¹

Given their biodiversity value, forest clearance must not be granted for the Dongrital, West Dongrital, Dongrital II, Mara-II Mahan, Mahan, Chatrasal, Badamara-XI-R-GSI, Bandha, Amelia and Amelia North coal blocks, or any others in this corridor.

The hitherto undemarcated forest area to the south of these blocks, which is connected to Guru Ghasidas and an important part of the corridor, must be excluded from the Singrauli coalfield and declared off limits for mining, as must the second corridor running northwards, to the west of the Gurumbhara coal blocks.

COMPANIES INVOLVED IN FOREST DESTRUCTION

COAL INDIA LIMITED

A Coal India subsidiary, Northern Coalfields Limited, is responsible for most of the mining in the Singrauli coalfield. Current and planned operations include the Jayanti, Dudichua, Nigahi, Khadia blocks.

ESSAR POWER AND HINDALCO

Essar Power and Hindalco are jointly seeking permission to mine the Mahan block. This block has been denied Forest Clearance on several occasions on account of its forest density, wildlife values and because it drains into the Rihand reservoir.⁴² It is part of a corridor connecting the Sanjay Dubri Tiger Reserve with the Bagdara Sanctuary. Villagers report both tiger and elephant presence, and the NTCA 2011 report shows tiger presence in the contiguous forests to the



Villagers collect mahua from the forests of Mahan, Singrauli coalfield. © Harikrishna Katragadda / Greenpeace

immediate north of the Mahan block.

Essar is also due to receive coal from the Amelia block. The Ministry of Environment website shows that Amelia was denied forest clearance in March 2009.⁴³ However, media reports in September 2011 indicate that the state government has pledged coal from Amelia to Essar for its Mahan power plant.⁴⁴ Amelia is part of the same forest corridor as the Mahan block, linking Sanjay Dubri Tiger Reserve with the Bagdara Sanctuary. The NTCA 2011 report shows tiger presence in the Amelia block.

RELIANCE POWER

Reliance has received forest clearance for the Moher and Moher Amlori blocks, and has also applied for forest clearance for the Chatrasal block, which is thickly forested and part of a corridor linking Sanjay Dubri Tiger Reserve with Bagdara Sanctuary. Coal from Moher, Moher Amlori and Chatrasal is destined for Reliance's Sasan ultra mega power project and the Chitrangi power project, each 4000 MW.

JAIPRAKASH ASSOCIATES

In 2006, Jaiprakash Associates entered into a 70:30 JV with Madhya Pradesh State Mining Corporation to form MP Jaypee Minerals Ltd to mine coal from Amelia North and utilize it in the Nigrie power plant.⁴⁵ This 500 ha. block is part of the forest corridor linking Sanjay Dubri Tiger Reserve with the Bagdara Sanctuary. The MoEF had categorized this as a no go area on account of the quality of its forest cover. In Principal Approval was granted in February 2009, even though the neighbouring Amelia block was rejected on merit the same year.

MP Jaypee Minerals Ltd is also seeking to develop the Dongri Tal II block, which lies within the 10 km. buffer of the Sanjay Dubri Tiger Reserve.



Meeting with the local residents
© Greenpeace / Sudhanshu Malhotra





SOHAGPUR COALFIELD

Madhya Pradesh & Chhattisgarh

Proved Reserves

1.674 billion tonnes

Corridor threatened

(1) Bandhavgarh Tiger Reserve south to Kanha Tiger Reserve/Achanakmarh Tiger Reserve. (2) Bandhavgarh Tiger Reserve east to Sanjay Dubri Tiger Reserve-Guru Ghasidas National Park. (3) Achanakmarh Tiger Reserve and Sanjay Dubri/Guru Ghasidas cluster

Corridor identified by

National Tiger Conservation Authority, forest cover analysis

Total area

4354 sq. km.

Forest cover

912 sq. km.

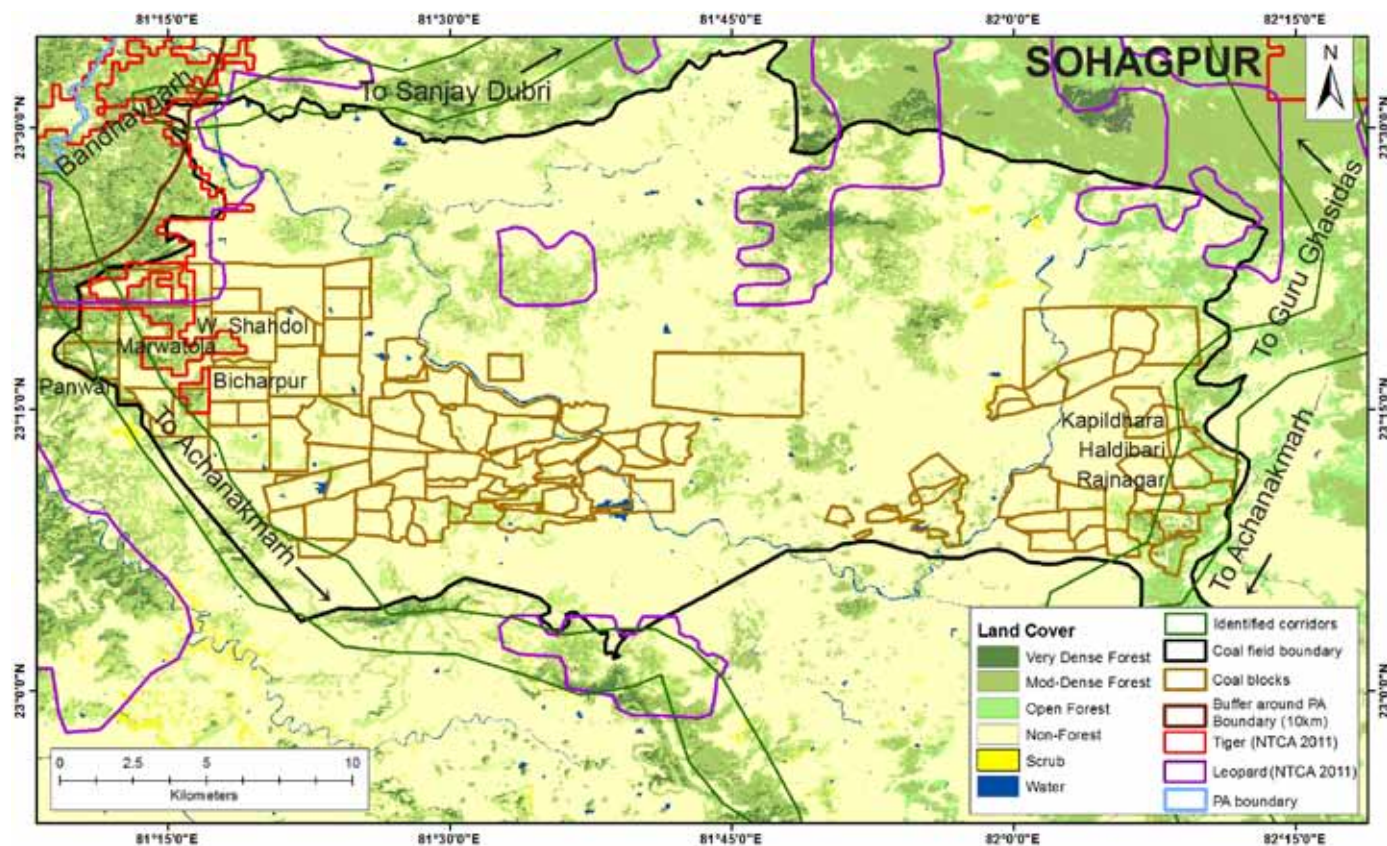
Endangered species

Tiger, leopard. Approximately 70 sq. km. of the Sohagpur coal field recorded tiger presence in 2010 and 340 sq. km. recorded leopard presence.

The western section of the Sohagpur coalfield abuts the southern boundary of the Bandhavgarh Tiger Reserve. This area has good forest cover and is part of a crucial corridor connecting Bandhavgarh with the Kanha and Achanakmarh Tiger Reserves to the south. Several coal blocks have been demarcated in the western, tiger inhabited area; development of these blocks will pose a risk to tiger movement through this corridor. The blocks as per the FSI-CMPDI map are: Arjuni, Patnar, Gunghuti, Panwari, Marwatola, West of Shahdol, Malachua, Maradhua, Marwatola South. Part of the Sohagpur coalfield falls within

10 km. of the boundaries of the Bandhavgarh Tiger Reserve and hence any mining operations should be prohibited, and would in any case need to seek permission from the National Board for Wildlife. The NTCA clearly states that "Tiger occupancy in the forests of Sohagpur were spill overs from Bandhavgarh and are important for connecting Bandhavgarh with Kanha and Achanakmarh."⁴⁶

The other major tiger corridor from Bandhavgarh Tiger Reserve lies along the northern edge of the Sohagpur coalfield, linking Bandhavgarh with the Sanjay Dubri Tiger





Reserve/Guru Ghasidas cluster. This part of the Sohgapur coalfield has not yet been blocked. There are also patchy forest connections with leopard presence through the central part of the Sohgapur coalfield that might provide a corridor to the Sanjay Dubi/Guru Ghasidas cluster.

The eastern edge of the Sohgapur coalfield lies along the MP-Chhattisgarh boundary. Forest cover maps show that this is part of a forest corridor linking the Guru Ghasidas/Sanjay cluster to the north with the Achanakmarh Tiger Reserve to the south. Some coal blocks have been demarcated in this area: Kapildhara, Haldibari, North, West and South Jhagrakhand, Jhimar, Jhinya and Kulhariya. Part of this area shows leopard presence.

COMPANIES INVOLVED IN FOREST DESTRUCTION

Coal India Limited

A CIL subsidiary, South Eastern Coalfields Limited has interests in many of the blocks in Sohgapur, including the Sheetalpara, Kapildhara and Haldibari blocks for which it is in the process of seeking environmental and forest clearance. All three of these blocks are in the narrow forest corridor that links Guru Ghasidas National Park to the north with Achanakmarh Tiger Reserve to the south. The Rajnagar Open Cast mine is eating into this corridor at one of its narrowest points.

ACC Limited

ACC is one of India's largest cement companies. According to ACC's 2010 Annual report, it is seeking clearance for the Bicharpur coal block.⁴⁷ Immediately to the west of the block are forests adjoining the Bandhavgarh Tiger Reserve, which shows tiger presence according to NTCA's 2011 report.

SONHAT COALFIELDS

Chhattisgarh

Reserves

171 MT

Corridor threatened

Achanakmarh Tiger Reserve to Guru Ghasidas National Park/Sanjay Dubri Tiger Reserve

Corridor identified by

GIS analysis

Total area

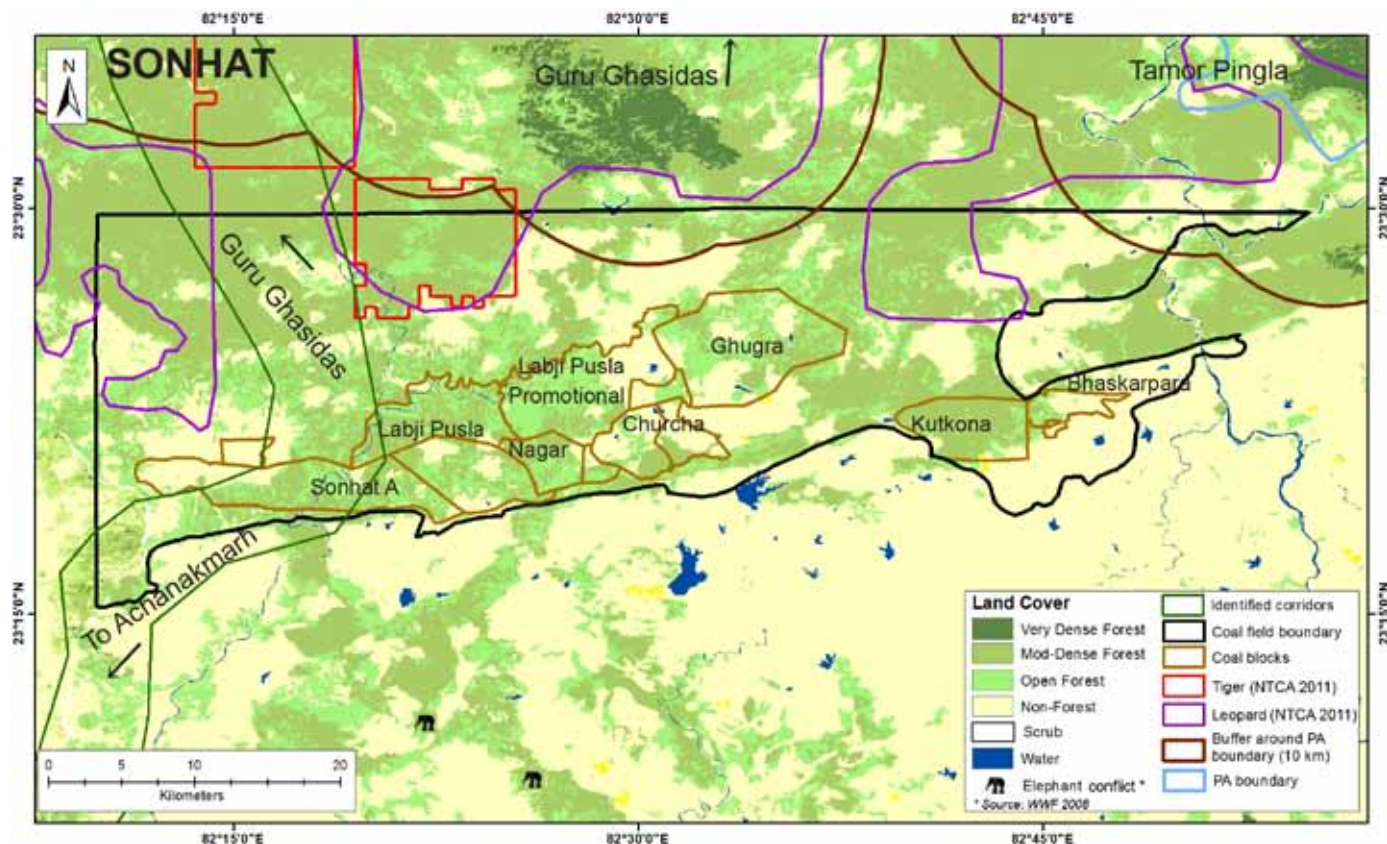
1,278 sq. km.

Forest cover

834 sq. km.

Endangered species

Tiger, leopard. Tiger presence is recorded in approximately 62 sq. km. and leopard in approximately 194 sq. km. Elephant presence is likely given that the area is contiguous with Tamor Pingla Sanctuary, which is part of the Badalkol-Tamor Pingla Elephant Reserve. WWF India's GIS division has documented reports of elephant-human conflict in several forest areas in and adjoining the Sonhat coalfield.⁴⁸ These locations are also marked on the adjoining map.



The Sonhat coalfields comprises of largely intact forest to the south of the Guru Ghasidas National Park, and immediately to the east of the Sohagpur coalfield. 65 sq. km. of the coalfield appears to fall inside the 10 km. buffer from GGNP and Tamor Pingla Sanctuary. The western part of the coalfield lies on the north-south forest corridor connecting Achanakmarh Tiger Reserve to GGNP/Sanjay Dubri Tiger Reserve. This coalfield is in the early stages of exploitation, with some blocks already demarcated in the central portion of the coalfield and in the corridor to

Achanakmarh at one of its narrowest points. Coal mining here will endanger the corridor as a whole.

The Sonhat coalfield must exclude the buffer areas of Guru Ghasidas National Park and Tamor Pingla. Further, given the proximity to the national park and the intact nature of the forest, permitting mining in any part of this coalfield would set a precedent for the destruction of the entire area.

COMPANIES MINING FOREST LAND

COAL INDIA LIMITED

A Coal India subsidiary, South Eastern Coalfields Limited is operating at Kutkona.



© Dhritiman Mukherjee / Greenpeace

TATAPANI COALFIELD

Chhattisgarh

Reserves

0 proved; indicated and inferred reserves are estimated at approximately one billion tones.

Corridor threatened

Guru Ghasidas National Park/Tamor Pingla Sanctuary to Palamau Tiger Reserve

Corridor identified by

NTCA

Total area

1137 sq. km.

Forest cover

568 sq. km.

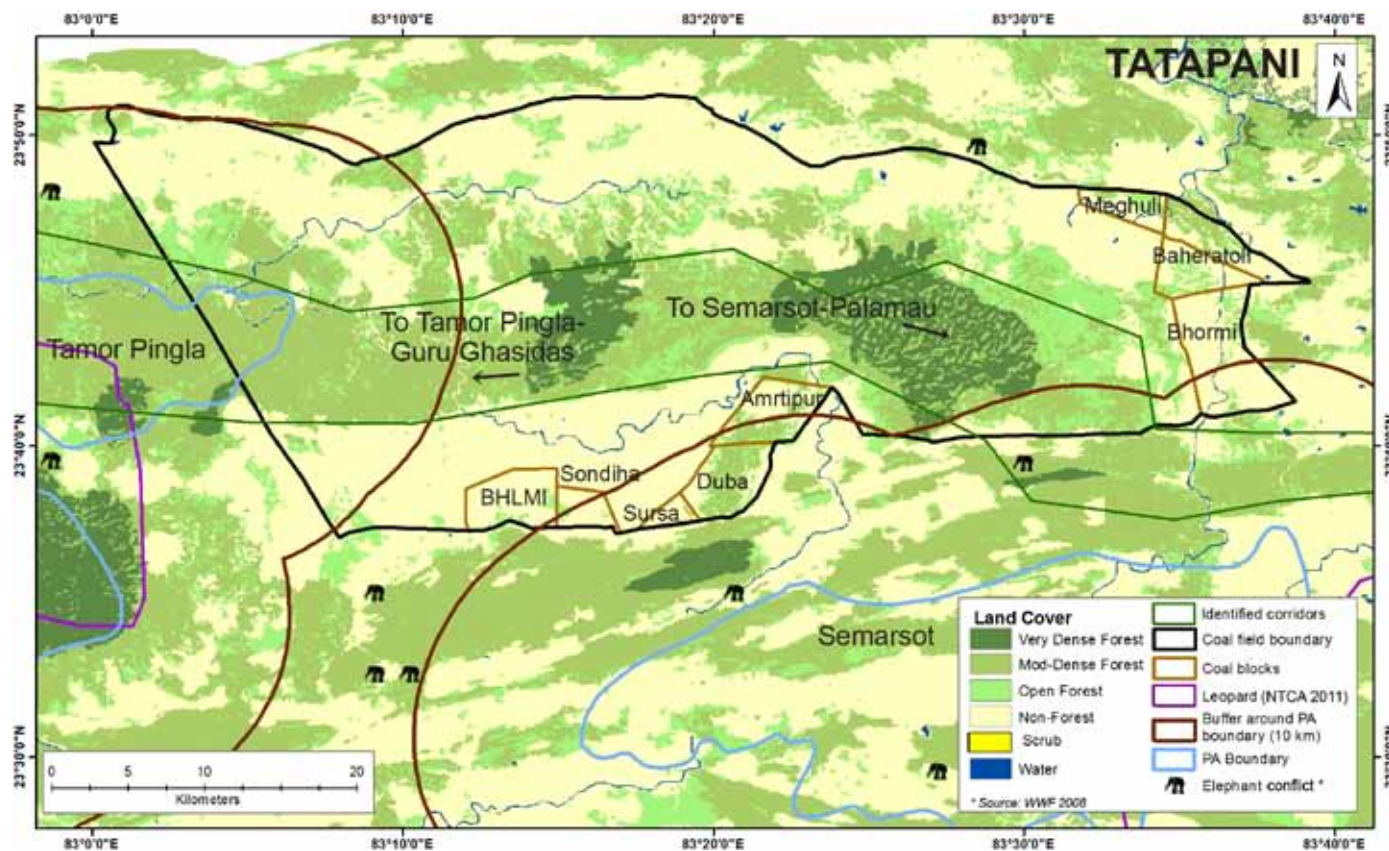
Endangered species

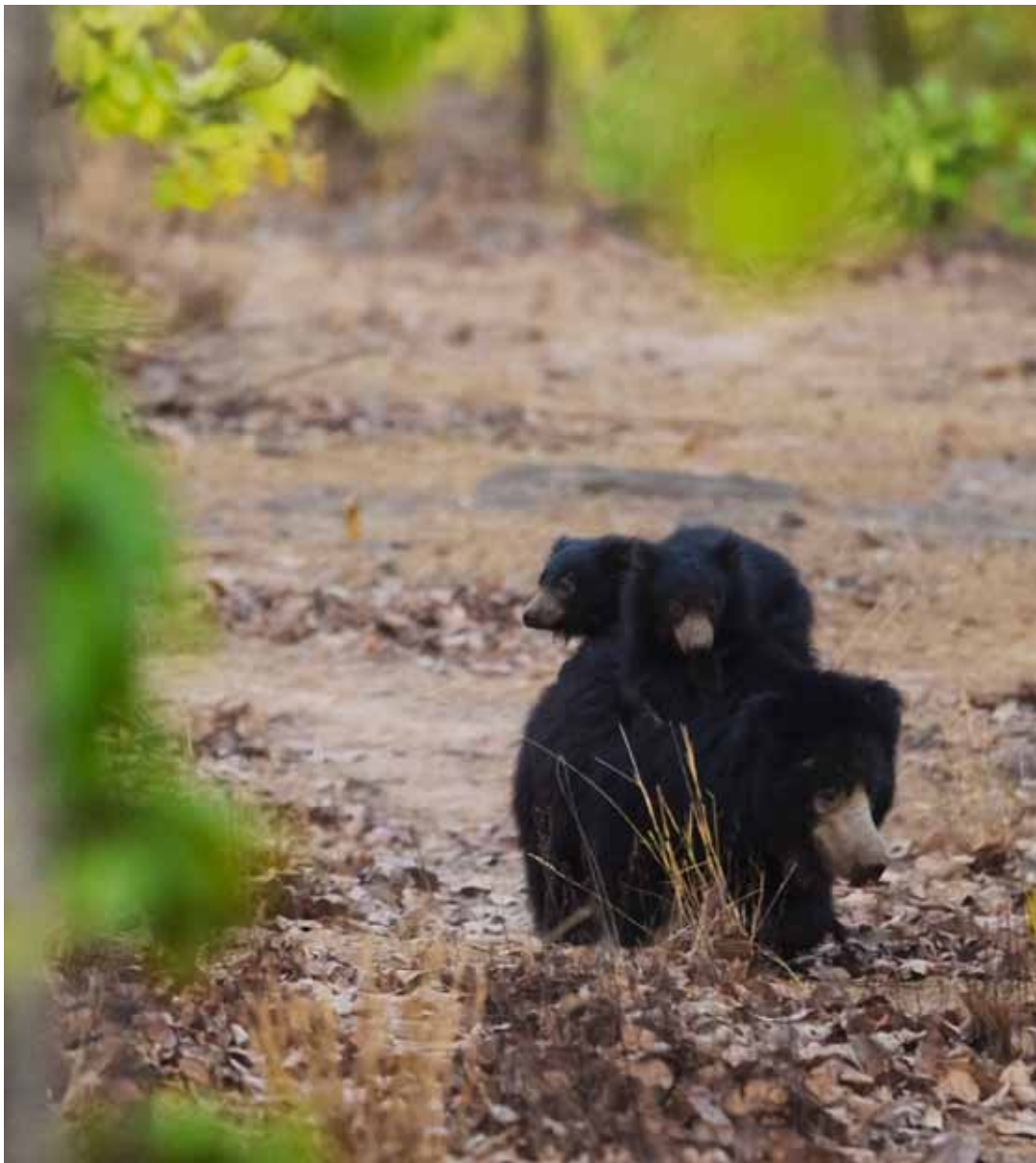
NTCA's 2011 report shows no tiger presence. The Project Tiger/Wildlife Institute of India 2006 report (Qureshi *et al*, 2006) shows tiger presence at a taluk level within the coalfield, representing over 400 sq. km. Given the continuity with Tamor Pingla and reports of elephant-human conflict,⁴⁹ elephant presence is probable. WWF India's GIS division has documented reports of elephant-human conflict in several forest areas in and adjoining the Tatapani coalfield.⁵⁰ These locations are marked on the adjoining map.

The Tatapani coalfield in Surguja district of Chhattisgarh is located to the northeast of the Sonhat coalfield, and overlaps a clear forest corridor connecting the Guru Ghasidas National Park (GGNP) /Tamor Pingla cluster with Semarsot Sanctuary and the Palamau Tiger Reserve. Forest cover maps show a clear east-west forest link between GGNP/Tamor Pingla and Palamau, and the corridor has been identified as important in NTCA's 2011 report. So far, only a few coal blocks have been demarcated in the coalfield, which is still largely unbroken. If the Tatapani coalfield is developed, the forest link between Tamor Pingla-Palamau will be broken. Approximately 365

sq. km. of the Tatapani coalfield falls within the 10 km. buffer from Tamor Pingla and Semarsot, and part of the coalfield even appears to fall inside Tamor Pingla Sanctuary.

Jhala *et al* (2011) stress the importance of this corridor: "The contiguous forest from Bandhavagarh to Palamau comprises of Sanjay-Dubri Tiger Reserve in Madhya Pradesh and the recently proposed Guru Ghasidas National Park in Chhattisgarh. The latter is further connected to forests of Timor Pingla and Semarsot Wildlife Sanctuary in Chhattisgarh which eventually connect to Palamau. The entire forested landscape





in this region covers an area of 12,580 sq. km. and could form one of the largest contiguous tiger habitats in central India.”

As with the Sonhat area, opening this relatively intact forest area to mining will set the stage of large-scale destruction of wildlife habitat.

COMPANIES MINING FOREST LAND

CHHATTISGARH MINERAL DEVELOPMENT CORPORATION (CMDC)

A state owned company, CMDC is seeking environmental clearance for 810 ha. for the Sondiha coal block. The Environment Impact Assessment report for the project mentions the presence of elephant in the area.⁵¹

Sloth Bear with its cubs.
© Dhritiman Mukherjee / Greenpeace

AURANGA COALFIELD

Jharkhand

Proved Reserves
213 million tonnes

Corridor threatened
Palamau Tiger Reserve to
Lawalong Wildlife Sanctuary

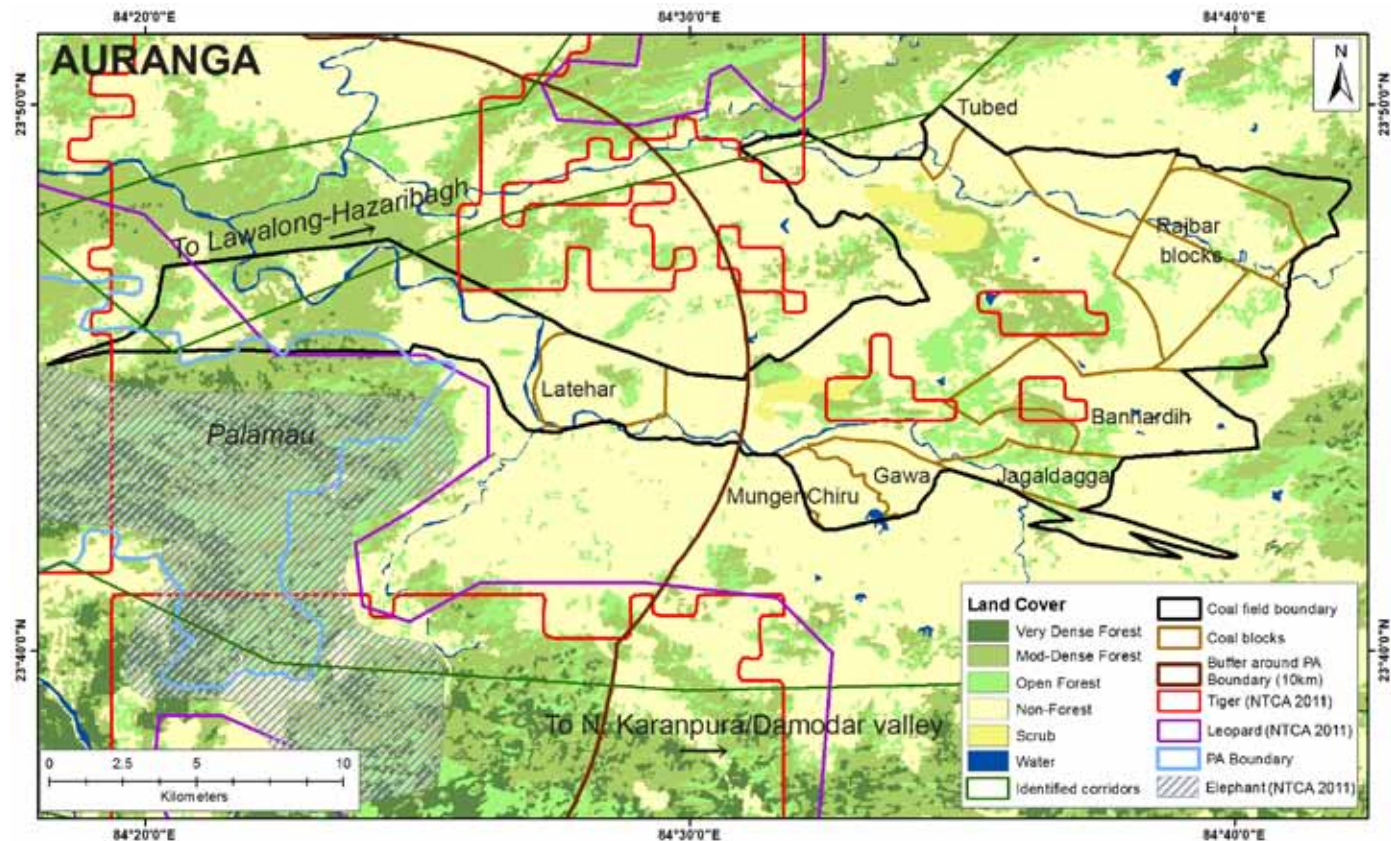
Corridor identified by
GIS analysis

Total area
228 sq. km.

Forest cover
58 sq. km.

Endangered species

Tiger presence recorded in 15 sq. km. across the coalfield. Elephant presence likely given continuity with Palamau.



The Auranga coalfield lies in the Palamau district of Jharkhand. From the FSI-CMPDI map of Auranga coalfield, it is apparent that a significant portion of the coalfield, over 57 sq. km., actually lies within the 10 km. buffer of the Palamau Tiger Reserve. Part of the coalfield even appears to fall within the tiger reserve boundaries. Tiger presence is reported from patches throughout the coalfield. The forest areas in the northern part of the coalfield are part of the corridor that connects Palamau to Lawalong Wildlife Sanctuary further to the northeast. From Palamau, tigers and elephants are known to move to Lawalong and beyond

to Hazaribagh National Park and its surrounding forests. Palamau is believed to be home to about 180 elephants, and Hazaribagh also harbours elephants. (Rangarajan et al, 2010) Elephants also move from Palamau through Latehar to McCluskieganj and eastwards along the Damodar river. Elephant presence has been recorded immediately outside the coalfield (see map), in adjacent forests.

Further development of the Auranga coalfield will jeopardize this movement. As seen in the North Karanpura case study, human elephant conflict is already a serious issue in this

area. The map of the Auranga coalfield must be redrawn to exclude the buffer areas of Palamau Tiger Reserve. A thorough analysis of elephant and tiger movement and presence is necessary. Given tiger and elephant presence at many places in and around the coalfield, no coal mines should be permitted in Auranga.

COMPANIES MINING FOREST LAND

HINDALCO AND TATA POWER

Both companies have set up Tubed Coal Mines, a Joint Venture to mine coal from the Tubed block. Tiger and leopard presence has been reported nearby.

JHARKHAND STATE MINERAL DEVELOPMENT CORPORATION (JSMDC)

JSMDC has been allotted the Latehar block, which falls within the 10 km. buffer of the Palamau Tiger Reserve. Elephant, tiger and leopard have been recorded nearby.

TENUGHAT VIDYUT NIGAM LTD (TVNL)

Another state-owned company, TVNL has been allotted the Rajbar block.



TALCHER COALFIELD

Odisha

Proved Reserves

14.240 billion tonnes

Corridor threatened

Satkosia Tiger Reserve to Simlipal Tiger Reserve and to Khalasuni Sanctuary

Corridor identified by

National Tiger Conservation Authority, Wildlife Trust of India

Total area

2342 sq. km.

Forest cover

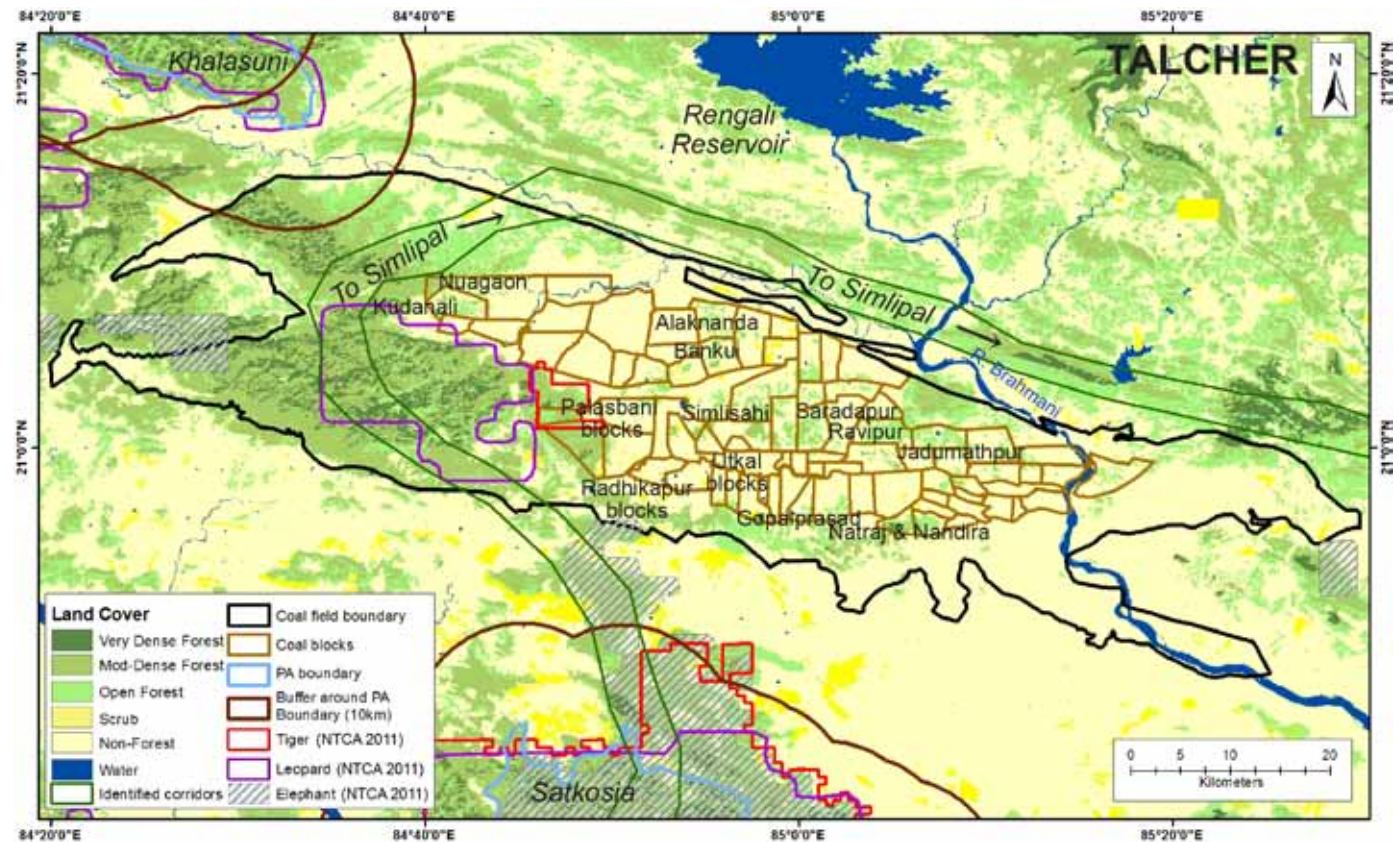
945 sq. km.

Endangered species

Tiger, leopard, elephant. Tiger presence was recorded in 24 sq. km., leopard over 225 sq. km. and elephant over about 14 sq. km. inside the coalfield.

The Talcher coalfield in Odisha lies in a critical location north of the Satkosia Tiger Reserve and a substantial portion overlaps with a forest corridor identified by the NTCA as critical to link Satkosia with the Simlipal Tiger Reserve. The western portion of the Talcher coalfield is covered with contiguous dense forests and it is here that most wildlife presence is seen; the southern and eastern edges have smaller dense and open forest areas. The central portion, where mining has been underway for several years, has only a few significant patches of open and moderately dense forest.

The forest areas in the western part of Talcher coalfield lie within and adjacent to the corridor identified by the NTCA (Jhala et al, 2011, pg 82) connecting the Satkosia Tiger Reserve to the Simlipal Tiger Reserve. Tiger presence has been recorded along this corridor, according to the NTCA, which is around the Bamur forest range. The Satkosia Tiger Reserve itself is at a straight line distance of approximately 20 km. from the southern boundary of Talcher coal field. Approximately 57 sq. km. of the coalfield lies within the 10 km. buffer of Satkosia. In addition to the NTCA identified corridor, there is also patchy



forest running along the southern edge of the coalfield, and in the central portion, up to the Brahmani river, which then connect with the corridor to Simlipal.

The Wildlife Trust of India in its 2005 report Right of Passage has also identified this area as being an important elephant corridor,⁵² stating “Elephants from Satkosia Wildlife Sanctuary, Handapa Reserve Forest and adjoining area of Athamalik Forest Division move through some degraded and discontinuous forest patches of Simulipathar Reserve Forest, Durgapur Reserve Forest, Nisha Protected Forest, Kuio Protected Forest, Kauchiakhhol Reserve Forest, Rakas Reserve Forest and Kahnejena Reserve Forest to Anantapur Reserve Forest of (Khamakhyanagar Range) Dhenkanal Forest Division.” The WTI report focusses on the corridor across the Brahmani river, but it is the extant forest patches within the Talcher coalfield that permit wildlife movement from Satkosia up to the river. If these forest stretches are cleared for mining, wildlife movement along this corridor could cease.

The coalfield maps obtained from the MoEF indicate that the western part of the coalfield has not yet been “blocked” (demarcated) by the Coal Ministry. The state forest department and central MoEF should not entertain any coal prospecting or extraction proposals in this area, given its importance for both tiger and elephant. Part of this area also falls within the buffer zone of the Khalasuni Sanctuary.

There is additional forest in the central and southern portion of the coal field. Maps of the area’s forest cover and the locations where elephant presence is shown in NTCA’s 2011 report indicate that it is likely that elephants are moving eastwards along the southern portion of the coalfield (adjoining the Radhikapur, Utkal and Gopalprasad blocks).

The Palasbani West and Dip Side of Palasbani West blocks are clearly in good quality forest. Similarly, the Kudanali, Kudanali-Luburi and Nuagaon North blocks overlap with forest area, as do the Gopalprasad blocks, Natraj, Nandira and Brahmani blocks and several more blocks (Simlisahi, Saradpur, Ravipur, Jadumathpur, Jamujhari-Brahmanabali) in the central portion of the coalfield. These forest patches provide forest “stepping stones” linking the Satkosia Tiger Reserve with the Kamakhyanagar range and then

eventually with the Simlipal Tiger Reserve.

No further diversion of forest land in these areas should be permitted if these corridors are to remain functional.



© Greenpeace / Sudhanshu Malhotra



COMPANIES MINING FOREST LAND

COAL INDIA LIMITED

CIL subsidiary Mahanadi Coalfields Ltd operates several blocks in Talcher and plans to open up new ones, including the Gopalprasad West open cast mine, in a joint venture with companies from the Jindal group.⁵³

JINDAL GROUP

Has a stake in several blocks including Utkal B1, Utkal A, Gopalprasad West and Mandakini.

MONNET GROUP

Has a stake in the Mandakini block, as part of a joint venture with Tata Power and Jindal Photo. The Utkal B2 block has also been allocated to Monnet Ispat.

TATA GROUP

TATA Sponge Iron Ltd has been allotted the Radhikapur East block. Tiger and leopard presence is reported in nearby forests to west and south. TATA Power has a stake in the Mandakini block.

© Greenpeace / Sudhanshu Malhotra







THE IB VALLEY, MANDRAIGARH & HASDEO-ARAND COALFIELDS

are adjacent to each other, stretching from Odisha's Sundergarh district to Chattisgarh's Korba district. The impact of mining in these three coalfields must be considered cumulatively. Given the relative continuity of these forests, they, in fact, provide a link between the biogeographic zones of Odisha's Eastern Ghats and the Central Indian forests. While expanding coal mining in any one of these coalfields would have serious implications on biodiversity, mining in all three coalfields would lay waste to a large contiguous forest area.

IB VALLEY COALFIELD

Odisha, Chhattisgarh

Proved Reserves

7.1 billion tonnes

Corridor threatened

Sambalpur Elephant Reserve to
Lemru Elephant Reserve in
Chhattisgarh

Corridor identified by

GIS analysis

Total area

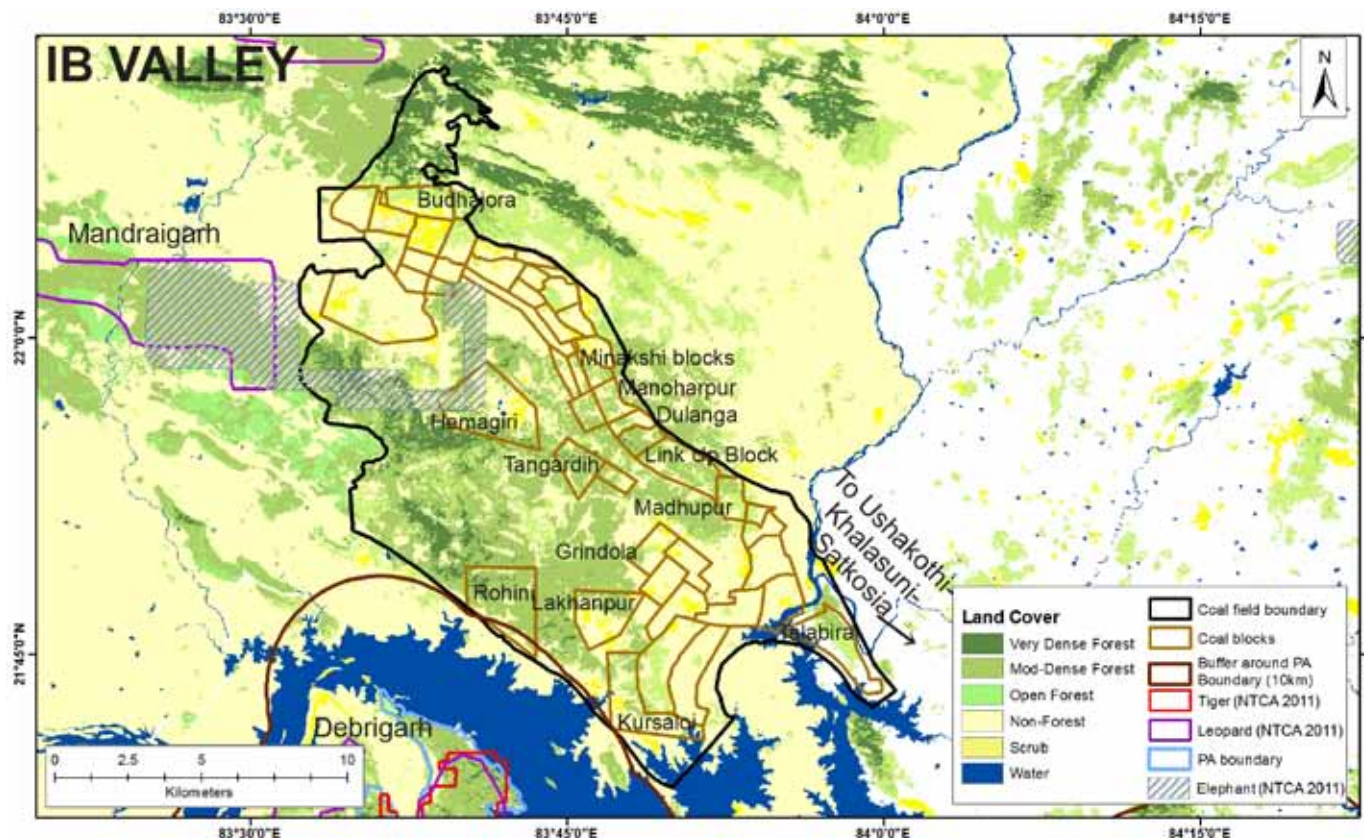
1,236 sq. km.

Forest cover

604 sq. km.

Endangered species

Elephant presence recorded over
approximately 57 sq. km. Tiger
presence recorded in 2005 but not
in 2010. Possibility of tiger presence
due to proximity to Debrigarh and
Ushakothi Sanctuaries.



The Ib Valley coalfield is situated on the northern bank of the Hirakud reservoir. NTCA reports tiger presence in the nearby Debrigarh Sanctuary. The Sambalpur Elephant Reserve lies immediately to the east of the coalfield, within which the Khalasuni and Ushakothi Sanctuaries are the main refuge for the elephant. These two PAs are connected to the Satkosia Tiger Reserve to the southeast.

Elephants from the Sambalpur Elephant Reserve are known to move north into Jharkhand (Sar & Varma, 2004). However, little information is available on elephant movement from Odisha to

Chhattisgarh. Officials in the Chhattisgarh Forest Department have been noting an increase in elephant movement into Chhattisgarh from both Odisha and Jharkhand in recent years, resulting in human-elephant conflict.⁵⁴ The increased movement has been attributed to mining in both states.⁵⁵

The Ib Valley appears to be one of the routes for elephant migration from the Sambalpur and Sundergarh districts into Chhattisgarh. The elephant presence map in the NTCA 2011 report shows a significant area with elephant presence in the Ib Valley north of Hirakud reservoir, and to the west and northwest

into Chhattisgarh. To the west and northwest of the coalfield in Chhattisgarh there is forest continuity up to the Lemru Elephant Reserve, itself a large and intact forest landscape. Given reports of tiger presence in Ushakothi, Khalasuni and Debrigarh Sanctuaries, tiger movement through the Ib Valley between Chhattisgarh and Odisha is also possible. NTCA's 2011 report also indicates tiger presence in the Ib Valley area in 2004, but none in 2010.

The central portion of the Ib Valley coalfield has extensive dense forests. Some coal blocks have already been demarcated here: Rohini, Tangardhi, Hemagiri, Madhupur, Link Up Block, Dulanga, Dulanga Part, Manoharpur, Manoharpur Dip, Minakshi B, Dipside of Minakshi and Dipside of Pariapara.

If these and other hitherto unblocked areas are opened up to coal mining, there is the danger of increased human-elephant conflict in surrounding areas, as corridors get disrupted and elephant populations try to find new routes to suitable habitats.

COMPANIES MINING FOREST LAND

COAL INDIA LIMITED

CIL subsidiary Mahanadi Coalfields Limited has been allotted several blocks in the Ib Valley, including Kulda, Samleswari (Basundhara and Chaturdhara blocks) and Talabira.

HINDALCO

Hindalco has applied for permission to expand its Talabira I coal mining operations here from 1 to 3 mtpa. This area is close to the Debrigarh Sanctuary and abuts a narrow forest patch connecting the forests of the Sambalpur Elephant Reserve with those of the Ib Valley. The Talabira mines have run into opposition from villagers protesting that they have not been rehabilitated and that the coal mine has led to

pollution and the destruction of forest.⁵⁶

VEDANTA (STERLITE ENERGY), LANCO, GMR, ARCELORMITTAL, RELIANCE INFRASTRUCTURE, NAVBHARAT POWER

These companies have formed a joint venture called Rampia Coal Mine and Energy Private Ltd (www.rampiaccoal.com) to develop the Rampia and Rampia Dip blocks, allocated to Sterlite. The Rampia block has extensive forest cover was classified as No Go by the MoEF. Elephant presence has been recorded very close to these blocks.

BHUSHAN LTD.

Jamkhani and Bijahan block have been allotted to Bhushan Ltd.

MANDRAIGARH COALFIELD

Chhattisgarh

Proved Reserves

3.675 billion tones

Corridor threatened

Sambalpur Elephant Reserve and Lemru Elephant Reserve

Corridor identified by

GIS analysis

Total area

3474 sq. km.

Forest cover

1727 sq. km.

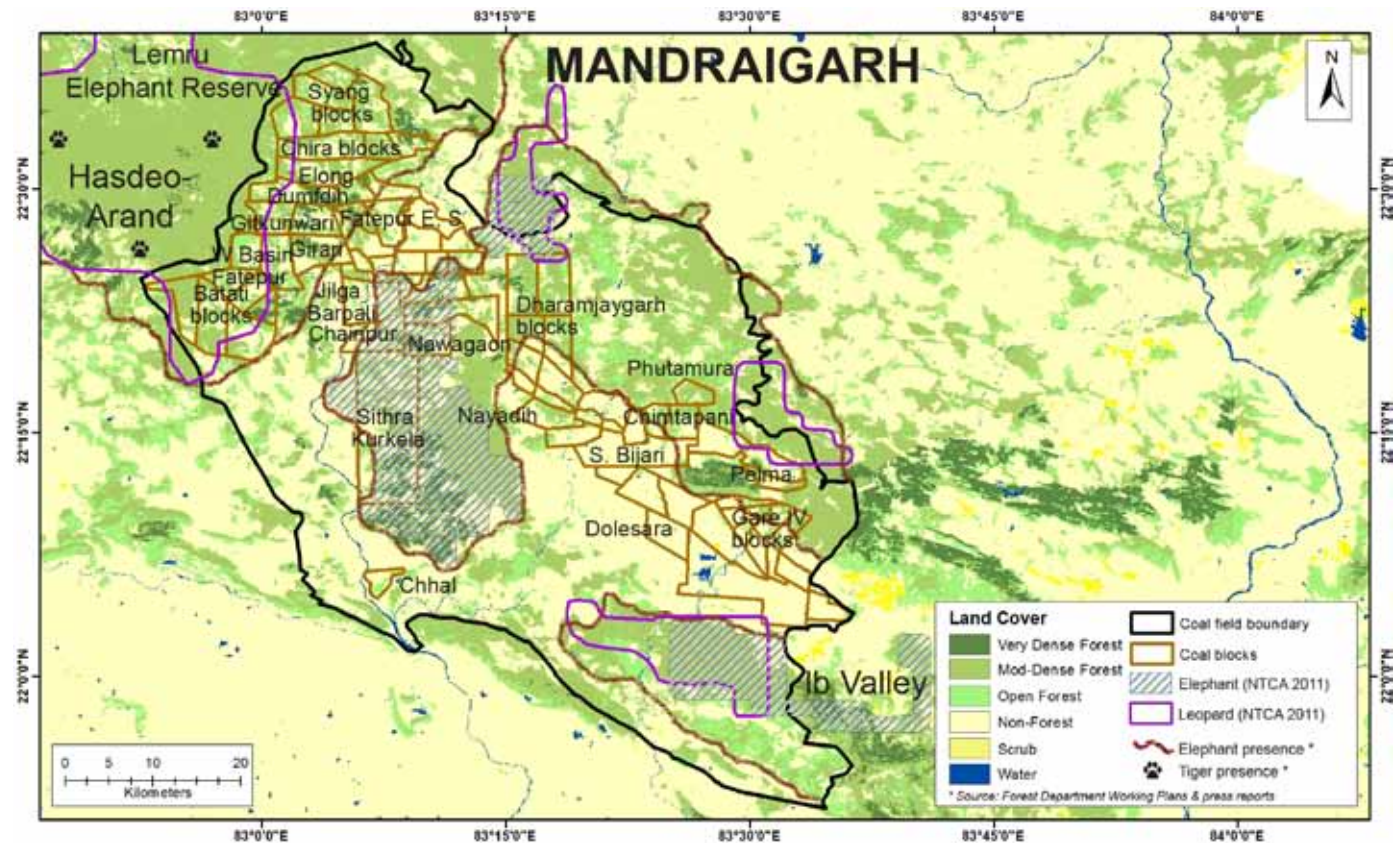
Endangered species

Elephant, leopard. Elephant presence recorded over 480-odd sq. km., and leopard presence over 370-odd sq. km. NTCA's 2011 report indicates tiger presence in 2004, but none in 2010. Forest Department Working Plans for Dharamjaygarh Division, press reports and field sources suggest that elephant presence is more widely distributed than reflected by the NTCA report. This has been shown in the map.

The Mandraigarh coalfield lies immediately to the west and northwest of the Ib Valley coalfield, with its southeastern edge on the border with Odisha. These forests are contiguous with those in the Sundargarh district, and a corridor for elephant movement between the two states. On the northwest, the Mandraigarh coalfield borders the area of the controversial Lemru Elephant Reserve, which has a significant elephant population according to the Chhattisgarh Forest Department. The NTCA 2011 report indicates elephant and leopard presence in a large part of the forests of Mandraigarh, and tiger presence in the 2004 enumeration (pg 79 of the 2004 report)

but none in 2010. WWF India's GIS division has documented reports of elephant-human conflict in several forest areas in and adjoining the Mandraigarh coalfield.⁵⁷

The Mandraigarh coalfield contains a large number of demarcated coal blocks in dense forest area, including several that overlap or adjoin elephant and leopard habitat. Among them are: Syang South, North, Central, East and Captive, Chira Southeast, Southcentral, North, Northeast and Northeast B, Elong, Dumfidh, Fatepur, Gitkunwari, West of Basin Fatepur A, B and C, Fatepur South, Girari, Batati and Batati-Kolga



blocks, Nawagaon, Chainpur, Ongana Potia, Sithra-Kurkela, East of Dharmjaygarh I, II, III and IV, Phutamura, Chintapani and Chintapani Extension, Nayadih, Gare IV/4, Gare IV/5, Gare IV/8.

COMPANIES MINING FOREST LAND

COAL INDIA LIMITED

CIL subsidiary South Eastern Coalfields Limited has been allotted several blocks in the Mandraigarh coalfield including Pelma, Jampali and Chhal, which are at various stages in the approval process. Some of these blocks are in or near areas showing leopard presence.

JINDAL GROUP

Several of the Gare blocks (Gare IV/1, IV/2, IV/3, IV/6) in the southeastern part of the Mandraigarh coalfield have been allotted to various Jindal companies for mining or coal washeries. The NTCA 2011 report shows elephant and leopard presence in and near the Gare blocks.



Sign erected to warn people of elephant presence on the Dharamjaigarh-Raigarh road, in Mandraigarh coalfield. © Pushp Jain

HASDEO-ARAND COALFIELD

Chhattisgarh

Proved Reserves
1.369 billion tonnes

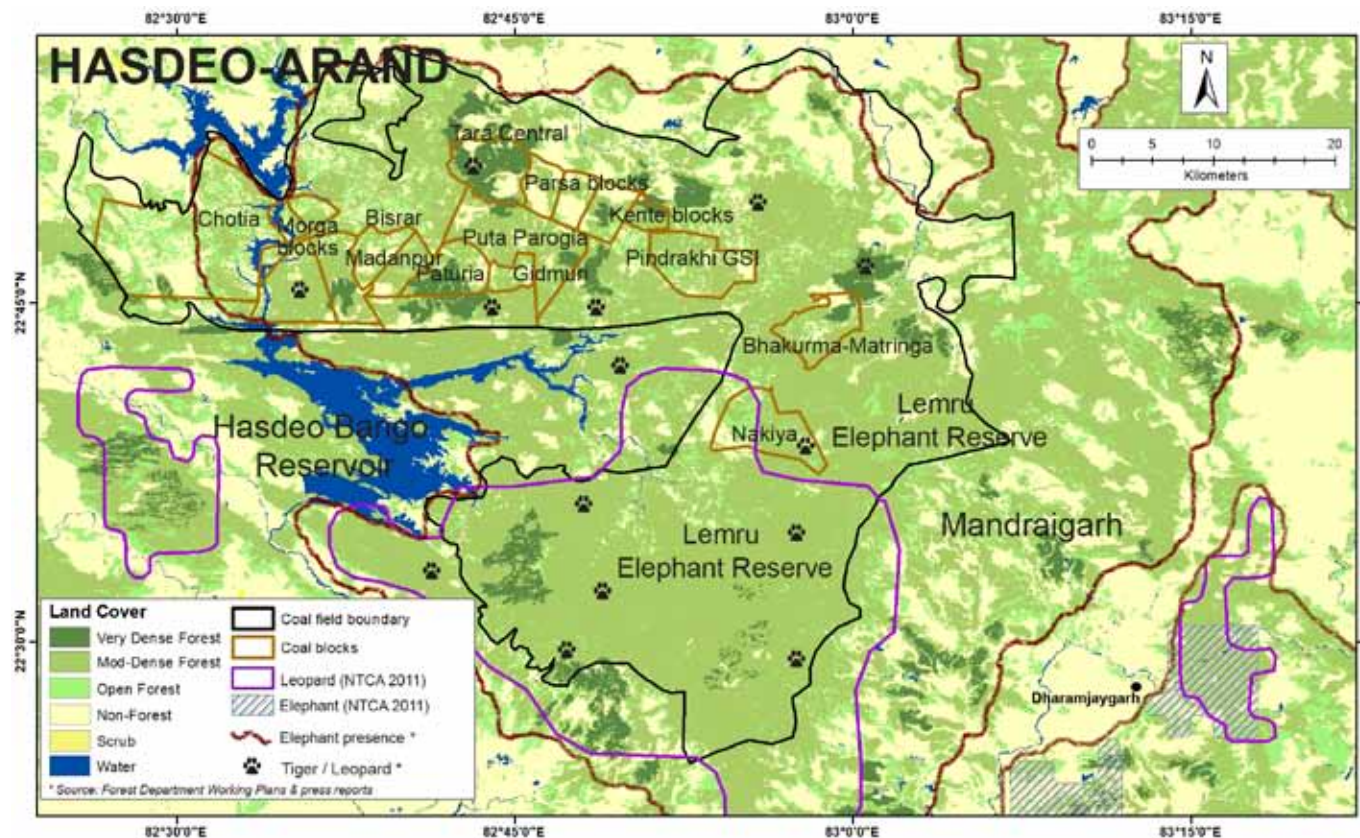
Corridor/ Protected Area threatened
Lemru Elephant Reserve

Total area
1878 sq. km

Forest cover
1502 sq. km.

Endangered species

Leopard. Neither tiger nor elephant, according to the NTCA's 2011 analysis. However, a multitude of reports from 2005 onwards indicate that this is not the case. In 2007, reports from the Ministry of Environment and Forests and Chhattisgarh Forest Department indicate the Korba and Raigarh districts have significant elephant numbers, on the basis of which the area was proposed as the Lemru Elephant Reserve. NTCA's 2011 report shows tiger presence recorded in the Hasdeo-Arand area in 2004, with no record in 2010.⁵⁸ Forest department correspondence in 2007 also cites tiger presence in the area near the Nakiya block. WWF India's GIS division has documented reports of elephant-human conflict in several forest areas in and adjoining the Hasdeo-Arand coalfield.⁵⁹ More recent reports in 2009 from MoEF officials and members of the Forest Advisory Committee confirm elephant presence near the Parsa village.⁶⁰ The current Working Plans for Korba, Katgora and South Sarguja Divisions mention elephant, tiger and leopard; Dharamjaygarh and Raigarh Division mention elephant and leopard. This has been shown on the map.



The Hasdeo-Arand coalfield lies in the Korba and Surguja districts of Chhattisgarh. Its southeastern edge borders the Mandraigarh coalfield. About 80% of Hasdeo-Arand is covered by good quality forest. This is one of the largest intact forest blocks in central India outside of the Protected Area system. It is also the watershed of the Hasdeo Bango reservoir on the Hasdeo river, which is a tributary of the Mahanadi river.

A large part of this intact forest block, around 450 sq. km., with no human habitations within, was approved by the MoEF as the Lemru Elephant Reserve in 2007, acting on a resolution

passed by the Chhattisgarh State Assembly in 2005. The Central government was very supportive of the Lemru reserve, its inspection team noting that Lemru was characterized by “dense cover, perennial water sources and moist riverine forest especially suitable for elephants.... There is an added advantage of having nearly 400-500 sq km free from human settlement.” The team also cautioned that the only threat to the area was “in terms of mineral importance for coal.”⁶¹

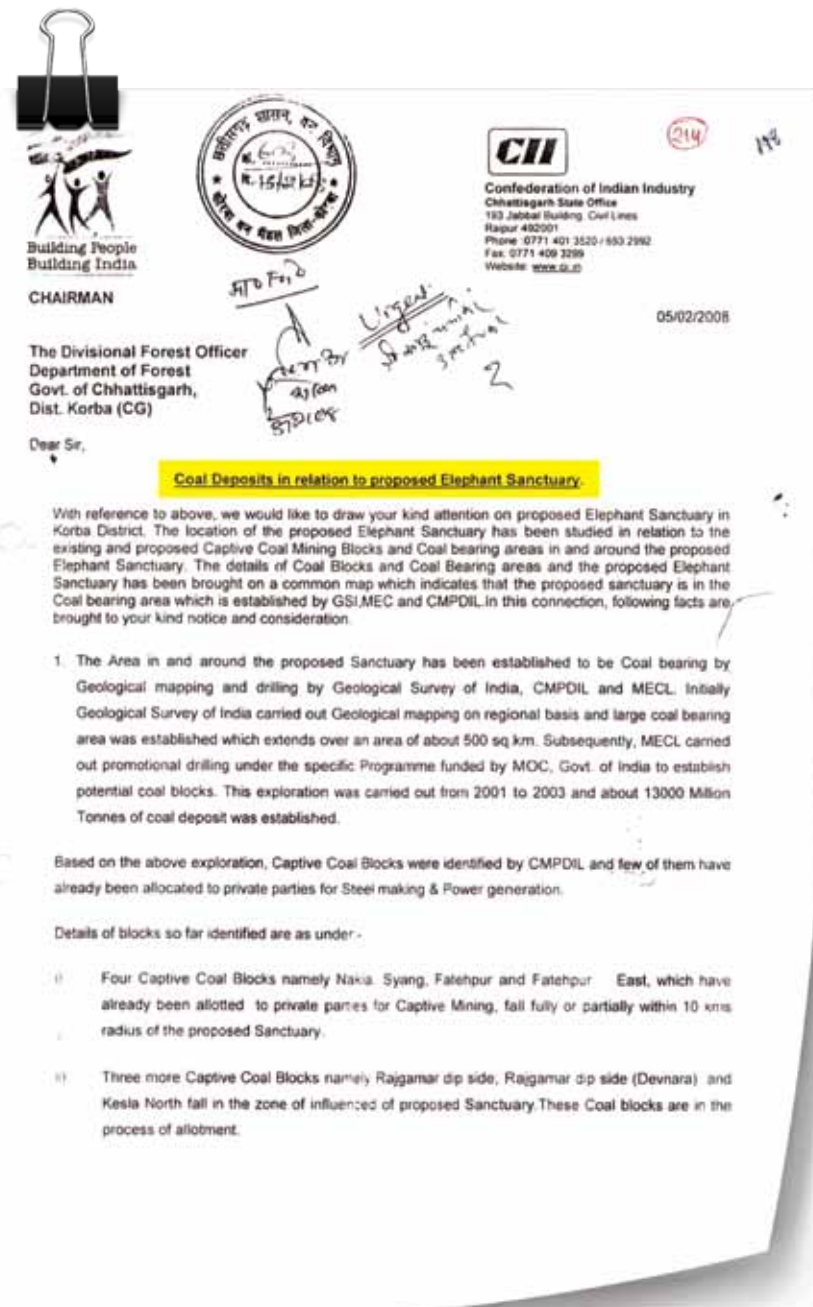
In February 2008, the Chhattisgarh state unit of the Confederation of Indian Industry (CII) wrote to the forest

department allegedly stating “the area in and around the (elephant) sanctuary has been established to be coal bearing. The proposed sanctuary, if finalised, will block at least 40 million tonne per annum of coal production.”⁶² Caving in to industry pressure, the state government first tried to reduce the area of the reserve to exclude coal mining blocks, and ultimately decided to do away with the reserve to make the entire area available for coal. Among the private players allocated blocks in Hasdeo-Arand are AES Chhattisgarh Energy, SKS Ispat & Power Ltd and Chhattisgarh Captive Coal Mining Ltd. The state government has since ignored repeated reminders from the Centre to notify the Elephant Reserve, and officials in the Chhattisgarh Forest Department⁶³ now state that the elephant reserve proposal has been “shelved”.

Tiger presence in the area is also probable, as Hasdeo-Arand has forest links with the Achanakmarh Tiger Reserve to the west. The area was marked as a Level 3 priority area by the Project Tiger Directorate in its 2006 report.⁶⁴ The current tiger population in Achanakmarh is low; if tigers recover here, Hasdeo-Arand will be an important spillover site.



Warning boards on the Dharamjaygarh-Korba road, on the border of the Hasdeo-Arand and Mandraigarh coalfields.
© Nick Wertsch



IS THE CHHATTISGARH GOVERNMENT SUPPRESSING WILDLIFE DATA FROM HASDEO-ARAND?

The neighbouring Mandraigarh coalfield shows significant elephant presence. Hasdeo-Arand is a large, intact forest block with very little human habitation. It is connected both to Mandraigarh and to the Achanakmarh Tiger Reserve. Given this, it is surprising that the NTCA 2011 report shows no tiger, leopard or elephant presence in the area from 2005 onwards. Individuals familiar with the areas, such as Advocate Sudiep Shrivastava, report both elephant and tiger presence in the Hasdeo-Arand area. Is the Chhattisgarh state government be suppressing wildlife data from Hasdeo-Arand to downplay the ecological significance of the area, so that it can be diverted for coal mining?

According to the map of Hasdeo-Arand prepared by the FSI and CMPDI, the following blocks have been demarcated, all of which contain good forest cover: Nakiya, Bhakruma-Matringa, Pindrakhi, Gidmuri, Paturia, Morga South, Puta-Parogia, Madanpur, Bissar, Chotia, Morga I, II, III and IV, Tara Central, Kente and Kente I GSI, Kente 2 GSI, Parsa and Parsa East.

In June 2011, then Minister of Environment and Forests Jairam Ramesh, rejecting the recommendations of the Forest Advisory Committee (FAC), granted Stage I forest clearance to the Tara, Parsa East and Kente blocks, on the grounds that they lie “on the fringes” of the Hasdeo-Arand forest. The FAC had recommended against mining in this area and the Ministry had reportedly rejected the proposals thrice in 2010. Pressure from industry players, the Chhattisgarh state government and the Prime Minister’s Office led to a change of heart. According to media reports,⁶⁵ the Minister claimed that the clearance was conditional on the state government not seeking any additional coal blocks in the Hasdeo-Arand area. Exactly how such an assurance, presumably verbal, was to be enforced was not specified. The Chhattisgarh government continues to push for clearance for other blocks in Hasdeo-Arand.

In June and July 2011, the Minister opined that forest clearance

should not be granted to the Morga II block, and urged the Coal Ministry to allocate an alternate allocation to the company concerned.^{66, 67} However, clearance does not appear to have been officially rejected, leaving the matter open-ended.

The Tara block would feed a 1320 MW power plant set up jointly by the state owned Chhattisgarh State Power Generation Company and Indian Farmers Fertiliser Cooperative Limited at Prem Nagar.⁶⁸ The Parsa and Kante Besan blocks are to be operated by Parsa Kante Collieries, a 74%-26% Joint Venture between Adani Enterprises Limited and Rajasthan Rajya Vidyut Utpadan Nigam (RRVUNL), a utility owned by the state of Rajasthan.⁶⁹ In March 2012, the Ministry of Environment gave final forest clearance (Stage II) to the Parsa East and Kante Basan blocks.⁷⁰ This clearance is being challenged before the National Green Tribunal on the grounds that the conditions specified in Stage I clearance have not been met.⁷¹

The proposed Surguja ultra mega power project is also expected to meet its coal requirements from blocks in the Hasdeo-Arand coalfield. Tata Power, L&T, NTPC, Essar Power, GVK Power, Lanco Infratech, Jindal Steel, Sterlite Industries and Torrent are reported to have expressed interest in the project.⁷²

COMPANIES MINING FOREST LAND

ADANI GROUP

The Adani group is involved in mining the Parsa and Kante Basan blocks, for which the MoEF gave forest clearance in June 2011, after pressure from the Chhattisgarh Chief Minister and the Prime Minister's Office. Adani is in a 74:26 Joint Venture with RRVUNL to develop these mines, through an entity called Parsa Kante Collieries Ltd. In addition, the mining for this block has been subcontracted to Adani Mining Pvt Ltd, a 100% subsidiary of Adani Enterprises Limited.⁷³

MONNET GROUP

Monnet is seeking to mine the Morga III block through a joint venture with the Madhya Pradesh State Mining Corporation.⁷⁴ This area like most of Hasdeo-Arand is densely forested, with elephant and leopard reported in the vicinity.

INDIABULLS GROUP

The Paturia & Gidmuri blocks, both densely forested, have been allocated to Chhattisgarh State Electricity Board for the 1320 MW Bhaiyathan project – a Public Private Project being developed by Indiabulls CSEB Bhaiyathan Power Limited (ICBPL), a subsidiary of Indiabulls Power Limited.⁷⁵

ACC LIMITED

ACC is seeking to mine the Morga IV block, which is densely forested. The area is believed to be good elephant habitat.

KSK ENERGY VENTURES

In July 2011, KSK Energy Ventures was denied permission for the Morga II block. KSK's website (<http://ksk.co.in/opr-evl-fs.html>) still lists Morga I and II among its fuel linkages. Tiger and elephant have been reported from the area.

In February 2012, the Chhattisgarh government submitted a proposal to the Railway Ministry for an industrial rail corridor which would pass through the heart of the Hasdeo-Arand forest area. The rail line is meant to connect all proposed coal blocks in order to facilitate evacuation of the coal to power plants. The rail link would run from Akaltara north through Katghora, through Hasdeo-Arand to Surajpur. Another rail link from the Dharmjaigarh in Mandraigarh coalfield would run east-west through Hasdeo-Arand and down to Korba. These rail lines would effectively divide what is currently a contiguous forest block into smaller parcels and facilitate the opening up of coal blocks throughout the area.

Permitting mining in any part of the Hasdeo-Arand coalfield, or allowing railway lines or major roads through it, will have serious repercussions given the forest's importance as a wild elephant refuge and as an important watershed. Railway lines in other elephant corridors exact a heavy death toll.

TRAIN TO DISASTER?

WEST BOKARO COALFIELD

Jharkhand

Proved Reserves

3.32 billion tones

Corridor threatened

Part of the elephant corridor linking North Karanpura/ Upper Damodar river valley to Hazaribagh National Park.

Corridor identified by

Centre for Interdisciplinary Studies for Mountain and Hill Environments, Bulu Imam and Justin Imam.

Total area

200 sq. km.

Forest cover

54 sq. km.

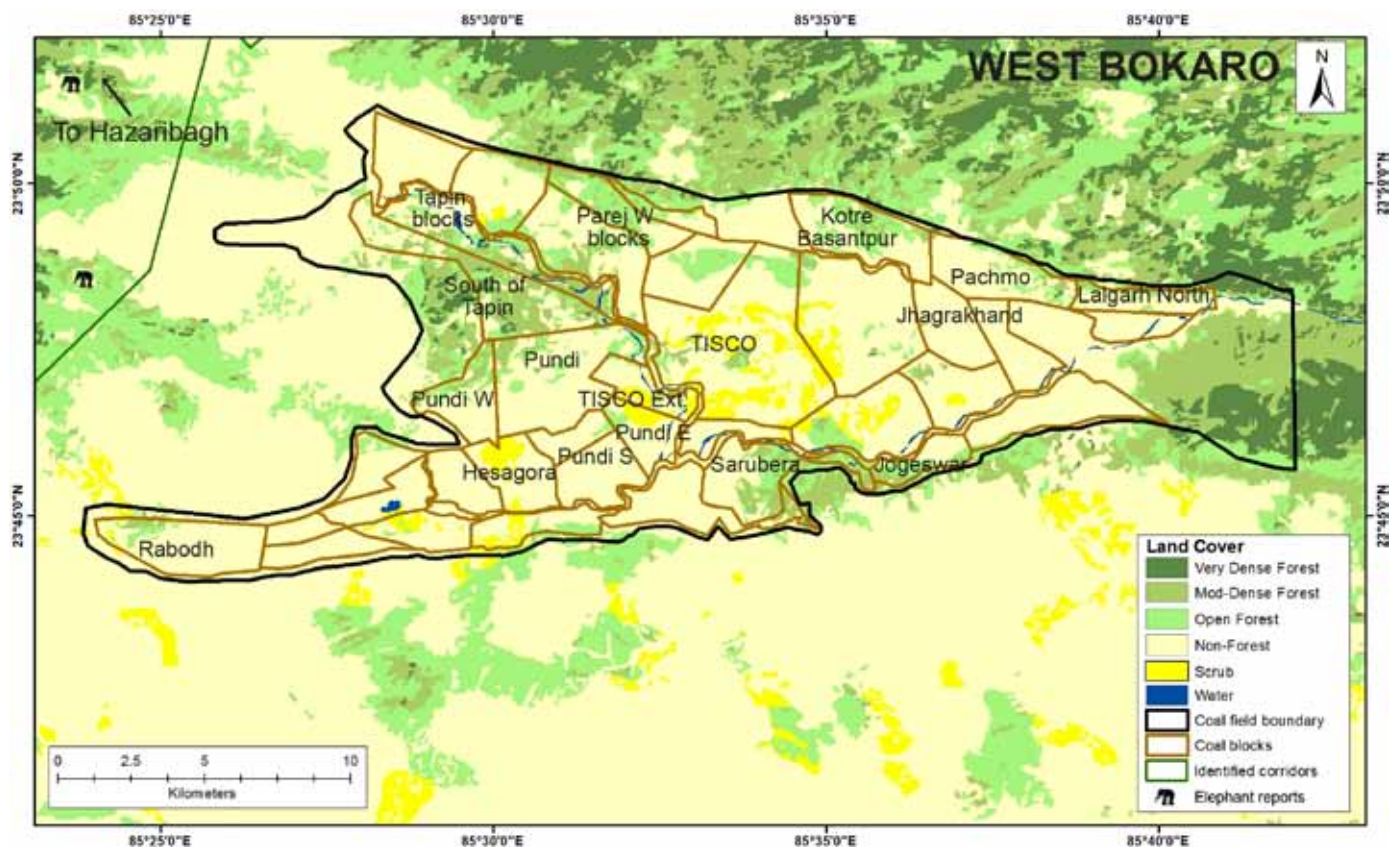
Endangered species

NTCA reports do not show tiger, leopard or elephant presence in the area. Elephant presence is likely in the western part of the coalfield, contiguous with the North Karanpura valley.

The West Bokaro coalfield is a relatively small coalfield lying to the east of the North Karanpura valley, and west of the East Bokaro coal field. While this area once boasted extensive forest cover, there are only a few remnants today, due to decades of coal mining. The eastern end of this coalfield is still covered by intact forest that forms the watershed of the Tenughat reservoir.

The western end has forest adjacent to the corridor identified in the North Karanpura case study which connects up to the Hazaribagh National Park. Some coal blocks have been demarcated in this area. The blocks in question are Parej West,

Parej West I, North of Parej West, Tapin Extension, South of Tapin, Pundi and Pundi West, as well as a large unblocked area. A thorough analysis of these blocks is needed to ascertain the biodiversity value and livelihood importance of this region. The hitherto unblocked eastern edge of the coalfield shows dense forest and is the watershed of the Tenughat reservoir.





COMPANIES MINING FOREST LAND

COAL INDIA LIMITED

CIL subsidiary Central Coalfields Limited operates a number of blocks including East and West Parej and plans to expand operations.

TATA STEEL

TATA Steel has applied for clearances to mine the Kotre Basantpur and Panchmo blocks. There is no information available on the wildlife value of this area. This block does however have good forest cover and was categorized as a No Go area by the MoEF.

Anpara thermal power plant on the outskirts of Dibulganj, Uttar Pradesh.
© Greenpeace / Sudhanshu Malhotra

LIVING WITH COAL

IMPACTS ON COMMUNITIES

Kanchi Kohli



Mining operations are far from socially or environmentally benign; any mining has impacts on either wildlife habitat or on people living in and around the mines, and usually on both. This simple fact is ignored when Coal India Limited boasts of being the largest coal miner in the world, or when the Government of India announces its plans for increased private sector investment in the coal and thermal power sectors. What are the real impacts on the country when Reliance, Hindalco, Essar, Adani, Tata and many other coal diggers “exert pressure” at the highest political levels to fast track approvals for their mines and power plants?

Today, a large amount of forest and non-forest land in coalfields across India is at different stages of exploitation. While some mines are up and running, many more are being deliberated upon in the corridors of power – either by the Empowered Group of Ministers (GoM), the Prime Minister’s Office or by Finance, Environment or Coal Ministries, and still more will enter the “clearance process pipeline” in the near future as Coal India Limited and private corporations seek to increase their extraction of coal.

From 2000 to November 2011, final approval was granted for the diversion of 28,957.982 hectares of forest land in the states of Madhya Pradesh, Jharkhand, Odisha, Maharashtra and Chhatisgarh for coal mining. Another 20,970.271 ha. has been granted In Principle (Stage 1) approval and another 10,468.742 ha. was pending approval as of December 2011. These figures do not include non-forest land.

DIRECT AND INDIRECT DISPLACEMENT

Aside from biodiversity impacts, large scale diversion of forest, agricultural and communal land for mining landscapes also has a range of social and livelihood impacts. Non-forest land acquired for coal mining typically includes both government and privately-owned land. Mining operations usually lead to local communities being directly displaced from their homes or having their access to their sources of livelihood cut off. In the Singrauli coalfield, the history of mine induced displacement goes back several decades. The Chilika Dand panchayat in Sonebhadra district of Uttar Pradesh (originally displaced and resettled in their current location in the 1960s by a reservoir) has been living in the shadow of an overburden dump of Northern Coalfields Limited (NCL). The NCL mine has been in existence in the area since



sparkling fears of landslides and collapses among the community. Private corporations such as Essar, Hindalco and Reliance are seeking the diversion of forest land in the Mahan, Chhatrasal and Amelia areas in Singrauli district. (Refer to Singrauli section) The loss of these forests will directly impact many villages dependent on them for Non-Timber Forest Produce (NTFP) as well as for cattle grazing. Over 14 villages are dependent on the Mahan forests alone. In many of these areas, including Mahan, the legal process of recognition of individual and community forest rights as mandated by the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act (FRA) has not been completed. This is mandatory before forest diversion can take place, and in the absence of the FRA process, it is impossible to comprehensively assess the community's direct and indirect dependence on these forests. It is illegal for forest land to be diverted without the FRA process first being followed.

WILDLIFE-HUMAN CONFLICT

As forests are fragmented and replaced by mining projects and related infrastructure, wildlife is often forced closer to human settlements, leading to conflict. In recent years, instances of tigers, leopards and elephants entering into conflict with humans have often made the headlines, and loss of habitat is believed to play a role in exacerbating such conflicts. This has been seen in many areas across the Central Indian landscape. North Karanpura has recorded crop damage from elephants, Chandrapur has seen a large number of deaths due to tiger attacks, and areas in Raigarh and Korba, in and near the Hasdeo-Arand and Mandraigarh coalfields, have seen crop and house damage by elephants, as well as human casualties. While it might be difficult in many cases to pin the blame on a particular mine, the gradual loss of natural forest for mining certainly plays a contributory role.

DOES COMPENSATORY AFFORESTATION ADD TO THE SOCIAL COST OF MINING?

Whenever forest land is diverted for non-forest use under the Forest Conservation Act, 1980, compensatory afforestation (CA) needs to be carried out on an equal amount of non forest land, or double the amount of degraded forest land. Ideally, this should be done at the point closest to where diversion is taking place, but in many instances compensatory afforestation takes place in another district of the same state. There remain huge doubts over the success rate of CA. CA also often results in other social impacts, which largely remain unaccounted for. M/s Mahan Coalfields Limited has reportedly purchased an equal amount of non-forest land in Sagar district of Madhya Pradesh (550 km. away from Mahan) to compensate for the loss of 1182.35 ha. of forest in the Mahan coal block. It is unclear what the nature of the land was before M/s Mahan Coalfields purchased/acquired it and what implications its take over will have on the people of the area. There has been no assessment of potential social impacts, particularly important when change of ownership from private or revenue land to forest land is involved. This is a significant issue that requires attention in all cases of land diversion for afforestation.

The consequences of having coal underneath the forests you depend on, or under your very village and fields, is something that communities across central India are dealing with. In many cases, this has led to resigned reconciliation and surrender to the powers that be; in many others however, communities have decided to fight for their forests, fields and way of life. The success of their fight will hinge on what India chooses to value more: coal or communities.

NORTH KARANPURA COALFIELD

Jharkhand

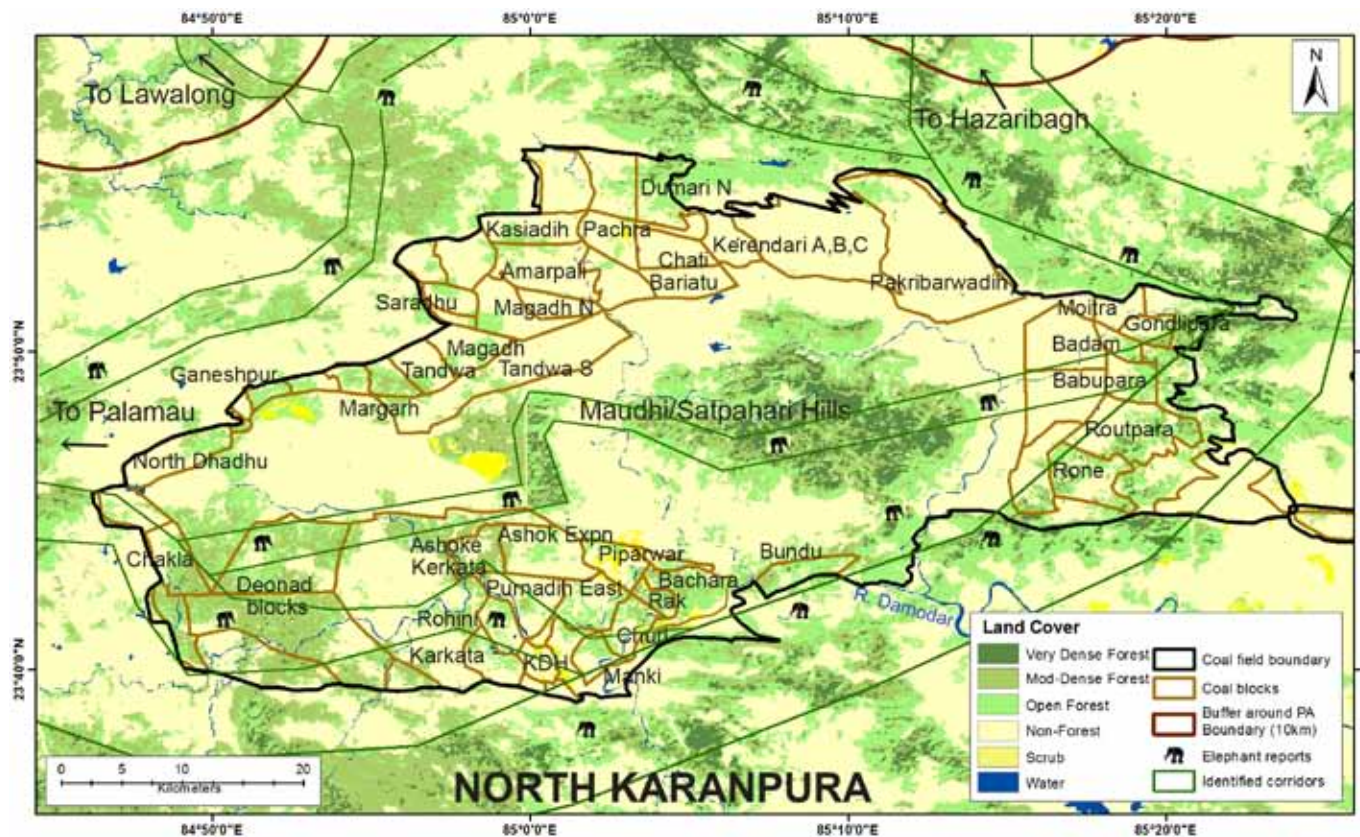
Proved Reserves
8.873 billion tonnes

Corridors threatened
Centre for Interdisciplinary Studies for Mountain and Hill Environments, Bulu Imam and Justin Imam.

Total area
1186 sq. km.

Forest cover
414 sq. km.

Endangered species
NTCA reports do not show either tiger, elephant or leopard presence in the area. This contradicts field level reports from villages of regular elephant and leopard movement and occasional tiger movement.



The case study on the following page explains in detail how mines in the North Karanpura coalfield are already disrupting elephant and tiger movement. The North Karanpura coalfield witnesses elephant movement in several areas. The elephants move between the Palamau Tiger Reserve to the west and the Lawalong Wildlife Sanctuary and Hazaribagh National Park to the north. Elephant movement along the Damodar river is also being impacted by existing mines on the river banks. Planned expansion in mining will worsen the situation, and will lead to massive social displacement and the loss of ancient cultural artifacts as well.

COMPANIES MINING FORESTLAND

COAL INDIA LIMITED

CIL subsidiary Central Coalfields Limited operates several mines in the NKV including Ashoka I & II, Piperwar and KD Hesalong, all of which fall in the crucial elephant corridor along the Damodar river.





RELIANCE POWER

Jharkhand Integrated Power Ltd has applied for clearance to mine the Kerendari B and C blocks. According to Reliance Power's website, as of 2009, JIPCL was "transferred" to Reliance Power. These blocks lie in an elephant corridor between Balumath in the east and Patratu in the west (see case study). Mining here will also jeopardise the connection between the Maudhi-Satpahari hills and the forests to the north, which connect with the Konar watershed and eventually the Hazaribagh National Park.

JINDAL GROUP, BHUSHAN STEEL & POWER LTD AND JAI BALAJI INDUSTRIES

These companies have jointly formed Rohne Coal Company Private Limited to mine the Rohne (Rone) coal block. This block lies in a forest corridor used by elephants to gain access to the Hazaribagh plateau via the Mahadeva and Sati forest ranges (refer North Karanpura case study).

ESSAR POWER

Essar Power is seeking to mine the Chakla and Ashok Kerkata blocks in the North Karanpura coalfield. Both these blocks fall in the elephant corridor from the Latehar forests to the Damodar river and its tributary the Haharo.



Pre-Historic rock art site dated to Mesolithic age in
Thetangi Village, Tandwa Block, Chatra District, Jharkhand
© Harikrishna Katragadda / Greenpeace

An aerial photograph of a forest landscape. The terrain is a mix of green and brown, suggesting a forest with some cleared areas. A prominent feature is a small, circular clearing with a tree stump in the center. The overall scene is a dense, natural environment.

THE NORTH KARANPURA VALLEY: ON THE EDGE

HOW COAL INDIA'S MINING EXPANSION IS DESTROYING WILDLIFE CORRIDORS AND TRIBAL COMMUNITIES

The North Karanpura valley (NKV) is a 60 km long and 30 km wide fertile basin in the upper watershed of the Damodar river. The valley lies in the Hazaribagh, Chatra, Palamau and Ranchi districts of the state of Jharkhand. The Damodar is the most important river in the Jharkhand state, which was formerly in the southern part of the state of Bihar. The area also has 37 streams and two large rivers that form the northern tributary feeding the Damodar river⁷⁶ and is one of the richest rice and vegetable croplands in India. The area is also one of India's major coal fields, with an estimated 17 billion tonnes (only 8.8 billion tonnes of which are proved reserves)⁷⁷ of coal lying beneath its forests and fields.

This case study was written by Kanchi Kohli and draws substantially from notes, submissions and papers written by Bulu Imam, INTACH Hazaribagh. It is also based on discussions with Justin Imam, Deepak Das, S.E.H Kazmi and others during a visit to the area in September 2011. It also draw on from the study on wildlife corridors carried out by Justin Imam for Wildlife Trust of India in 2005.

In addition to its agricultural fertility, the North Karanpura valley has historically also harboured one of the most significant *sal* (shorea robusta) forests in the country.⁷⁸ The valley functions as an important corridor for both tigers and elephants. To the west of the North Karanpura valley lies the Betla National Park and Palamau Tiger Reserve. From here further forest links connect Palamau to the Baghelkhand or “neck of the tiger” forest area in northern Madhya Pradesh and to the Sanjay Tiger Reserve (Madhya Pradesh) and Guru Ghasidas National Park (Chhattisgarh). To the north of the NKV lies the Hazaribagh National Park and Lawalong Sanctuary,

and the Damodar river flows along the southern border of the NKV.

The North Karanpura fields consist of three separate basins; the eastern part of the valley is now deeply scarred by two decades of mining; the central portion comprises the Maudhi and Satpahari hills and on beyond Ganeshpur, and the southwestern portion comprises the Mahalan basin.

The Maudhi and Satpahari hills are even today ecologically fragile, with resident wildlife such as leopard and sloth bear. In and around these forests, Santhal, Birhor, Munda and

Oraon tribal communities have been living for generations. At the western end of the central Maudhi and Satpahari hills, new mines are proposed and the Piperwar and Ashoka I and II projects of Coal India subsidiary Central Coalfields Limited (CCL) are already underway, partly fragmenting this wildlife corridor. The Mahalan basin in the southwest of the valley is under rich forests, and local reports indicate that this area has good forest and wildlife habitat.

The Hazaribagh chapter of INTACH confirms that the wildlife of North Karanpura includes tigers, elephants and gaur (Indian bison), animals listed as threatened by the Red Data Book of the World Conservation Union (IUCN), and featuring on Schedule I of the Indian Wild Life Protection Act. Other species such as leopards, wild boar and deer (including cheetal, sambar, barking deer) are also found in the area. Interestingly, Hazaribagh literally translates to ‘land of the thousand tigers’. The three forest ranges in the North Karanpura valley- Sati, Maudhi and Satpahari- are characterised by forest escarpments. These ranges have traditionally harboured both tigers and elephants, as attested by Santhal tribals resident in the area.⁷⁹ Recent research shows that elephants have had to alter some of their migratory routes; however, many traditional migration routes are still in use, and some of these routes are being threatened by proposed and operational coal mines. Site inspection reports for the period of 2008-2010 of the relevant divisions of the State Forest Department obtained by Greenpeace under the Right to Information Act have also listed the existence of wildlife in the forest areas including elephants, leopards, deer, sloth bear and other wildlife.

That the North Karanpura valley is also a cradle for prehistoric cultures is clear from rock art dating back to the Meso-Chalcolithic age (10,000 B.C.) in the Hazaribagh and Chatra areas; deer, wild boar and elephant adorn cave walls, painted in red haematite. Rock art depicting elephants has been found at Gonda and Sidpa on the northern fringe of the Satpahar range.

Several of these rock art sites and culturally significant sacred groves are threatened by coal mining expansion. The pre-historic rock art of the North Karanpura Valley has been linked with Indus Valley culture, and links have also been established with Dogon rockart in Mali, Prehistoric Iran, and Aboriginal rock art in Australia.⁸⁰ If the mining of the valley goes ahead as planned, many rock art sites will be damaged or destroyed. The Isco rockart falls in the proposed Rautpara opencast mine project. At the Thethangi site blasting for a railroad has affected the Saraiya and Thethangi rockart overlooking the railway.⁸¹

Hazaribagh literally translates to ‘land of the thousand tigers’. The three forest ranges in the North Karanpura valley- Sati, Maudhi and Satpahari- are characterised by forest escarpments.



Birhor Tribal hunters, Jharkhand
© Harikrishna Katragadda / Greenpeace

COAL MINES AND WILDLIFE CORRIDORS IN THE NORTH KARANPURA VALLEY

According to Bulu Imam, INTACH, Hazairibagh, in the 1990s, the Centre for Interdisciplinary Study on Mountain and Hill Environment (CISMHE), Delhi University, was commissioned by the Ministry of Environment and Forests (MoEF) to undertake a study of the landscape, elephant corridors and proposed mines. The results of the study were never made public, allegedly because it indicated threats from coal mining to both archaeological sites and wildlife corridors in the region.⁸²

A map prepared by CISMHE as part of the report is shown on the next page, showing the elephant corridors identified by the study.

Wild elephant populations in Palamau and the Gola-Peterbar area have traditionally traversed parts of the North Karanpura valley on their journeys between the Palamau forests to the west, Hazaribagh National Park and Lawalong Sanctuary to the north, and the forests of the lower Damodar and even up to the West Bengal's Purulia district. The elephant routes depicted here are based on field reports.

Elephant herds pass from the north and west through the McCluskieganj area headed for the Hendegir forest area. Proposed mines in this area will severely disrupt this corridor. From the south, elephant herds are traditionally forced to follow the escarpment of the Ranchi plateau until they are able to cross over into the Barudih range between Ramgarh and Ranchi towns. To gain access to the Hazaribagh plateau to the north these herds then travel along the Mahadeva and Sati forest ranges, which form the eastern boundary of the North Karanpura valley. Here too, proposed coal mine expansions threaten to disrupt this forest connection. From here, elephants have traditionally followed the Barakar river watershed, up to the Konar river watershed which then connects to the Hazaribagh National Park. Elephants have also been known to continue along the course of the Damodar, towards West Bengal and the Dalma region.



Uri Mari mines near Damodar river, North Karanpura, Hazaribag, Jharkhand © Harikrishna Katragadda / Greenpeace

EXISTING MINES DISRUPTING CORRIDORS

Agricultural lands and open, sparsely forested areas of the North Karanpura valley also serve as important wildlife corridors. Much of these agricultural lands are due to be taken over for coal mines.

While elephants can move through a mixed agricultural/forest landscape, it is hard to imagine them doing so through open cast mines. A report prepared by Justin Imam, for the Wildlife Trust of India recorded elephant movement and crop damage in and around the NKV.⁸³

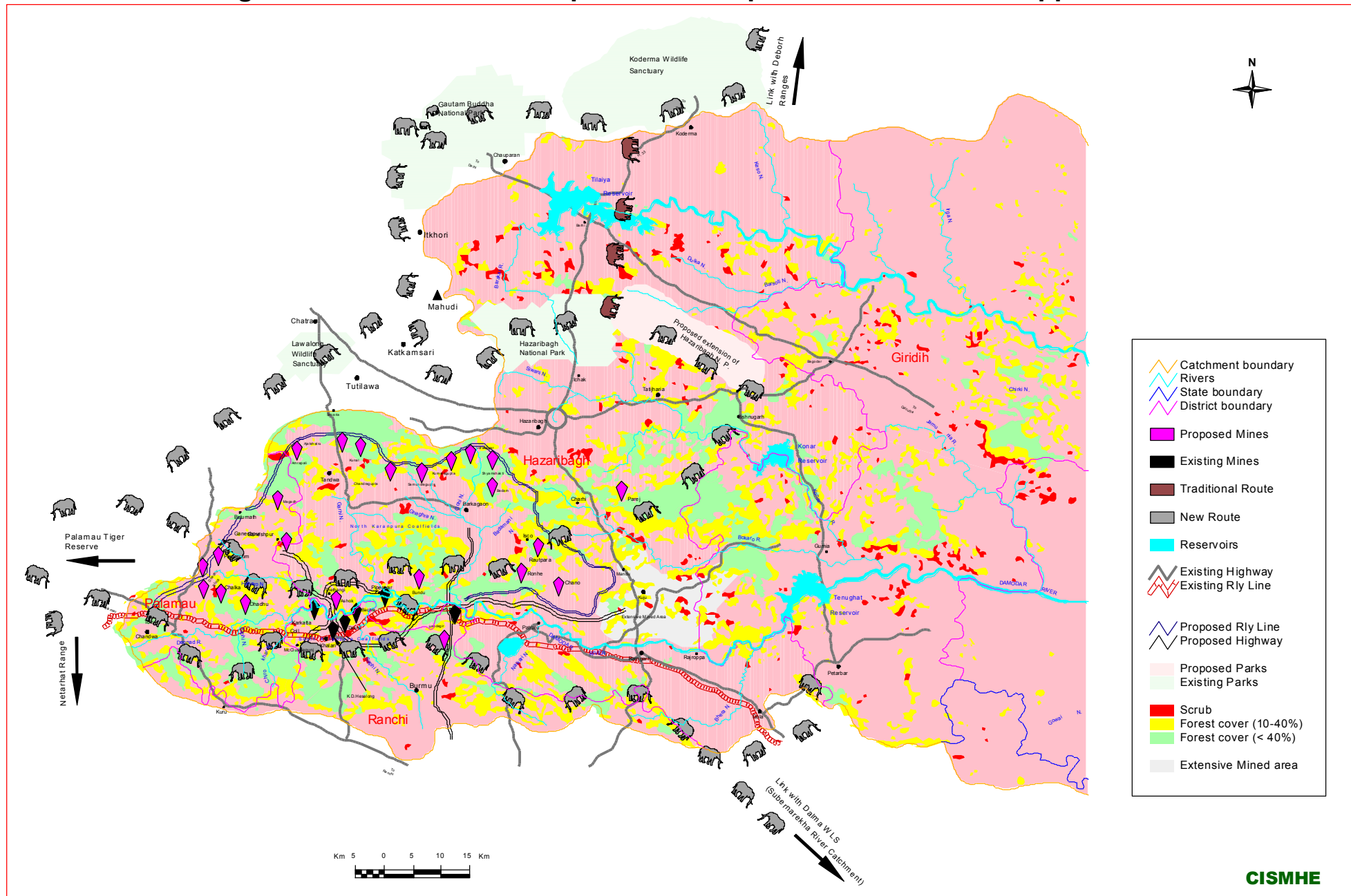
Piparwar was the first mine to be undertaken in the area, on the northern bank of the Damodar, in the 1990s or earlier. This mine which was constructed by an international company with international aid finance from Australia, contains state of the art technology in the form of an in pit crusher and conveyer belt system. It produces more coal than any other mine belonging to Central Coalfields Limited (CCL). It is also located in an eco sensitive area on the north bank of the Damodar river, in an acknowledged wildlife corridor.

Piparwar was the focus of a campaign that brought to light many inadequacies in CCL's social rehabilitation policies. Piparwar was followed by the adjacent Ashoka project. Both have disrupted migratory routes of elephants and tigers moving from Palamau and Hazaribagh to the forests of the lower Damodar (South Karanpura). Wildlife has usually followed the Damodar river, into the Maudhi range, which connects to the forests of the lower Damodar (South Karanpura) and the Sati Range (on the north bank).⁸⁴ The Ashoka and Piparwar projects, located as they are on the very bank of the river, have disrupted this corridor. Further plans to open up the Ashoke Kerkata and Deonad blocks between the Damodar and its tributary the Haharo will effectively destroy this corridor.

Forest contiguity has also been impacted by construction of a railway line to transport coal, which has now been abandoned. This railway line (crossing McCluskiganj-Satpahar-Sariya-Thethangi-Piperwar-Mangaldaha) is now a deep channel in parts where it cuts through the hills. Local residents seem to believe that CCL now finds it preferable to transport coal by road and therefore has abandoned construction of the railway line. The website of the MoEF accessed on 31.10.2011 indicates that in principle approval for diversion of 29.50 ha additional forest land for the construction of a railway siding under the Piperwar coal project of CCL was granted on 10.6.2010.

According to documents received by Greenpeace under the Right to Information Act in April 2012, 1520.548 ha of forest land has been diverted for non-forest use in the Hazaribagh, Chatra, Ranchi and Palamau districts of Jharkhand since 2001. This is mainly for the Pakri-Barwadih mine as well as NTPC's Ultra Mega Power Plant. Another 5646.44 ha of land was pending approval as of April 2012. In addition to this, 17,020 ha. of forest land lies in other blocked areas in the NKV, according to figures from the No Go exercise in 2010. If coal mining proceeds as proposed

Wildlife Migration Corridors and Proposed Developmental Activities in Upper Damodar Basin



by the Coal Ministry, all of this forest land will need to be diverted for mining. Ancillary activities such as roads, railways lines, overburden dumps etc will increase the land requirement even further.

EXISTING OPERATIONAL MINES IMPACTING WILDLIFE CORRIDORS IN NORTH KARANPURA VALLEY

PIPERWAR COAL MINE

South of Tandwa (Chatra district), the first CCL mine in the North Karanpura (final FC granted 7.1.2010)

ASHOKA I & II COAL MINES

South of Tandwa (Chatra district), operated by Central Coalfields Limited (FC for Ashoka I (166 ha.) granted in 1999)

K.D.HESALONG COAL MINE

North of McCluskieganj (Ranchi District), operated by CCL (FC granted for 28.95 ha on 26.10.2009) In addition to the above, the following operational mines in the Latehar district, immediately adjacent to the North Karanpura valley, are affecting corridors connecting the Palamau forests with others in the region.

SIKNI COAL MINE

In Chandwa (Latehar District) of the Jharkhand State Mineral Development Corporation (EC granted on 8.5.2008, FC granted for 46.986 ha on 20.7.2011)

TETARIYATARN (PINERKOM) COAL MINE

In Balumath (Latehar District) of Central Coalfields Limited.

In addition, the following operational mines in the Latehar district, immediately adjacent to the North Karanpura valley, are affecting corridors connecting the Palamau forests with others in the region.

SIKNI COAL MINE

In Chandwa (Latehar District) of the Jharkhand State Mineral Development Corporation (EC granted on 8.5.2008, FC granted for 46.986 ha on 20.7.2011)

TETARIYATARN (PINERKOM) COAL MINE

In Balumath (Latehar District) of Central Coalfields Limited.

Existing illegal coal mines in the Balumath region also threaten the connections between forests in Chandwa (Latehar district) and those in Lawalong (Chatra district). According to Kuntala Lahiri Dutt (2007) illegal coal mines or “unintended collieries”⁸⁵ are spread across the coal-bearing tract stretching from Raniganj in West Bengal westward through Dhanbad and Ranchi and up to Jharia and North Karanpura in Jharkhand. Most of this coal is transported on cycles. Lahiri-Dutt and Williams⁸⁶ estimated about 2.5 million tonnes of coal was transported by cycles in 2003-04. This amount is equivalent to the production of a reasonably large colliery. The impact of this activity on wildlife and its habitat has not been studied or assessed in detail.







ଜ୍ଞାନ ଦେଉଁ ଜମିନ ନାହିଁ ଦେଉଁ ନାହିଁ
ନାମାଧ ଜମିନ ନୁଁ ନାମାଧ ରାଜୀ ଦେଉଁ

KUSUM TOLA FIGHTING EVICTION



Noth Karanpura Range in Chatra District
© Harikrishna Katragadda / Greenpeace

Kusum Tola is one of the numerous villages threatened by the expansion of coal mining operations by both CCL and private companies in the NKV. According to a report by FIAN International, the Purnadih mine, which affects Kusum Tola and adjacent villages, officially opened on August 21, 2009. The hamlets of Dembua and Baseriya have already been evicted, and Kusum Tola is next in line. The use of explosives in the mine is already affecting the hamlet, and the mining is causing the pollution of rivers and the destruction of local water sources. The Purnadih mine and several others that have been in operation for many years (Dakara, Ray, Chura, Bachara, Manki, Piparwar and Ashoka) collectively threaten to destroy one of the richest rice and vegetable producing areas in the region, and one with great cultural significance. The indigenous people maintain artistic traditions that link back to prehistoric rock art designs found in the area.⁸⁷



Thetangi Village, Tandwa Block, Chatra District, Jharkhand
© Harikrishna Katragadda / Greenpeace



KARANPURA BACHAO SANGHARSH SAMITI

The North Karanpura Valley is witnessing a strong people's resistance to coal mining expansion. Two forums active in the area are the Karanpura Bachao Sangharsh Samiti (KBSS) and the Karanpura Bisthapita Morcha (KBM).

On June 22, 2008, people's organizations in Karanpura (Karanpura Bachao Sanghrash Samiti, Bhartiya Mahila Jagriti Samiti, Ekta Parishad, Addi Haq Jan Sanghrash Samiti, and representatives of Vistaphan Pratirodh Samiti) formed a united platform, and decided that no land would be handed over to coal or thermal power companies. The platform also resolved to take further measures to develop local agricultural production.

According to Deepak Das from KBSS, "Out of the 37 mining leases of different companies in the area, 19 have expired due to ground mobilisation because of which mining activity could not take place. The Gram Sabha has also given their objections in writing. There are only 10-15% of the people who are pro mining in the area and it is those who mostly have land or are likely to get contracts from the mining. Those who are going to be fully displaced are the ones objecting."

The Sangharsh Samiti held a protest march against the coal mining in September 2011, and has been consistently raising the issue in the region.

Dhuru Basti, Jharkhand
© Harikrishna Katragadda / Greenpeace



A coal mine in Sikhni, Latehar District, Jharkhand.
© Harikrishna Katragadda / Greenpeace

HABITAT FRAGMENTATION: THE THREAT OF UPCOMING COAL MINES

The ecological damage caused by operational coal mines is the tip of the iceberg; a massive coal mining expansion is planned for the NKV. This was one of the coal fields covered by the “No Go” exercise undertaken by the Ministry of Coal and Ministry of Environment and Forest in 2010. The entire North Karanpura coal field covers an area of approximately 118,668 ha, of which 41,457 ha. is forest cover. The “no go” exercise covered 63 demarcated blocks in the North Karanpura coal field, totaling 60,561 hectares, and 30 of these

blocks were deemed to have sufficiently dense forest cover for them to be considered “No Go” blocks.⁸⁸ The actual forest cover over these 63 blocks as measured by the inter-ministerial exercise was 17,020 hectares or over 170 sq. km.

The loss of this 170 sq. km. of forest land in itself will have serious repercussions on hydrology, wildlife and forest-dependent livelihoods. In addition,

areas not covered by forest – such as agricultural and grazing land under community use – are also important for wildlife movement. The proposed mining expansion with its ancillary infrastructure will also destroy many of these areas.

According to Imam, the proposed Magadh and Amrapalli coal mines will destroy the forest corridor to the north of the Satpahar Range, connecting to the Chatra forests.⁸⁹ This will be compounded by dams, thermal power plants and other ancillary activities like

roads, residential colonies etc between Tandwa and Piparwar in Chatra district. To the south west of the Satpahar range, the corridor running along the Damodar river to the Auranga river in Latehar is threatened. South of the Satpahars, mining had destroyed most of the forest corridor except the Burmu gap. To the east, the corridor via Laranga to the Mahudi range is threatened by the proposed Garhi dam, being built to supply water to NTPC’s proposed super thermal power plant in the region.

Reliance Power is building an Ultra Mega Power Project at Tilaiya, 50 km. north of Hazaribagh town. It will burn coal from captive mines at the Kerendari B and C blocks between Barkagaon and Tandwa in the North Karanpura valley.⁹⁰ The Kerendari area is part of the elephant corridor between Balumath in the east and Patratu in the west and is watered by several streams and rivers including the Salgah river which is a tributary of the Barki river on which a dam is being built. This region contains tribal villages famous for their Khovar and Sohrai art style. The nearby hills contain important painted rock art sites such as the Nautangwa Pahar caves. In the middle of what will become the Kerendari opencast mine are the Chunatari Caves which supply the kaolin and white earth (*charak-matti*) for the surface plaster of village houses on which Khovar and Sohrai paintings are cut or drawn.

The Pakri Barwadih mine of NTPC also impinges on a forest corridor between Hazaribagh and Chatra on the edge of the Hazaribagh plateau. In December 2010, Leighton Holdings subsidiary Thiess won a \$5.5 billion coal mining contract to develop and operate the mine, which is to run over 22 years.⁹¹ Reportedly, several villages in and around the area will also be impacted. The new mine also includes the remains of a Buddhist stupa as well as megalithic and stone-age remains, according to Bulu Imam of INTACH Hazaribagh.

There are two wildlife corridors (see map on page 60) in the NKV considered to be under immediate threat: the Chandwa-Chatra corridor passing through Balumath and the Chandwa-McClusksieganj corridor. These two are considered crucial for migrating elephants due to the presence of water along the Damodar river and the food availability along the route. To elaborate these corridors are:

The proposed Magadh and Amrapalli coal mines will destroy the forest corridor to the north of the Satpahar Range, connecting to the Chatra forests.

- a) Latehar-Chandwa-Mahuamilan-Deonadia-McCluskiegunj- Burmu
- b) Latehar- Chandwa-Deonadia-Hesalong-Dahu-Satpahar-Maudhi

In both these corridors elephant movements have been reported until recently.⁹²

Other than this, the Barkagaon block in Hazaribagh district where CCL has proposed its Chandragupta, Samudragupta, Kumargupta, Udrasagar and Shyam Shakti projects, and the Badam, Rautpura, Rohne, Chano, Bundu and Hendegir blocks are other areas where mine developments threaten to cut off elephant movement. (These mining blocks have been given the names of kings of ancient Bihar by CCL, and these names will eventually replace the indigenous names of the adivasi villages – a form of cultural imperialism)

While all these mines and their ancillary developments will destroy the wildlife corridors of North Karanpura valley, many of the mines mentioned above are now at advanced stages of clearance or have been granted approval (See Table 1 below). The mines in Barkagaon block will destroy the corridor connecting the forests of Maudhi range with forests of Sati Range which is continued into Charhi-Churchu forests in the watersheds of Bokaro and Konar rivers in South-east Hazaribagh.⁹³

The elephant and tiger populations of the Palamau Tiger Reserve are already faced with increasing isolation. If the coal mining expansion planned for the North Karanpura area goes ahead as planned, habitat connectivity between the Palamau Tiger Reserve and the forests of Hazaribagh will be severely impacted. Connectivity between Palamau and the forests of Saranda in southern Jharkhand will also be affected by coal mines planned in Latehar district.

In addition to the coal mines, ancillary infrastructure like highways, evacuation roads and railway lines are also impacting wildlife corridors. These developments will crisscross the valley as mining proceeds.

Mining and other related activities will also impact water sources – both for human and wildlife use. Some stretches of the Damodar river already experience serious pollution levels due to coal washeries and thermal power plants. If the proposed open cast mines commence

operation, this will cause further damage to the upper Damodar watershed.

The North Karanpura Valley is today at a critical point. Existing mines have already had devastating impacts. We now have an opportunity to re-assess the coal mining expansion that is proposed in the area. Continuation on the current path will mean sending an already troubled landscape beyond the point of no return.



Piparwar coal mines, Chatra district, Jharkhand
© Harikrishna Katragadda / Greenpeace

STATUS OF APPROVALS OF COAL BLOCKS

Hazaribagh, Chatra, Ranchi and Ramgarh districts⁹⁴

Notes

1) The list of Coal Blocks is based on the Ministry of Coal listing for the North Karanpura Coalfield. Where additional information on allotment or transfer to other private companies is available or status of approvals is available, the same has been added.

2) Figures related to total area and forest area are based on the Go-No Go list prepared jointly by the Ministry of Coal and MoEF. This does not always match with the land details for which environment and forest clearances are sought because the forest clearance sought is either only for part of the coal block or might also include adjoining forest areas outside the coal block, required for ancillary activities and mining infrastructure.

S. No.	Coal Blocks of NKP coalfields	District	Total Area (ha)	Forest Area (ha) ⁹⁵	EC status	FC Status	Company and date of allotment
1.	Dakra	Chatra	144	3	TOR granted 18.03.2009. Application for EC awaited.	-	Central Coalfields Ltd.
2.	KD South		96	5	-	-	-
3.	KD Hesalong	Hazaribagh	359	10	-	Final forest clearance for 28.95 ha granted 26.10.2009	Central Coalfields Ltd.
4.	Manki		448	185	-	-	Central Coalfields Ltd.
5.	Deonad III	Latehar	977	330	-	-	-
6.	Karkata	-	641	232	-	-	-
7.	Rohini	Hazaribagh	524	184	-	EDS (Site Inspection by DFO with respect to density) on 6.9.2011 for 74.81 ha	Central Coalfields Ltd.
8.	Churi	Chatra	654	317	TOR granted 17.01.2008. Application for EC awaited.	Final forest clearance for 312.76 granted 12.10.2010	Central Coalfields Ltd.
9.	Deonad-III	Latehar	3290	2580	-	-	-
10.	Ray	Ramgarh	227	176	EC recommended as Ray-Bachara coalfields April 2010	-	Central Coalfields Ltd.
11.	Benti	Chatra	992	291	EC granted as part of Piparwar and Ashoka mine expansions	-	Central Coalfields Ltd.
12.	Purnadih East	Chatra	979	159	EC granted on 19.5.2009	-	Central Coalfields Ltd.
13.	Mahuamilian	Latehar	564	479	-	-	Global tender for exploration announced (CMPDI/EXPLORATION/DCE (GLOBAL-3RT) dated 11.07.2011)
14.	Bachara	Ramgarh	1081	708	EC recommended as Ray-Bachara coalfields April 2010	-	Central Coalfields Ltd.
15.	Mangrdaha	Chatra	207	67	EC granted as part of Piparwar and Ashoka mine expansions	-	Central Coalfields Ltd.

S. No.	Coal Blocks of NKP coalfields	District	Total Area (ha)	Forest Area (ha)	EC status	FC Status	Company and date of allotment
16.	Piparwar	Hazaribagh	670	164	-	Final forest clearance for additional 43.3 ha on 7.1.2010	Central Coalfields Ltd
17.	Ashok Kerkata	Latehar	548	307	-	-	Central Coalfields Ltd
18.	Ashok Expansion	Chatra	1336	418	-	-	Central Coalfields Ltd
19.	Chakla	Latehar	837	444	EC pending since 2009, awaiting information on elephant corridor impact	-	Essar Power Generation Ltd (20.2.2007)
20.	Deonad-I	Latehar	2377	1737	-	-	-
21.	Ashok Kerkata W	Latehar	6068	1795	-	-	Essar power Ltd (6.11.2007)
22.	Chitarpur	Latehar	657	125	-	-	Corporate Ispat Ltd (2.9.2005 for power project) Abhijit Infrastructure Ltd (for coal mining) ⁹⁶
23.	Chano Rikba A	-	294	11	-	-	Central Coalfields Ltd (Sought by SAIL for its JV with Tata Steel) ⁹⁷
24.	Chano Rikba B	-	1720	51	-	-	Central Coalfields Ltd (Sought by SAIL for its JV with Tata Steel) ⁹⁸
25.	Rohne	Hazaribagh	1250	688	Recommended for EC in Jan 2010. EAC (T&C) meeting participated by WL and FC Divisions officers. File was submitted for grant of EC on 19.03.2010. However, returned for closure as it contains forest land.	To be placed before FAC for 778.23 ha in favour of CCL	[GVK Power (9.8.2008); MS JSW Steel Ltd.(5.6.2008); Bhushan power & steel Ltd (5.6.2008); Jaibalaji Industries Ltd. (5.6.2008)] EC in the name of M/s Rohne Coal Company as per MoEF website
26.	Dip side of Rone	Hazaribagh	1026	242	-	-	-

STATUS OF APPROVALS OF COAL BLOCKS

Hazaribagh, Chatra, Ranchi and Ramgarh districts⁹⁴

Notes

1) The list of Coal Blocks is based on the Ministry of Coal listing for the North Karanpura Coalfield. Where additional information on allotment or transfer to other private companies is available or status of approvals is available, the same has been added.

2) Figures related to total area and forest area are based on the Go-No Go list prepared jointly by the Ministry of Coal and MoEF. This does not always match with the land details for which environment and forest clearances are sought because the forest clearance sought is either only for part of the coal block or might also include adjoining forest areas outside the coal block, required for ancillary activities and mining infrastructure.

S. No.	Coal Blocks of NKP coalfields	District	Total Area (ha)	Forest Area (ha)	EC status	FC Status	Company and date of allotment
27.	North Dhadu	Latehar	1046	289	Meeting held on 24th -25th Jan. 2011 regarding ToR. Clarifications sought. Response awaited. File closed.	-	Jharkhand Ispat Pvt Ltd.; Pavanjay Steel & Power Generation; Electro Steel Castings Ltd; Adhunik Alloyes & Power Ltd (13.1.2006) ToR considered in the name of M/s North Dadhu Mining Company Ltd.
28.	Pindarkom	Latehar	84	14	-	-	Central Coalfields Ltd
29.	Routpara	Hazaribagh	1728	700	-	-	Being considered for allocation to SAIL ⁹⁹
30.	Tetriakhar	Latehar	110	1	EAC decided that it should be treated as fresh proposal in 2009, not as expansion ¹⁰⁰	-	Central Coalfields Ltd
31.	Ganeshpur	Latehar	223	132	-	In principle clearance on 4.7.2011 for total 242.56 in Ganeshpur and Sheregarha coal-blocks	M/S SEREGARHA MINES LIMITED
32.	Sheregarha	Latehar	251	52	-	In principle clearance on 4.7.2011 for total 242.56 in Ganeshpur and Sheregarha coal-blocks	M/S SEREGARHA MINES LIMITED
33.	Dip side of Rutu	-	1343	0	-	-	-
34.	Karmati	-	309	141	-	-	-
35.	Dumargarh	-	429	265	-	-	Central Coalfields Ltd
36.	Babupara	Hazaribagh	621	224	-	-	Central Coalfields Ltd (allotted) (Applied for by National Mineral Development Corporation) ¹⁰¹
37.	Tandwa	Chatra	663	129	-	-	-

S. No.	Coal Blocks of NKP coalfields	District	Total Area (ha)	Forest Area (ha)	EC status	FC Status	Central Coalfields Ltd
38.	Magadh	Chatra	785	217	EC granted on 27 .10.2008	Final forest clearance on 18.10.2010 for 96.72 ha	Central Coalfields Ltd
39.	Badam	Hazaribagh	314	102	EC granted on 13.3.2008	In principle approval granted for 150.49 ha on 20.9.2010	Tenughat Vidyut Nigam Ltd (3.11.2003)
40.	Gondilpura	Hazaribagh	384	96	TOR granted on 10.02.2010		Tenughat Vidyut Nigam Ltd Damodar Valley Corporation (13.1.2006)
41.	Tandwa South Bio	Chatra	2736	384	-	-	Central Coalfields Ltd
42.	Dip side of Bada	-	1302	0	-	-	Central Coalfields Ltd
43.	Saradhu south we	Chatra	159	36	-	-	Central Coalfields Ltd
44.	Moitra	Hazaribagh	412	29			Central Coalfields Ltd (Allotted) Nikko Jayaswal ¹⁰²
45.	Saradhu south we	Chatra	410	127	-	-	Central Coalfields Ltd
46.	Koyed Kishanpur	-	1040	134	-	-	Central Coalfields Ltd
47.	Chati Bariatu South ¹⁰³	Hazaribagh	733	0	Last considered by EAC on September 2009, where EC recommended.	In principle approval for 128.92 ha for Chati Baraitu block on 2.2.2011 (see also point 50)	NTPC 25.07.07
48.	Pachra south	Hazaribagh	726	41	-	-	Coal India has confirmed the coal availability from this block for NTPC's 1000 MW Nabinagar Power Project ¹⁰⁴
49.	Manatu	-	451	72	-	-	Central Coalfields Ltd
50.	Chati Bariatu South ¹⁰⁵	Hazaribagh	741	6	EC granted for 646.23 ha on 19.4.2010	In principle approval for 128.92 ha for Chati Baraitu block on 2.2.2011 (see also point 47)	NTPC (25.1.2006) [for captive consumption of Barh Super Thermal Power Plant Stage-2 (2x 660 MW)]
51.	Koyad	-	766	78	-	-	Central Coalfields Ltd

STATUS OF APPROVALS OF COAL BLOCKS

Hazaribagh, Chatra, Ranchi and Ramgarh districts⁹⁴

Notes

1) The list of Coal Blocks is based on the Ministry of Coal listing for the North Karanpura Coalfield. Where additional information on allotment or transfer to other private companies is available or status of approvals is available, the same has been added.

2) Figures related to total area and forest area are based on the Go-No Go list prepared jointly by the Ministry of Coal and MoEF. This does not always match with the land details for which environment and forest clearances are sought because the forest clearance sought is either only for part of the coal block or might also include adjoining forest areas outside the coal block, required for ancillary activities and mining infrastructure.

S. No.	Coal Blocks of NKP coalfields	District	Total Area (ha)	Forest Area (ha)	EC status	FC Status	Company and date of allotment
52.	Dumri	Hazaribagh	254	4	EC pending	Placed before FAC June 2011 for 158.64 ha	Nilanchal Iron and Power Generation; Bajramg Ispat Pvt Ltd. (13.3.2006)
53.	Kasiadih	Hazaribagh	867	162	-	-	Central Coalfields Ltd
54.	Pachra	-	719	72	-	-	Central Coalfields Ltd
55.	Kerendari-A	Hazaribagh	661	0	EC granted on 31.3.2010	-	NTPC (25.1.2006)
56.	Kerendari-B	Hazaribagh	3057	34	TOR granted on 29.07.2010.	-	Power Finance Corp UMPP (25.7.2006) TOR granted to M/s Jharkhand Integrated Power Ltd.
57.	Pakari- Barwadih	Hazaribagh	3933	255	EC granted on 19.5.2009	Final forest clearance granted for 1026.438 ha 17.9.2010	NTPC (11.10.2004)
58.	Sisai	Chatra	946	185	-	In principle clearance for 49.07 for Brinda-Sisai block granted 11.2.2011	Abhijit Infrastructure P Ltd (26.5.2005) [Allotted to Central Coalfields Ltd]
59.	Brinda	Chatra	979	20	-	In principle clearance for 49.07 for Brinda-Sisai block granted 11.2.2011	Abhijit Infrastructure P Ltd (26.5.2005) [Allotted to Central Coalfields Ltd]
60.	Amrapali	Hazaribagh	1417	271	-	Final forest clearance on 12.10.2010 for 531.64 ha	Central Coalfields Ltd
61.	Magadh north	Hazaribagh	477	0	-	-	
62.	Bundu	Hazaribagh	595	449	Submitted for final orders for grant of EC. Pending with FC Division on the issue of "Go-and No-Go Areas"	-	Rugta Mines Ltd.(25.1.2006)
62.	Dumari North	Hazaribagh	923	589	-	-	Central Coalfields Ltd
	Total		605561	17020			



WARDHA COALFIELD

Maharashtra

Proved Reserves
3.274 billion tonnes

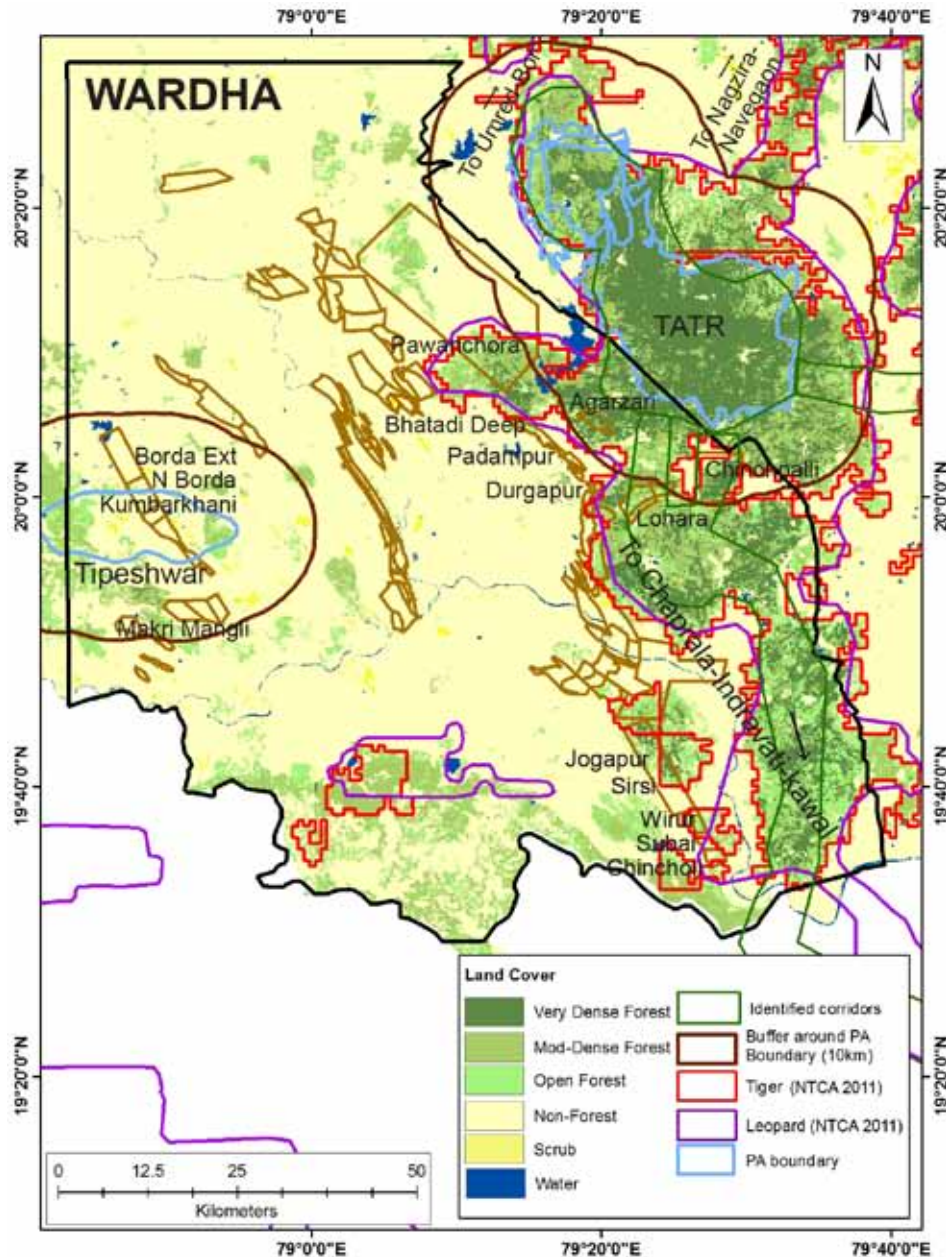
Corridor threatened
Tadoba Andhari Tiger Reserve south to Kawal Tiger Reserve and Indravati Tiger Reserve. Tadoba Andhari Tiger Reserve north to Umred-Karandla and Bor Sanctuaries.

Corridor identified by
NTCA, Satpuda Foundation, Tiger Research and Conservation Trust, Eco-Pro, Green Planet Society

Total area
7,541 sq. km.

Forest cover
1,800 sq. km.

Endangered species
Tiger, leopard. Tiger presence was recorded from 1300 sq. km. across the coalfield in 2010, and leopard presence from almost 1400 sq. km. and tiger presence.



The Wardha coalfield spreads to the south and west of the Tadoba-Andhari Tiger Reserve. The impact it is having and impacts it will have on corridors if further mining is permitted are spelled out in greater detail in the case study on the following page. Forest connections between TATR and the Indravati Tiger Reserve, as well as between TATR and the Kawal Tiger Reserve are at risk from coal blocks in the Wardha coal field. Other coal blocks (not within the Wardha coal field) also pose a threat to connectivity from TATR to tiger habitats (Bor Sanctuary and the Umred-Karandla sanctuary) to the north.

Over 1,100 sq. km. of the coalfield falls within the 10 km. buffer of the Tadoba-Andhari Tiger Reserve and the Tipeshwar Sanctuary.

COMPANIES

COAL INDIA LIMITED

CIL subsidiary Western Coalfields Limited operates many blocks in the Wardha coalfield, including Durgapur, Durgapur Deep, Padmapur and Ghugus. Durgapur and Padmapur are close to the buffer of TATR and tiger and leopard presence has been reported from within these blocks. Western Coalfields Limited is seeking permission to open up new forest areas.

ADANI GROUP

The Lohara West and Lohara Extension blocks have been allocated to Adani. Forest



clearance has been denied thus far, but the blocks have not been de-allocated yet.

KARNATAKA POWER CORPORATION LIMITED (KPCL)

Owned by the state of Karnataka, a number of blocks have been allocated to the state-owned KPCL, including the Manora Deep block which is immediately adjacent to tiger and leopard habitat.

Lohara coal block, adjoining Tadoba-Andhari Tiger Reserve, Chandrapur District © Dhiraj Singh / Greenpeace

KAMPTEE COALFIELD

Maharashtra

Proved Reserves

1.2 billion tonnes

Corridors threatened

Bor Wildlife Sanctuary eastwards towards Umred-Karandla Sanctuary.

Corridor identified by

Forest cover analysis based on local inputs

Total area

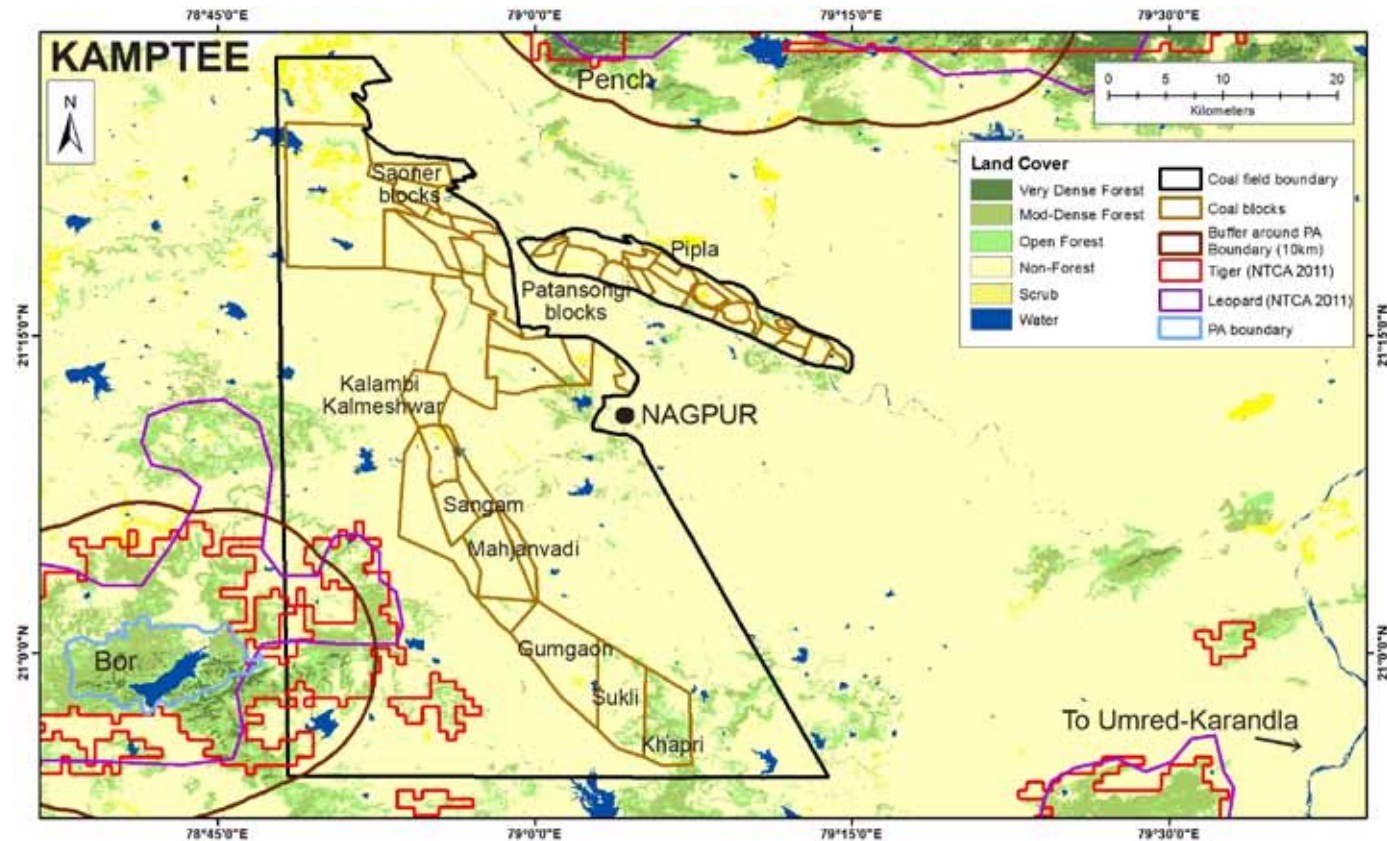
1,765 sq. km.

Forest cover

161 sq. km.

Endangered species

Tiger, leopard. Tiger presence was recorded over 100 sq. km. and leopard over almost 70 sq. km.



The Kamptee coalfield covers a large geographical area and does not contain much forest cover relative to its extent. The GIS analysis shows tiger and leopard presence in the southwest portion of the coalfield adjoining the Bor Wildlife Sanctuary. 115 sq. km. of the coalfield lies within the 10 km. buffer of Bor. This area has not been blocked or demarcated yet; no coal mining proposals should be permitted either within the Sanctuary or in its buffer.

The borders utilized in the GIS analysis do not take into account recent notifications doubling the size of the Bor Sanctuary

from 62 to 122 sq. km. It is probable that much more of the Kamptee coalfield falls within the 10 km. buffer of Bor.

In the southeast corner of the coalfield, there is another block of forest between the Vadghaon lake and Makhardhokda reservoir, which acts as a stepping stone connection between Bor and the Umred-Karandla Sanctuary further to the east.

The northern part of the Kamptee coalfield lies approximately 15 km. from the buffer of the Pench Tiger Reserve (Maharashtra). This section however contains patchy forest cover in some

parts. Field reports indicate that there is tiger movement between Pench and Bor via Khapa-Saoner-Kondhali-Hingni. Ground level analysis is needed to determine to what extent ongoing and proposed coal operations in Kamptee coalfield threaten this corridor.

COMPANIES

COAL INDIA LIMITED

CIL subsidiary Western Coalfields Limited operates mines in the Kamptee and Saoner area, including the Bina Bhanegaon and Singori blocks. WCL has also expressed interest in the Sangam, Sillori and Bharatwada blocks. The extent to which coal mines are impacting wildlife movement in the Saoner area needs to be ascertained through field surveys.

Several blocks have been allocated to private players including Sunflag Iron and Steel, Maharashtra Seamless Ltd, Dhariwal Infrastructure, Kesoram Industries and Dalmia Cement.







CHANDRAPUR'S TIGERS: ENCIRCLED BY COAL

The Wardha coalfield in Maharashtra is well known for the conflict between coal and tiger landscapes. Given the paucity of data for many other regions, the Wardha coalfield provides us with the best-documented case of coal mining impacting wildlife habitats.

Wardha is one of India's major coalfields with an estimated 3.2 billion tonnes of proved coal reserves. It lies for the most part in the Chandrapur and Yavatmal districts and covers over 750,000 ha. Of this, approximately 180,000 hectares is covered by forest. The "no go" exercise of 2010 covered 113 demarcated blocks in the Wardha coal field, totaling 82,932 hectares, and 16 of these blocks were deemed to be "No Go" blocks.¹⁰⁶ The actual forest cover over these 113 blocks as measured by the inter-ministerial exercise was 17,489 hectares or over 170 sq. km.

On the north-eastern boundary of the Wardha coalfield lies the Tadoba-Andhari Tiger Reserve, and most of the forests in the coalfield are contiguous with TATR and home to tigers. The Tadoba-Andhari Tiger Reserve (TATR) in Central India is considered to be one of India's better-managed tiger reserves, with a healthy breeding population.

The TATR has a core area of 625 sq.km. and a buffer of around 1,153.94 sq. km. as notified in 2010, and a significant tiger population both inside and outside the reserve providing the best source population of tigers in this part of the Central Indian landscape. According to 2011 estimates by the WII, there were between 66 to 74 tigers in the Chandrapur landscape covering 3,241 sq. km.

TATR has also been designated as an Important Bird Area¹⁰⁷ with 280 species including five globally threatened species; the Botanical Survey of India has recorded 667 plant species within TATR.

These forests also form the catchment of the Irai, Human and Andhari rivers as well as catchments for smaller reservoirs like the Naleshwar Dam. Drinking water and water for agricultural and industrial purposes including the Chandrapur Super Thermal Power Station comes mostly from these water sources.

THREATENED TIGERS, COMPROMISED CORRIDORS

Chandrapur's tigers have been identified as one of three functional populations in the Central Indian landscape. The larger Tadoba-Chandrapur-Gadchiroli-Indravati landscape has the potential to harbor tiger meta-populations provided corridors are maintained and restored. Forest links exist between TATR with the Kawal Tiger Reserve in Andhra Pradesh to the southwest; the Indravati Tiger Reserve (via Chaprala) to the east; the Nagzira-Navegaon belt to the north-east and to the Umred and Bor forest areas to the north and north-west.¹⁰⁸

The corridors from TATR southwards to Andhra Pradesh and to the northeast to Nagzira-Navegaon have been identified in NTCA and WII's 2011 report.¹⁰⁹

TATRS CONNECTIVITY TO OTHER PROTECTED AREAS

Corridor	Connects to	Threatened by
South and south-east	Kawal Tiger Reserve, Chaprala Sanctuary and Indravati Tiger Reserve	Ongoing: Durgapur and Padmapur mines. Proposed: Chinchpalli, Durgapur and Padmapur Extensions, Lohara blocks, Agarzari, Bahmini-Palasaon, Rajura-Manikgarh, Jogapur Sirsi, Wirur, Subai, Chincholi.
North	Bor Sanctuary, Umred-Karandla Sanctuary, Nagzira-Navegaon Tiger Reserve (proposed)	Coal mining ongoing: Murpar underground. Proposed: Bandar, Murpar Expansion, Surmanjiri, Bhansuli, Bhagwanpur, Nand I and Nand II.

TATR serves as a source population for tigers in several or all of these satellite areas. This has been recorded by reports from the forest department and camera trapping results by Nagpur-based NGO TRACT. These corridors are important for the viability of the tiger populations in TATR and in the satellite areas.

Chandrapur is the fourth most polluted city in the country,¹¹⁰ largely on account of coal mining activities and the 2,340 MW Chandrapur Super Thermal Power plant. Since the year 2000, over 2,412 ha. of forest land has been diverted for coal mining in Chandrapur district alone.¹¹¹ This does not take into account the land diverted for related infrastructure.

Chandrapur has also recorded amongst the highest levels of tiger-human conflict in the country over the last 5 years.¹¹² The role of increased disturbance to the corridors through which tigers

disperse has not been ruled out.

A fact finding mission in September 2011 by wildlife and legal experts revealed that coal mining had already had a huge impact on TATR and Chandrapur. Based on site visits, discussions with local forest and coal mine authorities as well as civil society groups, the team found that some ongoing and several proposed coal mines posed a significant threat to habitat connectivity in the region. Refer to map on page 83.

OPERATIONAL MINES

The existing Padmapur and Durgapur open cast mines lie to the south of TATR and were given approvals ignoring the impacts that they would have on tigers and wildlife. Both these mines are at the border of the notified buffer of TATR. Sightings of tigers with cubs and leopards have been reported in both the Durgapur and Padmapur area indicating that these mines. According to officials of Western Coalfields Limited (a Coal India Limited subsidiary) there are plans for further expansion of both these mines.

These mines have contributed significantly to breaking a part of the southern forest corridor connecting TATR to the relatively intact forest block to the south of the reserve. Camera trap records show that this is a corridor used by tigers heading south towards the Andhra Pradesh border and towards the Kothari-Dhaba block. From here, there is tenuous connectivity both to the proposed Kawal Tiger Reserve in Andhra, as well as Chaprala-Gadchiroli and then the Indravati Tiger Reserve in Chhattisgarh.

PROPOSED MINES

A number of proposed mines in the Wardha coalfield pose a threat to tiger movement and forest corridors:

DURGAPUR DEEP EXTENSION

The Durgapur Deep Extension mine is seeking to further expand into forest land. This area is in close proximity to the buffer of TATR and there is evidence from local groups of tiger presence in the mine area itself, and in adjoining forests.

PAWANCHORA-MECL PROMOTIONAL BLOCK, BAHMINI-PALASGAON AND RAJURA MANIKGARH AND JOGAPUR SIRSI

All of these blocks overlap significantly with tiger forests. Pawanchora-MECL is contiguous with the TATR buffer and forms the watershed of the Irai reservoir. Bahmini Palasgaon and Jogapur Sirsi lie to the south of TATR and cover forests inhabited by tiger that form important connecting patches in the southward dispersal route (towards Kawal/Adilabad/Andhra Pradesh) used by tigers.

WIRUR, SUBAI AND CHINCHOLI

All of these blocks overlap significantly with tiger forests. Pawanchora-MECL is contiguous with the TATR buffer and forms the watershed of the Irai reservoir. Bahmini Palasgaon and Jogapur Sirsi lie to the south of TATR and cover forests inhabited by tiger that form important connecting patches in the southward dispersal route (towards Kawal/Adilabad/Andhra Pradesh) used by tigers.

CHINCHPALLI KELZAR-MECL PROMOTIONAL

This block lies further to the east of the controversial Lohara blocks which were denied forest clearance in 2010. They are in the same critical corridor that connects TATR to the forests to the south. This is a large area of forest, much larger than the Lohara blocks and is critical to maintain connectivity to the south, given the fragmented nature of this corridor.



Durgapur Deep coal mine, adjoining Tadoba-
Andhari Tiger Reserve © Dhiraj Singh / Greenpeace

CS-5/A
□



AGARZARI BLOCK

is located within the buffer of the Tadoba Andhari Tiger Reserve as notified in 2010, and just about 3 km from the boundary of the core zone of the reserve. This 700 ha. block contains good density and high quality forest, with wildlife and tiger sightings reportedly common. The block contains 137 million tonnes of coal and was allocated to the Maharashtra State Mining Corporation Limited in July 2007. Following the buffer notification and intense local opposition to any plans to mine this block, the Coal Ministry reportedly de-allocated this block in 2010, though this has not been confirmed.¹¹³

LOHARA WEST AND LOHARA EXTENSION BLOCKS

cover a total of 1750 ha. with reserves of 140-170 million tons of coal. The Lohara W block is at a distance of about 12 km from the TATR boundary. This is good tiger habitat with frequent tiger sightings. These blocks were allocated to the Adani Group in 2007. Due to huge public opposition, the Ministry of Environment and Forests decided to deny approval.¹¹⁴ The block's proximity to the existing Chandrapur-Gondia rail line is one of the main reasons why it has been targeted for coal mining repeatedly over the last decade. This area has not been de-allocated by the Coal Ministry and there are reports that Adani is still lobbying for access to this area, in order to secure coal for its plant at Tiroda.¹¹⁵

LOHARA EAST

was allocated to a company called Murli Agro and is directly continuous with the Lohara West block, with the habitat also being of similar high quality.

Both Lohara East and Lohara West proposals were earlier rejected by the MoEF in 1999¹¹⁶ on wildlife grounds. Yet despite this, these proposals resurfaced almost 10 years later, for different private parties.

Chandrapur is also the location of other coal blocks which do not lie inside the Wardha coalfield but will make significant demands on forest land and wildlife

BANDAR BLOCK - OPEN CAST AND UNDERGROUND

is to the north of TATR and is situated in Chimur tehsil. The Bandar block covers an area of 1746 ha. of which 1,170 ha. is forest land. The boundary of the block is just 7.5 km from the Tadoba Andhari Tiger Reserve. Local NGOs allege that the buffer of the TATR has been reduced to 7 km. distance rather than the norm of 10 km, in order to facilitate the Bandar coal mine.

This block has been allocated to three companies; J.K. Cements Limited, Century Textiles and Industries Ltd and AMR Iron and Steel Pvt. Ltd. The Bandar mine will destroy a narrow forest corridor through which tigers currently disperse from TATR to the north. A committee appointed by the National Tiger Conservation Authority visited the area in October 2010 and has submitted a proposal recommending against grant of forest clearance for mining in this block, on grounds of its proximity to TATR and the fact that the Bandar block is at a critical neck in an already narrow corridor that enables tiger dispersal to the north of TATR.



Padmapur mine, Chandrapur, Maharashtra.
© Dhiraj Singh / Greenpeace

A Western Coalfields Limited (WCL) map¹¹⁷ showing proposed and ongoing mines indicates the presence of several more proposed mines in the same forest area as the Bandar block – Murpar Expansion, Bhansuli, Surmanjiri and Bhagwanpur and Gokul (Nand II). All of these are part of the same forest block and provide a dispersal corridor for Tadoba's tigers.

PEOPLE'S PROTESTS STALL COAL MINING

The people of Chandrapur and Nagpur are proud of the region's tiger conservation record, and there was huge public mobilisation in opposition to the Lohara and Agarzari mining projects, led by groups such as EcoPro and Green Planet Society and other committed individuals. These groups are also challenging the Bandar, Durgapur and other coal mining projects in forest areas for the same reasons. The coming years are likely to see the coal vs. tiger conflict in Chandrapur intensify.



Coal mine bordering Tadoba-Andhari Tiger Reserve, Chandrapur, Maharashtra. © Dhiraj Singh / Greenpeace

STATUS OF COAL BLOCKS IN THE WARDHA COALFIELD

1) The list of coal blocks and their area is based on the listing for the Wardha Coalfield used for the No Go classification. Additional information on allotment or transfer to other private companies is available or status of approvals has been added wherever obtained.

2) Figures related to forest area do not always match with the land details for which environment and forest clearances are sought because the forest clearance sought is either only for part of the coal block or might also include adjoining forest areas outside the coal block, required for ancillary activities and mining infrastructure.

S. No.	Coal block/project	District	Total Area (ha)	Forest Area (ha)	EC status	FC Status	Allotted to
1.	Bhatadi Deep	Chandrapur	660	311	EC granted 19/05/2005	-	WCL
2.	Motaghat	Chandrapur	87	0	-	NA	-
3.	Lohara East	Chandrapur	354	346	ToR withdrawn in January 2010	NA	Maharashtra Coal Company Limited
4.	Lohara West	Chandrapur	882	766	ToR withdrawn in January 2010	NA	Adani Power
5.	Pauni Extn	Chandrapur	83	0	14/07/2006	NA	WCL
6.	Sasti ug/oc	Chandrapur	1189	0	17/05/2007	NA	WCL
7.	Balarpur	Chandrapur	1216	11	EC granted on 18/06/2008	-	WCL
8.	Dhuptala	Chandrapur	589	7	TOR issued on 09/02/2009. Appl. for EC is awaited.	-	WCL
9.	Sasti	Chandrapur	312	27	EC granted on 1/03/2007	-	WCL
10.	Wiru		325	195	-	-	-
11.	Chincholi	Chandrapur	434	161	TOR issued on 30/04/2009. Appl. for EC is awaited.	-	WCL
12.	Kalgoan		233	0	-	-	-
13.	Ghugus Oc	Chandrapur	381	0	-	-	WCL
14.	Kolar Pimpri Deep	Yavatmal	189	0	-	-	WCL
15.	New Majri Ug	Chandrapur	803	4	EC granted 19/05/2005	-	WCL
16.	New Majri Oc	Chandrapur	186	14	EC granted 19/05/2009	-	WCL
17.	Juna Kunada	Chandrapur	136	7	EC granted 10/1/05	-	WCL
18.	Telwasa	Chandrapur	102	10	EC granted 19/05/2005	-	WCL
19.	Dhowasa & Extn	Chandrapur	98	0	17/09/2008	NA	WCL
20.	Sima Oc		37	9	-	-	-
21.	Chargaon Oc		16	0	-	-	-
22.	N.Nakoda		59	0	-	-	-
23.	Kondha Nardola I/II		1107	12	-	-	-
24.	Kiloni Oc		356	0	-	-	-

S. No.	Coal block/ project	District	Total Area (ha)	Forest Area (ha)	EC status	FC Status	Allotted to
25	Manora Deep-II		361	10	-	-	-
26	Warora East		763	18	17/10/2006	-	WCL
27	Majra	Chandrapur	548	9	EC granted 31/07/2007	In principal approval on 11/01/2011	Gondwana Ispat Ltd.
28	Yekona-I	Chandrapur	217	0	EC granted 17/10/2006		WCL
29	Yekona-II	Chandrapur	550	6	-	-	-
30	Chikalgaon		612	21	-	-	-
31	Rajur	Rajura	1322	0	EC granted 17/05/2007	NA	WCL
32	Makri Mangli-II	Yavatmal	165	55	Considered by EAC January 2010. Compliance details on Public hearing awaited. File closed.	-	Virangana Steels Private Ltd
33	Mana Oc		21	0	-	-	-
34	Visapur		154	0	-	-	-
35	Hindustan Lalpet Oc	Chandrapur	64	0	EC granted 14/07/2006	-	WCL
36	Junad Oc	Chandrapur	79	0	EC granted 9/2/09	-	WCL
37	Drc-678 Ug/ Durgapur Extn	Chandrapur	1528	961	TOR issued on 12/06/2008	-	WCL
38	Anandvan	Yavatmal	399	12	-	-	-
39	Chinora	Chandrapur	341	0	EC granted 19/05/2009	-	Field Mining & Ispat Ltd.
40	Agarzari Ug+Oc	Chandrapur	542	534	-	-	-
41	Kosar Dongargaon	Chandrapur	725	57	EC granted 15/04/2009	-	Chaman Metallics Pvt. Ltd.
42	Makri Mangli-I	Yavatmal	533	0	-	-	-
43	Makri Mangli-III	Yavatmal	165	55	Considered by EAC January 2010. Compliance details on Public hearing awaited. File closed	-	Virangana Steels Private Ltd
44	Makri Mangli-IV	Yavatmal	165	55	Considered by EAC January 2010. Compliance details on Public hearing awaited. File closed	-	Virangana Steels Private Ltd
45	Nakoda South		174	0	-	-	-
46	Kalgoan Saongi		1110	1	-	-	-

STATUS OF COAL BLOCKS IN THE WARDHA COALFIELD

1) The list of coal blocks and their area is based on the listing for the Wardha Coalfield used for the No Go classification. Additional information on allotment or transfer to other private companies is available or status of approvals has been added wherever obtained.

2) Figures related to forest area do not always match with the land details for which environment and forest clearances are sought because the forest clearance sought is either only for part of the coal block or might also include adjoining forest areas outside the coal block, required for ancillary activities and mining infrastructure.

S. No.	Coal block/ project	District	Total Area (ha)	Forest Area (ha)	EC status	FC Status	Allotted to
47	Bhandak		437	0	-	-	-
48	Yekona Extn		944	0	-	-	-
49	Mana Oc		65	0	-	-	-
50	Neradmalegaon		480	0	-	-	-
51	Junad-II	Yavatmal	190	0	-	-	WCL
52	Mugoli	Yavatmal	244	6	EC granted 4/5/09	-	WCL
53	Hiwadara Sindhwadhona		634	0	-	-	-
54	Bhatali		1931	0	-	-	-
55	Bahmini-Palassgaon & Rajura Manikgarh	Chandrapur	5886	1281	-	-	-
56	Bhivkund A	Chandrapur	1499	173	-	-	-
57	Bhivkund	Chandrapur	1017	0	-	-	-
58	Jogapur-Sirsi		3778	2209	-	-	-
59	Subai		351	193	-	-	-
60	Gauri-I,II Pauni-Oc	Chandrapur	688	0	EC granted on 22/07/2009	-	WCL
61	Balarpur Deep		373	0	EC granted on 22/07/2009	-	WCL
62	Mathra deep Side		586	148	-	-	-
63	Mathra		343	0	-	-	-
64	Gauri Deep	Chandrapur	41	0	ToR issued 11/12/08	-	WCL
65	Belgaon	Nagpur	365	0	EC granted 6/11/06	FC granted on 02/02/2011 for 55 ha.	Sunflag Iron & Steel Co. Ltd.
66	Warora West(Northern Part)	Chandrapur	143	0	EC granted 19/05/2009		M/s Bhatia International Ltd.
67	Warora West (southern part)	Chandrapur	233	0	19/05/2009	-	Field Mining & Ispat Ltd.,

S. No.	Coal block/ project	District	Total Area (ha)	Forest Area (ha)	EC status	FC Status	Allotted to
68	Takli Jena-Bellora(N)	Yavatmal	519	0	-	-	-
69	East of Ekarjuna	Yavatmal	1010	0	-	-	-
70	Baranj I/IV		758	0	-	-	-
71	Bandak West	Yavatmal	198	15	-	-	-
72	Bandak East	Yavatmal	313	7	-	-	-
73	Ukni	Yavatmal	239	1	EC granted 20/05/2005	-	WCL
74	Niljai	Yavatmal	270	0	EC granted 19/05/2005, ToR for expansion issued 17/12/2007.	-	WCL
75	Niljai Deepside		144	9	-	-	-
76	Bellora		117	0	-	-	-
77	Bellora Naigaon	Chandrapur	87	0	ToR issued 10/12/2009	-	WCL
78	Bellora deepside	Yavatmal	189	0	-	-	WCL
79	Ghugus Nakoda Ug	Chandrapur	253	0	-	-	-
80	Mugoli Nirguda Deep Oc		165	2	-	-	-
81	Pisgaon		383	0	-	-	-
82	Chinchala		230	0	-	-	-
83	Borda Extn		1732	0	-	-	-
84	North of Ghonsa/Borda		1056	117	-	-	-
85	UnB1		418	1	-	-	-
86	Kumbarkhani	Yavatmal	552	0	ToR issued 18/02/2008	-	WCL
87	Parsoda		253	0	-	-	-
88	Parsoda Dara		108	0	-	-	-
89	Durgapur Oc	Chandrapur	76	0	EC granted 30/03/2007	-	WCL
90	Sinhala Deep Oc		94	6	-	-	-

STATUS OF COAL BLOCKS IN THE WARDHA COALFIELD

1) The list of coal blocks and their area is based on the listing for the Wardha Coalfield used for the No Go classification. Additional information on allotment or transfer to other private companies is available or status of approvals has been added wherever obtained.

2) Figures related to forest area do not always match with the land details for which environment and forest clearances are sought because the forest clearance sought is either only for part of the coal block or might also include adjoining forest areas outside the coal block, required for ancillary activities and mining infrastructure.

S. No.	Coal block/project	District	Total Area (ha)	Forest Area (ha)	EC status	FC Status	Allotted to
91	Durgapur Oc	Chandrapur	173	19	-	-	WCL
92	UNB2		222	127	-	FC Granted on 06/12/2002 for 172 ha., on 8/11/2005 for 80.77 ha. and 11/8/2006 for 1172 ha.	-
94	Chand Rayatewari	Chandrapur	417	0	17/10/2006	-	WCL
95	Mahakali	Chandrapur	195	0	EC granted 2/8/06	-	WCL
96	Hindustan Lalpet Oc		306	46	EC granted 14/07/2006	Temporary Working Permission. In Principal approval granted 23/11/2005	WCL
97	Mandgaon		85	9	-	Reminder I issued on 11.01.2010, EDS awaited. Reminder II issued on 05.05.2010. EDS awaited	-
98	Mana Oc		80	0	-	In principal approval 06/05/2008	-
99	Padampur Deep	Chandrapur	175	1	14/07/2009	-	WCL
100	Padampur	Chandrapur	86	0	19/05/2005	-	WCL
101	Bhatadi	Chandrapur	44	0	19/05/2005	-	WCL
102	Lohara Extn	Chandrapur	330	266	ToR withdrawn in January 2010	-	Adani Power
103	Ukni Deep		138	0	-	-	-
104	Ukni Deep Extn		44	0	-	NA	-
105	Pimpalgaon Deep		55	5	-	-	-
106	Pimpalgaon	Chandrapur	114	1	20/03/2007	-	WCL
107	Takli Jena-Bellora(S)	Yavatmal	301	0	-	-	-

S. No.	Coal block/ project	District	Total Area (ha)	Forest Area (ha)	EC status	FC Status	Allotted to
108	Telwasa OC Expn	Chandrapur	46	0	ToR issued 17/09/2008. Considered July 2009. Clarification on distance he project from Tadoba-Andhari Tiger Reserve is awaited. File closed.	-	WCL
109	Chinchpalli Kelzar –MECL	Chandrapur	3408	2167	-	-	-
110	Pawanchora-MECL	Yavatmal	24662	6969	-	-	-
111	Madhri-Mec promotional	Yavatmal	1418	37	-	-	-
112	Gauri Deep II Antargaon	Yavatmal	538	0	-	-	-
113	Kolar Pimpri	Yavatmal	130	0	EC granted on 29/04/2010	-	WCL





ALTERNATIVES

WHY INDIA CAN AND MUST WEAN ITSELF OFF COAL

Over 400 million¹¹⁸ people in India still lack access to electricity. In addition, India also suffers from a 10.6% peak power deficit,¹¹⁹ which is pushing business and industries to adopt inefficient means of power generation such as diesel generators. These two arguments, and the fact that externalised costs mean that coal is currently the cheapest source of energy, are commonly used to justify increased coal fired power generation, and by implication, increased coal mining to supply the fuel to run thermal power plants. But the inconvenient truth is that destroying forests for coal will not guarantee energy security for India, and will certainly not benefit millions of rural poor. Once other costs and risks (pollution, health impacts, loss of water and forest resources etc.) are internalised, coal can no longer be considered a cheap fuel, much less a secure investment.¹²⁰



LIMITED COAL RESERVES

According to official government figures, India has 267.21 billion tonnes (BT) of coal resources. However, only 105.82 BT of this is currently proved. According to the Integrated Energy Policy of 2006, only 56-71 BT of total coal resources can be considered technically and economically extractable. There is some question as to whether even this figure is accurate, with TERI suggesting that “The coal that can be extracted—taking into account geological, technical, and economic aspects - is only a small fraction of our total coal inventories” and warning that in reality India might not have sufficient extractable coal for even the next 40 years, as is currently believed.¹²¹

Does it still make sense to destroy some of the country’s last remaining forests for a resource that could soon be over anyway?

While both the peak power deficit and the lack of electricity to poor and rural consumers are very real issues, the widely-held belief that coal can solve these problems is a fallacy. Increasing India's reliance on coal for electricity will be risky from an energy security point, financially expensive and entail huge social and environmental costs.

The ongoing problems with the supply of both domestic and imported coal show that coal cannot be relied on to provide India's energy security. Some experts warn that India might not have sufficient extractable coal for even the next 40 years (see box). On the international market, coal prices are increasingly volatile, jeopardizing investments in coal-fired thermal power plants which rely on imported coal. The International Energy Agency estimates that coal demand and prices will continue to increase in coming years.¹²² And increasing domestic coal mining to the levels targeted by government, will entail huge social and environmental costs.

On the other hand, the case in favour of renewable technologies (wind, solar and biomass) being able to meet India's legitimate energy requirements is growing stronger. Together with demand and supply side management through energy efficiency measures, renewables can meet a significant part of India's projected energy needs. According to the 4th Edition of the Greenpeace 'Energy Revolution'¹²³ scenario, 92% of the electricity produced in India can come from renewable energy sources by 2050. 'New' renewables- mainly wind, solar thermal energy and PV- can contribute 74% of electricity generation. The scenario assumes that ambitious energy efficiency measures are put in place and models immediate market development with high annual growth rates achieving a renewable electricity share of 62% by 2030.

ENERGY EFFICIENCY

Energy efficiency is a sleeping giant - offering the most cost competitive way to reform the energy sector. There is enormous potential for reducing our consumption of energy, while providing the same level of energy services. New business models to implement energy efficiency must be developed and must get more political support. Efficiency measures in the appliance, agriculture

and industry sectors, along with a reduction in transmission and distribution losses can result in a saving of 255 billion kWh for India.¹²⁴

For example, energy think tank Prayas has estimated that just upgrading ceiling fans in every household in the state of Maharashtra to those with the highest efficiency will save 2072 GWh in 2020.¹²⁵ Replacing incandescent bulbs with CFLs in the 400 million light points currently lit by incandescent bulbs can save the country 10,000 MW of electricity.¹²⁶

RENEWABLES: THE 21ST CENTURY GROWTH STORY

Renewable forms of energy accounted for approximately half of all new electric capacity added globally during 2010, and delivered close to 20% of global electricity supply.¹²⁷

The renewables sector has been growing at a massive pace. Bloomberg New Energy Finance reported that India led nations in the growth of renewable energy investment in 2011, with a 52 percent jump to \$10.3 billion, helped by a growing wind sector and accelerating solar market, and that Indian power distributors are now the key roadblock in the growth of renewables.¹²⁸ Renewable technologies also enable us to tackle the twin imperatives of providing access to modern energy for those without electricity and replacing fossil fuels with low-carbon energy.

ENERGY ACCESS

The cost of providing rural villages access to centralized electricity grids is often prohibitive, and increases with distance from the nearest substation. For thousands of such villages, the cost per unit of most forms of renewable energy at current rates is considerably less than the cost of grid-connected electricity. An integrated approach with a mix of grid extension, grid interactive and off-grid systems to meet the rural electricity requirements must be developed.¹²⁹

Electrifying a village of 500 households situated 100 km from a grid transmission line through a centralised scheme like Rajiv Gandhi Grameen Viduyutikaran Yojana would cost approximately 100 million

(10 crore) rupees¹³⁰ (minus the substation costs), whereas the same village could be electrified through suitable renewable energy systems for less than half the cost. For example, experiences from small scale renewable energy companies in Bihar, such as Husk Power Systems and Saran Renewable Energy, show that a biomass-based decentralized renewable energy system for a village of the same size would cost less than 10 million (one crore) rupees.¹³¹

WIND ENERGY POTENTIAL

India's on-shore wind energy potential has been traditionally estimated by the Ministry of Renewable Energy and others at about 45-50 GW.¹³² However, recent estimates from the Lawrence Berkeley National Laboratory that take into account land availability and more efficient technology suggest that India has between 2,006 and 3,121 GW of wind energy potential.¹³³ Critically, this estimate excludes forests, protected areas, hill slopes and areas with an elevation greater than 1500 m. Even if this is an optimistic estimate, India has thus far utilized a very small percentage of its wind energy potential.

SOLAR POTENTIAL

The Ministry of New and Renewable Energy calculates the potential of solar power at between 20-30 MW per sq. km.¹³⁴ Theoretically, this can yield many times India's current and foreseeable energy needs. The high capital costs associated with solar have been dropping rapidly over the last few years, and industry analysts predict that solar in India will achieve grid parity (that is, same cost as grid power such as coal) by 2016.¹³⁵

Decentralised energy systems, where power and heat are produced close to the point of final use reduce grid loads and energy losses in distribution. Investments in 'climate infrastructure' such as smart interactive grids and transmission grids to transport large quantities of offshore wind and concentrating solar power are essential. Building up clusters of renewable micro grids, especially for people living in remote areas, will be a central tool in providing sustainable





electricity to the almost 400 million around who currently don't have access to electricity.

THE KEY PRINCIPLES OF THE ENERGY REVOLUTION

The expert consensus is that this fundamental shift in the way we consume and generate energy must begin immediately and be well underway within the next ten years in order to avert the worst impacts of climate change and address other key environmental and social justice issues. The scale of the challenge requires a complete transformation of the way we produce, consume and distribute energy, while maintaining sustainable economic growth.

The five key principles behind this Energy Revolution will be to:

1. Implement renewable solutions, especially through decentralised energy systems and grid expansions
2. Respect the natural limits of the environment
3. Phase out dirty, unsustainable energy sources
4. Create greater equity in the use of resources
5. Decouple economic growth from the consumption of fossil fuels

CONCLUSION & DEMANDS

There are many reasons why increasing the country's dependence on coal to deliver energy is not a wise choice – energy insecurity, greenhouse gas emissions and climate change, public health implications and the inability of coal to deliver power to remote locations to name a few. However, leaving these aside, the implications that expanded coal mining will have on such large forest areas, their water sources, endangered species such as the tiger and millions of impoverished forest-dependent communities should be reason enough to press the pause button.



India has a choice: continue down the path of coal dependence and sacrifice its forests, the biodiversity they harbour and displace and destroy indigenous communities, or, we can wean ourselves away from coal and towards a future where energy efficiency, distributed generation and renewable forms of energy are harnessed to deliver greater equity, energy security for all and a clean and healthy living environment.

DEMANDS

TO THE GOVERNMENT OF INDIA:

- 1** An immediate moratorium on forest clearances for coal mining. Given that clearances in excess of government targets have already been granted, the logic behind an immediate moratorium on all further forest clearances for coal mining is impeccable. This period should be utilized to: i) assess independently the quantum of coal that remains in existing (broken) mines, ii) to re-assess India's coal requirements and coal reserves in light of the rapid growth and potential in renewable energy and energy efficiency and to do the following:
- 2** Exclude all forest corridors and areas inhabited by key endangered species from coal fields/coal blocks
- 3** Map community forest dependence in all areas proposed to be opened for coal mining
- 4** Initiate a public consultative process to determine criteria for areas that will be kept off limits to mining. These criteria should include but not necessarily be limited to forest cover, endangered species presence, level of community dependence on forest resources, hydrological value etc.

To private companies in the coal and power sectors:

- 5** Commit to supporting implementation of legal process as prescribed by the Forest Conservation Act, Environment Protection Act and the Forest Rights Act for all lease areas.
- 6** Exclude areas of high biodiversity value from future operations
- 7** Support the development of criteria as laid out in (4) above.



© Harikrishna Katragadda / Greenpeace

REFERENCES

Qureshi Q., Gopal R., Shirish Kyatham, Basu S., Mitra A., Y.V. Jhala 2006. Evaluating Tiger Habitat at the Tehsil Level. Project Tiger Directorate, Govt. of India, New Delhi and Wildlife Institute of India, Dehradun. TR No. 06/001.

Rangarajan, M. 2010. Gajah - Securing the Future for Elephants in India. The report of the Elephant Task Force, Ministry of Environment and Forests, Government of India.

Sar, C.K., and Varma, S. 2004. The Asian elephants in Odisha, India; Population status, Conservation and Management of Asian elephants (*Elephas maximus*) in Elephant Reserves of Odisha, India, Occasional report of Asian Elephant Research and Conservation Centre, Bangalore.

Tiwari, S.K., Singh, A.K., Singh, R.K., and Swain, D. 2005. Elephant Corridors of Central India. In: Right of Passage: Elephant Corridors of India. Menon, V., Tiwari, S. K., Easa P. S. and Sukumar, R. (2005). (Eds.). Conservation Reference Series 3. Wildlife Trust of India, New Delhi.

Y.V.Jhala, R.Gopal, Q.Qureshi. 2007. Status of the Tigers and Co-predators in Central Indian Landscape A Preliminary Report. National Tiger Conservation Authority, Govt. of India, New Delhi, and Wildlife Institute of India, Dehradun. TR 07/001

Y.V.Jhala, R.Gopal, Q.Qureshi (eds.) 2008. Status of the Tigers, Co-predators, and Prey in India. National Tiger Conservation Authority, Govt. of India, New Delhi, and Wildlife Institute of India, Dehradun. TR 08/001

Y.V. Jhala, Q. Qureshi, R. Gopal, and P.R. Sinha (Eds.) 2011. Status of Tigers, Co-predators, and Prey in India, 2010. National Tiger Conservation Authority, Govt of India, New Delhi, and Wildlife Institute of India, Dehradun. TR 2011/003 pp-302

GLOSSARY

BT Billion tonnes

CIL Coal India Limited

CA Compensatory Afforestation

CISMHE Centre for Interdisciplinary Studies for Mountain and Hill Environments

CFL Compact Fluorescent Lamp

CMPDIL Central Mine Planning & Design Institute Limited

ESZ Eco Sensitive Zone

FSI Forest Survey of India

FAC Forest Advisory Committee

FRA Forest Rights Act

FCA Forest Conservation Act

GoM Group of Ministers

GIS Geographic Information Systems

GDP Gross Domestic Product

GwH Gigawatt Hour

INTACH Indian National Trust for Art and Cultural Heritage

KBSS Karanpura Bachao Sangharsh Samiti

KBM Karanpura Bisthapita Morcha

KwH Kilowatt Hour

MwH Megawatt Hour

MoEF Ministry of Environment and Forests

NCL Northern Coalfields Limited

NTPC National Thermal Power Corporation

NTFP Non-Timber Forest Produce

NKV North Karanpura Valley

NTCA National Tiger Conservation Authority

PA Protected Area

PV Photovoltaic

REDD Reduced Emissions of Deforestation and Degradation

RTI Right to Information

SECL South Eastern Coalfield Limited

TATR Tadoba-Andhari Tiger Reserve

TERI The Energy Resource Institute

WII Wildlife Institute of India

WTI Wildlife Trust of India

WCL Western Coalfields Limited

END NOTES

¹Centre for Science and Environment, Comprehensive analysis of environment and forest clearances granted by the Indian government in the period of the 11th Five Year Plan, 2011, Ch.2. <http://www.cseindia.org/userfiles/Coal%20mining.pdf>

²Satpura, Pench, Tadoba-Andhari, Kawal, Kanha, Achanakmarh, Bandhavgarh, Sanjay-Dubri, Palamau, Satkosia.

³Planning Commission, 2006. "Integrated Energy Policy: Report of the Expert Committee" Planning Commission, Government of India. See: http://planningcommission.nic.in/reports/genrep/rep_intengy.pdf

⁴US Energy Information Administration, 2010. International Energy Statistics. <http://www.eia.gov/countries/country-data.cfm?fips=IN#coal>

⁵Business Standard, 2012. Sudheer Pal Singh and Shine Jacob. Govt Draws Plan to Avoid Costly Coal Imports. June 8, 2012 <http://business-standard.com/india/news/govt-draws-plan-to-avoid-costly-coal-imports/476689/>

⁶Rajshekhkar, M. 2012. UPA fastest in granting coal mining clearances during its eight years, Economic Times, 15th June 2012. http://articles.economictimes.indiatimes.com/2012-06-15/news/32254609_1_environment-clearances-forest-clearances-coal-projects

⁷Forest Survey of India, Scheme of Classification. http://www.fsi.org.in/scheme_of_classification.htm

⁸Mahaprashasta, A. 2010. Mining Tussle. Frontline, Volume 27 - Issue 14 :: Jul. 03-16, 2010.

⁹Sethi, N. 2012. Chhatrasal, Mahan coal blocks' fate hangs in balance. Times of India, March 29, 2012. http://articles.timesofindia.indiatimes.com/2012-03-29/india/31254425_1_coal-block-forest-clearance-forest-advisory-committee

¹⁰Press Trust of India, 2012. Environment Ministry 'wrongly viewed' as stumbling block: Jayanthi Natarajan. Economic Times, April 11, 2012

¹¹Government of India, Planning Commission, October 2011. Faster, Sustainable and More Inclusive Growth. http://planningcommission.nic.in/plans/planrel/12appdrft/approach_12plan.pdf

¹²Centre for Science and Environment, Comprehensive analysis of environment and forest clearances granted by the Indian government in the period of the 11th Five Year Plan, 2011, Ch.2, <http://www.cseindia.org/userfiles/Coal%20mining.pdf>

¹³Pannu, S.P.S., Business Today. February 18, 2011. Jaiswal bats for an end to 'no go' zone in mining. <http://businesstoday.intoday.in/story/coal-minister-sriprakash-jaiswal-bats-for-an-end-to-no-go-zone-in-mining/1/13318.html>

¹⁴The Financial Express, October 16, 2010. PMO lifts Jairam's no-go order on Coal India ahead of IPO. <http://www.financialexpress.com/news/pmo-lifts-jairams-nogo-order-on-coal-india-ahead-of-ipo/698257/0>

¹⁵Economic Times, July 9, 2011. Environment Minister Jairam Ramesh says no to mining in Mahan block in Singrauli coalfield. http://articles.economictimes.indiatimes.com/2011-07-09/news/29755770_1_coal-mine-coalfield-forest-advisory-committee

¹⁶Prasad, M. Project Monitor, March 26, 2012. Adani Power seeks to secure coal for Tiroda Project. <http://www.projectsmonitor.com/ELECTRICITY/adani-power-seeks-to-secure-coal-for-tiroda-project>

¹⁷Mazoomdar, J. 2005. Have you seen a tiger at Sariska since June? If yes, you're the only one. Indian Express, January 22, 2005.

¹⁸Government of India, 2005. Joining the Dots, Report of the Tiger Task Force. http://projecttiger.nic.in/TTF2005/pdf/full_report.pdf

¹⁹Champion, H. and Seth, S.K. 1968. A revised survey of the forest types of India. Daya Publishing House, Delhi.

²⁰Ministry of Tribal Affairs, 2010. Statistical Profile of Scheduled Tribes In India, 2010. pp 3. <http://tribal.nic.in/writereaddata/mainlinkFile/File1386.pdf>

²¹Terborgh, J.W., Lopez, L., Nunez, P., Rao, M., Shahabuddin, G., Orihuela, G., Riveros, M., Ascanio, R., Adler, G.R., Lambert, T.D. and Balbas, L. 2001. Ecological Meltdown in Predator-Free Forest Fragments. *Science* 294: 1923-1926.

²²Tewksbury, J.J., Levey, D.J., Haddad, N.M., Sargent, S., Orrock, J.L., Weldon, A., Danielson, D.J., Brinkerhoff, J., Damschen, E.I. and Townsend, P. 2002. Corridors Affect Plants, Animals and their Interactions in Fragmented Landscapes. *Proceedings of the National Academy of Sciences, USA* 99: 12923-12926.

²³Centre for Science and Environment, 2011. <http://cseindia.org/userfiles/Forest%20clearance.pdf> Accessed May 10, 2012

²⁴FAO. 2006. Global Forest Resources Assessment 2005: Progress towards sustainable forest management. FAO Forestry Paper 147. Food and Agriculture Organisation of the United Nations, Rome

²⁵The State of Forest Report 2011, Forest Survey of India (FSI), Ministry of Environment and Forests (MoEF), Government of India (GoI), 2011.

²⁶Brooks, T. M., Mittermeier, R. A., Mittermeier, C. G., Da Fonseca, G. A. B., Rylands, A. B., Konstant, W. R., Flick, P., Pilgrim, J., Oldfield, S., Magin, G. and Hilton-Taylor, C. (2002), Habitat Loss and Extinction in the Hotspots of Biodiversity. *Conservation Biology*, 16: 909–923. doi: 10.1046/j.1523-1739.2002.00530.x

²⁷Laurance, W.F. 2007. Forest destruction in tropical Asia. *Current Science* 93, 1544–1550

²⁸Puyravaud, J, Davidar, Priya & Laurance, W.F. (2010), Cryptic destruction of India's native forests, *Conservation Letters* 3 (2010) 390–394, doi: 10.1111/j.1755-

263X.2010.00141.x

²⁹Sheikh, M.A., Kumar, M., Bussman, R.W. and Todaria N.P., 2011. Forest carbon stocks and fluxes in physiographic zones of India. *Carbon Balance and Management* 2011 6:15. doi:10.1186/1750-0680-6-15 <http://www.cbmjournal.com/content/pdf/1750-0680-6-15.pdf>

³⁰Kishwan, J, Pandey, R. and Dadhwal, V.K. (2009) India's Forest and Tree Cover: Contribution as a Carbon Sink. Technical Paper, Indian Council of Forestry and Research Education. http://indiancouncilforestryresearcheducationicfre.academia.edu/RajivPandey/Papers/1299832/Indias_Forest_and_Tree_Cover

³¹Centre for Science and Environment, 2011. <http://cseindia.org/userfiles/Forest%20clearance.pdf> Accessed May 10, 2012

³²Greenpeace. 2011. Undermining Tadoba's Tigers. Greenpeace India Society. <http://www.greenpeace.org/india/en/publications/Undermining-Tadobas-Tigers>

³³Rangarajan, M. et al. 2010. Gajah – Securing the Future for Elephants in India. The Report of the Elephant Task Force. Ministry of Environment and Forests, Government of India.

³⁴Forest Survey of India, Scheme of Classification. http://www.fsi.org.in/scheme_of_classification.htm

³⁵Tiwari, S.K., Singh, A.K., Singh, R.K., and Swain, D. 2005. Elephant Corridors of Central India. In: Right of Passage: Elephant Corridors of India. Menon, V., Tiwari, S. K., Easa P. S. and Sukumar, R. (2005). (Eds.). Conservation Reference Series 3. Wildlife Trust of India, New Delhi. pg 70-117.

³⁶Response from Appellate Authority, CMPDIL, dated February 7, 2012.

³⁷Figures based on Coal Inventory by Geological Survey of India and Central Mine Planning and Design Institute Ltd, as of April 1, 2010. http://cmmclearinghouse.cmpdi.co.in/docfiles/coalreserve_010410.pdf Accessed June 14, 2012.

³⁸"Proved Reserves" includes both coking and non-coking coal, up to a depth of 300 m. Indicated and inferred reserves are not included here.

³⁹All coal reserve figures based on Coal Inventory by Geological Survey of India and Central Mine Planning and Design Institute Ltd, as of April 1, 2010. http://cmmclearinghouse.cmpdi.co.in/docfiles/coalreserve_010410.pdf Accessed June 14, 2012.

⁴⁰Forest cover refers to Very Dense, Moderately Dense and Open Forest. Does not include scrub, water bodies etc.

⁴¹Ministry of Environment & Forests, Letter to all Chief Wildlife Wardens, February 9, 2011, F. No. 1-9/2007 WL-I (pt) Guidelines for Declaration of Eco-Sensitive Zones Around National Parks and Sanctuaries.

⁴²Jairam Ramesh, Minister for Environment and Forests, July 8, 2011.

⁴³www.envfor.nic.in Forest Clearance section, accessed December 2011.

⁴⁴Moneycontrol.com September 22, 2011. Essar Energy bags allocation from MP's Amelia coal block. http://www.moneycontrol.com/news/business/essar-energy-bags-allocationmps-amelia-coal-block_589538.html Accessed May 22, 2012

⁴⁵Collector and District Magistrate, Singrauli. January 2011. Destination Singrauli. http://singrauli.nic.in/Destination_Singrauli.pdf pg 19. Accessed May 22, 2012

⁴⁶Y.V. Jhala, Q. Qureshi, R. Gopal, and P.R. Sinha (Eds.) (2011). Status of Tigers, Co-predators, and Prey in India, 2010. National Tiger Conservation Authority, Govt of India, New Delhi, and Wildlife Institute of India, Dehradun. TR 2011/003 pp-302

⁴⁷ACC Limited, Annual Report 2010. http://www.acclimited.com/newsite/annual_report_10/acc_minerals.pdf pg 176. Accessed May 22, 2012

⁴⁸Areendran, G., Raj, K., Mazumdar, S., Govil, H., Kumar, R., and Kumar, S., 2008. Forest Cover and Habitat Suitability Mapping of Chhattisgarh. GIS Division, WWF India.

⁴⁹Areendran, G., Raj, K., Mazumdar, S., Govil, H., Kumar, R., and Kumar, S., 2008. Forest Cover and Habitat Suitability Mapping of Chhattisgarh. GIS Division, WWF India.

⁵⁰Areendran, G., Raj, K., Mazumdar, S., Govil, H., Kumar, R., and Kumar, S., 2008. Forest Cover and Habitat Suitability Mapping of Chhattisgarh. GIS Division, WWF India.

⁵¹Min Mec Consultancy Private Limited, July 2011. Executive Summary of Environment Impact Assessment and Environment Management Plan for Sondih Coal Block. http://www.enviscecb.org/152/Executive%20Summary_English.pdf Accessed June 14, 2012

⁵²Tiwari, S.K., Singh, A.K., Singh, R.K. and Swain, D. (2005) Elephant Corridors of Central India. In: Right of Passage: Elephant Corridors of India. Menon, V., Tiwari, S. K., Easa P. S. and Sukumar, R. (2005). (Eds.). Conservation Reference Series 3. Wildlife Trust of India, New Delhi. Pp 110

⁵³CMPDI. Executive Summary of EIA & EMP for Gopalprasad Open Cast Project. <http://www.ospcboard.org/download/Gopalprasad%20OCP%20%28English%29.pdf> Accessed June 14, 2012

⁵⁴Times of India, December 15, 2008. Elephants Kill Two in Chhattisgarh. http://articles.timesofindia.indiatimes.com/2008-12-15/india/27889831_1_wild-elephants-herd-villagers Accessed May 9, 2012

⁵⁵Times of India, September 15, 2009. Thirty people fall prey to wild elephants in Chhattisgarh http://articles.timesofindia.indiatimes.com/2009-09-15/flora-fauna/28098077_1_wild-elephants-chhattisgarh-Odisha-and-jharkhand Accessed May 9, 2012

END NOTES

⁵⁶Environment Protection Group, Odisha. December 22, 2005. Hundreds protest at the Coal Mines of Hindalco at Talabira, Sambalpur, Odisha.

⁵⁷Areendran, G., Raj, K., Mazumdar, S., Govil, H., Kumar, R., and Kumar, S., 2008. Forest Cover and Habitat Suitability Mapping of Chhattisgarh. GIS Division, WWF India.

⁵⁸Y.V. Jhala, Q. Qureshi, R. Gopal, and P.R. Sinha (Eds.) (2011). Status of Tigers, Co-predators, and Prey in India, 2010. National Tiger Conservation Authority, Govt of India, New Delhi, and Wildlife Institute of India, Dehradun. Pg 79.

⁵⁹Areendran, G., Raj, K., Mazumdar, S., Govil, H., Kumar, R., and Kumar, S., 2008. Forest Cover and Habitat Suitability Mapping of Chhattisgarh. GIS Division, WWF India.

⁶⁰Report submitted after site visit by Director General of Forests & Special secretary (DGF&SS), Addl. Director General of Forests (Forest Conservation), Sr. Assistant Inspector General of Forests, August 27-28, 2009.

⁶¹Times of India, January 23, 2011. How elephants got hauled over the coals http://articles.timesofindia.indiatimes.com/2011-01-23/special-report/28352010_1_elephant-reserve-lemru-chhattisgarh-government

⁶²Times of India, January 16, 2011. Chhattisgarh govt scraps elephant reserve plan for coal mining

http://articles.timesofindia.indiatimes.com/2011-01-16/india/28352561_1_elephant-reserve-lemru-reserve-project-elephant Accessed May 10, 2012

⁶³Times of India, January 23, 2011. How elephants got hauled over the coals http://articles.timesofindia.indiatimes.com/2011-01-23/special-report/28352010_1_elephant-reserve-lemru-chhattisgarh-government

⁶⁴Qureshi Q., Gopal R., Shirish Kyatham, Basu S., Mitra A., Y.V. Jhala 2006. (pg 40) Evaluating Tiger Habitat at the Tehsil Level. Project Tiger Directorate, Govt. of India, New Delhi and Wildlife Institute of India, Dehradun..

⁶⁵The Hindu, June 24, 2011. Jairam loses “no-go” battle, allows coal mining in forested Hasdeo Arand <http://www.thehindu.com/news/national/article2129774.ece> Accessed May 10, 2012

⁶⁶Note from Minister of State, Environment & Forest Jairam Ramesh dated July 5, 2011.

⁶⁷Note from Minister of State, Environment & Forest Jairam Ramesh to Principal Secretary, Prime Minister, dated June 30, 2011.

⁶⁸Sudeip Shrivastava, pers comm. June 2012.

⁶⁹Moneycontrol.com August 10, 2011. Adani forms JV to develop coal blocks in Rajasthan. http://www.moneycontrol.com/news/business/adani-forms-jv-to-develop-coal-blocksrajasthan_575244.html Accessed May 10, 2012.

⁷⁰F. No. 8-31/2010-FC, Stage II Forest Clearance for 1898.328 ha for Parsa East and Kete Basan blocks, March 15, 2012

⁷¹Sudiep Shrivastava vs Union of India & Ors., June 2012.

⁷²Financial Express, January 23, 2012. Bidding for Chhattisgarh ultra mega power project set to begin. <http://www.financialexpress.com/news/bidding-for-chhattisgarh-ultra-mega-power-project-set-to-begin/902738/> Accessed May 10, 2012.

⁷³Moneycontrol.com August 10, 2011. Adani forms JV to develop coal blocks in Rajasthan. http://www.moneycontrol.com/news/business/adani-forms-jv-to-develop-coal-blocksrajasthan_575244.html Accessed May 10, 2012.

⁷⁴Monnet Group. <http://www.monnetgroup.com/coal/mining-activities-by-monnet> Accessed June 14, 2012

⁷⁵<http://www.indiabulls.com/power/bhaiyathan.htm>

⁷⁶Imam, J. 2005. The Threats to Wildlife Corridors of the uppermost section of the Damodar river in Jharkhand state (a report prepared for The Wildlife Trust of India, New Delhi), September 2005.

⁷⁷Figures based on Coal Inventory by Geological Survey of India and Central Mine Planning and Design Institute Ltd, as of April 1, 2010. http://cmmclearinghouse.cmpdi.co.in/docfiles/coalreserve_010410.pdf Accessed June 14, 2012.

⁷⁸Department of Forests, State of Jharkhand, Forest Resources Survey, Hazaribagh, 2006 http://www.jharkhandforest.com/files/Hazaribagh_Introduction.pdf

⁷⁹Carter, Phil. 1997. Hazaribagh Land of a thousand tigers. Sanctuary Asia, Vol.XVII, No.5, October 1997

⁸⁰Imam, B. 2003. A Case-study for the Protection of Living Heritage in India: The North Karanpura Valley. Paper for presentation at the UNESCO World Heritage Conference May 21-24, 2003, The Hague, Amsterdam

⁸¹Ibid.

⁸²Bulu Imam, pers comm, September 2011.

⁸³Imam, J. 2005. The Threats to Wildlife Corridors of the uppermost section of the Damodar river in Jharkhand state (Report prepared for The Wildlife Trust of India, New Delhi), September 2005.

⁸⁴Ibid.

⁸⁵Lahir-Dutt, Kunatala. 2007 Illegal Coal Mining in Eastern India: Rethinking Legitimacy and Limits of Justice. Economic and Political Weekly, December 8, 2007

⁸⁶Lahiri-Dutt, Kuntala and David J Williams (2005): ‘The Coal Cycle: Small-scale of Illegal Coal Supply in East-ern India’, Resources, Energy and Development, 2(2),

pp 93-105.

⁸⁷FIAN International, August 2, 2011, letter to Prime Minister Manmohan Singh. <http://www.fian.org/news/news/urgent-action-on-india-kusum-tola-extended/pdf>

⁸⁸Details of No Go classification obtained by Greenpeace in 2011 under Right to Information Act.

⁸⁹Imam, J. 2005. The Threats to Wildlife Corridors of the uppermost section of the Damodar river in Jharkhand state (Report prepared for The Wildlife Trust of India, New Delhi), September 2005.

⁹⁰Reliance Power http://www.reliancepower.co.in/business_areas/fuel_business/tilaiya_coal_mines.htm Accessed June 12, 2012.

⁹¹http://www.sourcewatch.org/index.php?title=Pakri_Barwadih_Mine and <http://www.thiess.com.au/capabilities/projects/pakri-barwadih-coal-mine-operation>

⁹²Justin Imam, September 2011, pers comm.

⁹³Imam, J. 2005. The Threats to Wildlife Corridors of the uppermost section of the Damodar river in Jharkhand state (Report prepared for The Wildlife Trust of India, New Delhi), September 2005.

⁹⁴This list is a combination of North Karanpura coal blocks listed under the No Go exercise of 2010, environment and forest clearance details as per the website of the Ministry of Environment and Forests accessed during September-November 2011, as well as list of coal block allocations as available with Deepak Das, Gondalpara.

⁹⁵As per Go/No Go list received by Greenpeace in response to RTI filed with Ministry of Environment and Forests in 2010.

⁹⁶Source: List of field areas of Jharkhand Mines Area Coordination Committee available at <http://www.firstpeoplesfirst.in/jmacc-alliance.php> accessed on 3rd November 2011

⁹⁷http://metaljunction.com/news.php?mode=details&text=y&name=sailta_ta_steel_jv_wants_5_coal and <http://www.latinfinance.com/DailyBriefArchivePrint.aspx?ID=68498> accessed on 3rd November 2011

⁹⁸http://metaljunction.com/news.php?mode=details&text=y&name=sailta_ta_steel_jv_wants_5_coal and <http://www.latinfinance.com/DailyBriefArchivePrint.aspx?ID=68498> accessed on 3rd November 2011

⁹⁹Minutes of Inter Ministerial Group meeting, held on 20.12.2010 in the Ministry of Steel.

¹⁰⁰Minutes of 59th Expert Appraisal Committee (EAC) (Thermal & Coal Mining) meeting held on 24th and 25th November 2009.

¹⁰¹NMDC Directors' Report for the year 2008-09. <http://money.livemint.com/II91/F126371/DirectorsReport/Company.aspx> Accessed on 8th November 2011

¹⁰²Annual Report of Jharkhand Mines Area Co-ordination Committee (JMACC) 2007-2008 and <http://www.exchange4projects.com/COAL/jnl-receives-mining-lease-for-its-moitra-coal-block>

¹⁰³According to a news report in Times of India on 17th June 2011, the coal ministry has cancelled allotment of five coal acreages, including three given to state-run generation utility NTPC, on the ground that the companies "were not serious in developing them". NTPC was given Chhati Bariatu (South), Chatti Bariatu and Kerandari blocks in Jharkhand. Chatti Bariatu and Kerandari blocks in North Karanpura coalfields were allocated in 2006, while it got Chatti Bariatu (South) in 2007. The power ministry had written a letter to the coal ministry, asking for an "urgent" review of the decision to cancel allocations to NTPC http://articles.timesofindia.indiatimes.com/2011-06-17/india-business/29669394_1_saharpur-jamarpani-coal-blocks-lignite-blocks.

¹⁰⁴<http://indscan.weblogs.us/archives/387> accessed on 8th November 2011

¹⁰⁵According to a news report in Times of India on 17th June 2011, the coal ministry has cancelled allotment of five coal acreages, including three given to state-run generation utility NTPC, on the ground that the companies "were not serious in developing them". NTPC was given Chhati Bariatu (South), Chatti Bariatu and Kerandari blocks in Jharkhand. Chatti Bariatu and Kerandari blocks in North Karanpura coalfields were allocated in 2006, while it got Chatti Bariatu (South) in 2007. The power ministry had written a letter to the coal ministry, asking for an "urgent" review of the decision to cancel allocations to NTPC (See: http://articles.timesofindia.indiatimes.com/2011-06-17/india-business/29669394_1_saharpur-jamarpani-coal-blocks-lignite-blocks).

¹⁰⁶Details of No Go classification obtained by Greenpeace in 2011 under Right to Information Act.

¹⁰⁷BirdLife International (2012) Important Bird Areas factsheet: Tadoba National Park and Andhari Tiger Reserve. Downloaded from <http://www.birdlife.org> on 02/07/2012

¹⁰⁸'Undermining Tadoba's Tigers' 2011, Greenpeace, pg 15.

¹⁰⁹Y.V. Jhala, Q. Qureshi, R. Gopal, and P.R. Sinha (Eds) (2011) Status of Tigers, Co-predators and Prey in India, 2010. National Tiger Conservation Authority, Govt. of India, and Wildlife Institute of India, Dehradun. TR 2011/003 pp-302.

¹¹⁰Central Pollution Control Board. 2009. http://envvis.maharashtra.gov.in/envvis_data/?q=cepi_10#tab_graph

¹¹¹Information obtained by Greenpeace through Right to Information requests.

¹¹²Press Trust of India. April 17, 2011. On IBNlive.in.com <http://ibnlive.in.com/generalnewsfeed/news/mananimal-conflict-on-a-rise-in-maharashtras-chandrapur->

END NOTES

dist/651525.html

¹¹³Ali, M., Times of India. July 26, 2010. New Mining Threat Near Tadoba http://articles.timesofindia.indiatimes.com/2010-07-26/nagpur/28288667_1_coal-mine-tatr-coal-block

¹¹⁴Moneylife.in January 27, 2010. Adani Group denied coal mining permission near Tadoba reserve. <http://www.moneylife.in/article/3399.html> Accessed July 4, 2012

¹¹⁵Projects Monitor, Mrinalini Prasad, March 26, 2012. <http://www.projectsmonitor.com/ELECTRICITY/adani-power-seeks-to-secure-coal-for-tiroda-project>

¹¹⁶Pinjarkar, Vijay. Times of India, March 14, 2009. Govt doublespeak on Lohara. http://articles.timesofindia.indiatimes.com/2009-03-14/nagpur/28029661_1_lohara-govt-doublespeak-acc

¹¹⁷Copy available with Greenpeace.

¹¹⁸International Energy Agency, March 2011. Energy Poverty: The Missing Millennium Development Goal. http://www.iea.org/index_info.asp?id=1847

¹¹⁹Ministry of Power, Government of India. 2011. Annual Report 2011-12. http://www.powermin.nic.in/reports/pdf/Annual_Report_2011-12_English.pdf

¹²⁰Sierra Club. 2012. Locked In – The Financial Risks of New Coal Fired Power Plants in Today's Volatile International Coal Market. http://www.sierraclub.org/international/lockedin/downloads/06-12-Locked-In_Coal_Whitepaper.pdf

¹²¹TERI, Policy Brief, March 2011. India's coal reserves are vastly overstated: is anyone listening? http://www.teriin.org/policybrief/docs/TERI_PolicyBrief_Coal_March11.pdf

¹²²International Energy Agency, 2011. Medium Term Coal Market Report 2011.

¹²³<http://www.greenpeace.org/international/en/publications/Campaign-reports/Climate-Reports/Energy-Revolution-2012/>

¹²⁴Interim Report of the Expert Group on Low Carbon Strategies for Inclusive Growth. Op. cit. pg 35.

¹²⁵Prayas Energy Group, Ceiling Fan- The neglected Appliance , 2009. pg.4 http://www.mercindia.org.in/Presentations_PDF/Session%20III/Prayas-ceiling%20fan%20-%20HVAC%20wkshp%20181209_DaljitSingh.pdf

¹²⁶Bachat Lamp Yojana, <http://emt-india.com/BEE-BLY/BhachatLampYojna.pdf>

¹²⁷UNEP Global Trends in Renewable Energy Investment 2011

¹²⁸Ashish Sethia, Bloomberg New Energy Finance, January 2012. India Clean Energy Surge Enters Next Phase. <http://www.bloomberg.com/news/2012-01-17/india-clean-energy-surge-enters-next-phase.html> Accessed May 15, 2012

¹²⁹Sreekumar N and Shantanu Dixit, "Rajiv Gandhi Rural Electrification Program-Urgent Need for Mid-course Correction." Prayas Energy Group, Pune, India, July 2011.

¹³⁰Ministry of Power, Government of India. Progress of rural electrification under RGGVY for projects sanctioned in the 10th plan as on 31-03-2008, http://www.powermin.nic.in/rural_electrification/progress_rural_electrification.htm

¹³¹Greenpeace India Society, Empowering Bihar – Case studies for bridging the energy deficit and driving change, Oct 2010, <http://www.greenpeace.org/india/Global/india/report/Empowering%20Bihar.pdf>

¹³²Ministry of New and Renewable Energy, 2011. Annual Report 2010-11. http://mnre.gov.in/file-manager/annual-report/2010-2011/EN/Chapter1/chapter1_1.htm pp 17. Accessed on May 15, 2012

¹³³Lawrence Berkeley National Laboratory. 2011. Reassessing Wind Potential Estimates for India: Economic and Policy Implications <http://ies.lbl.gov/drupal.files/ies.lbl.gov.sandbox/IndiaWindPotentialAssessmentRevisedFinal03202012%5B1%5D.pdf> Accessed May 15, 2012

¹³⁴Ministry of New and Renewable Energy, Government of India. 2011. Annual Report, 2010-11. http://mnre.gov.in/file-manager/annual-report/2010-2011/EN/Chapter1/chapter1_1.htm Accessed May 15, 2012. Pg 3.

¹³⁵The Economist, April 28, 2012. Waiting for the Sun. <http://www.economist.com/node/21553480>



Greenpeace is a global campaigning organisation that acts to change attitudes and behaviour, to protect and conserve the environment and to promote peace by:

Catalysing an energy revolution to address the number one threat facing our planet: climate change.

Defending our oceans by challenging wasteful and destructive fishing, and creating a global network of marine reserves.

Protecting the world's remaining ancient forests and the animals, plants and people that depend on them.

Working for disarmament and peace by reducing dependence on finite resources and calling for the elimination of all nuclear weapons.

Creating a toxic-free future with safer alternatives to hazardous chemicals in today's products and manufacturing.

Supporting sustainable agriculture by encouraging socially and ecologically responsible farming practices.

Greenpeace exists because this fragile earth deserves a voice. It needs solutions. It needs change. It needs action. At Greenpeace, we believe in the power of the many. The future of the environment rests with the millions of people around the world who share our beliefs, together we can tackle environmental problems and promote solutions.



Greenpeace India Society

Head Office - Bengaluru

60, Wellington Street,
Richmond Town,
Bengaluru 560 025, India
T +91 80 42821010
F +91 80 41154862

Regional Office - New Delhi

A-23, Second floor,
Green Park (near Aurobindo Market)
New Delhi 110 016, India
T +91 11 66665000
F +91 11 66665010

Toll Free No.: 1800 425 0374

E supporter.services.in@greenpeace.org

www.greenpeace.org/india