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CLASS X GEOGRAPHY NOTES

Minerals and Energy Resources



Key Notes and Important Questions with Answers

Lesson 5
Minerals and Energy Resources

Important Facts

1. Minerals – An indispensable part of our lives. Almost everything we use are made from minerals. Homogenous, naturally occurring substance with a definable internal structure.
2. Lignite – Allow grade brown coal.
3. Ore - Minerals are usually found in Ores. It is an accumulation of any mineral mixed with other elements.
4. Haematite – The most important industrial iron ore in terms of the quantity used but has only 50-60% iron content.
5. Magnetite – The finest iron ore with a very high content of iron up to 70%
6. Petroleum – Impure or raw mineral oil which is the next major energy source in India after coal.
7. Mining – The extraction of useful and commercially viable minerals.
8. Ferrous Minerals – Containing iron e.g. iron, manganese, nickel, cobalt etc.
9. Mumbai High – The oil field in Arabian sea near Mumbai which produces 63% of India's Petroleum.
10. Nuclear Power - Nuclear or Atomic (Power Energy) is obtained by altering the structure of atoms.
11. Nuclear Minerals-The matters which consists the nuclear power such as Uranium, Thorium etc.
12. Biogas - Energy which is obtained from the decomposition of organic matters, such as wet-dry grass, agricultural wastes, animal and human defecate ect.
13. Metallic Minerals - Minerals which have more metallic content e.g. iron ore, bauxite etc.
14. Non-Metalic Minerals - Minerals which have no metal portion e.g. lime stone, potash etc.
15. Geologist – Who study the formation of minerals their age and their physical and chemical composition.

Major mineral producing areas in India

Name of the mineral	Producing States and Regions
Iron Ore	Chattisgarh (Bailadila), Jharkhand (Gua, Nuamandi). Orissa (Mayurbhanj, Kendujhar), Goa, Karnataka (Kudremukh)
Manganese	Orissa, Madhya Pradesh, Karanataka, Maharastra, Goa
Bauxite (Aluminium)	Orissa (Panchpatmali, Koraput), Gujarat, Jharkhand, Maharashtra. Tamil Nadu, Chattisgarh (Bilaspur), Madhya Pradesh (Katni, Amarkantak)
Mica	Jharkhand (Koderma - Gaya - Hazaribagh belt), Rajasthan (Ajmer), Andhra Pradesh (Nellore), Bihar etc.
Copper	Madhya Pradesh, Rajasthan (Khetri), Jharkhand (Singbhum), Karnataka, Andhra Pradesh.
Gold	Karnataka (Kolar), Bihar etc.
Coal	Jhafrkhand, Chattisgarh, Madhya Pradesh, Orissa, West Bengal, Andhra Pradesh, Maharashtra etc.
Mineral Oil	Mumbai High, Bassien, Assam (Digboi, Naharkatia, Moran-Hugrijan), Gujarat (Ankeleshwar, Kalol), Arunachal Pradesh, Andhra Pradesh, Tamil Nadu

Very Short answer type Questions (One Marker)

1. Where does the minerals occur in sedimentary rocks?
2. Which is the finest quality of iron ore?
3. Where does Manganese used?
4. In which industry lime stone is used as a basic raw material?
5. Which mineral is found in Monazite sands?
6. Which are the non-conventional energy resources?
7. Where does the largest solar plant of India is located?
8. Where does the two experimental projects have been set up in India to harness geothermal energy?
9. What is Rat- Hole mining?
10. Why Mumbai high is famous for?
11. Name the hardest mineral?
12. Which minerals largely derived from the ocean waters?
13. Name the mineral in which India is the leading producer in the world?
14. State the importance and uses of copper?
15. Name the highest quality hard coal?
16. Where does the largest wind farm cluster is found in India?

Answer Key :-

A.1. In beds or layers.
A.2. Magnetite Content of iron up to 70%
A.3. It is used in manufacturing bleaching powder, insecticides and paints.
A.4. Cement Industry.
A.5 . Thorium.
A.6. Wind energy, solar energy, tidal energy, Geo-thermal energy.
A.7. At Madhapur near Bhuj (Gujarat).
A.8. In the Parvati Vally near Manikaran in Himachal Pradesh and in the Puga Valley,Ladakh.
A.9. In Jowai and Cherapunjee the coal mining is done by family members in the form of a long narrow tunnel, known as a Rat-Hole mining.
A.10. The largest Petroleum producing area of India.63%
A.11. Diamond is the hardest mineral.
A.12. Magnesium, Common salt and bromine.
A.I3. Mica.
A.14. It is malleable, ductile and a good conductor. Copper is mainly used in electrical cables, electronic and chemical industries.
A.15. Anthracite.
A.16. Nagarcoil (Tamil Nadu) and Jaisalmer (Rajasthan).

Short/Long Answer type questions (3/5 Marks)

1. How minerals are significant for us?
2. How many types of minerals are there and how these are classified?
3. How minerals are formed in igneous and metamorphic rocks?
4. Distinguish between Ferrous and Non-Ferrous minerals?
5. Mention about three major iron ore belts of India?
6. In which form Mica is found? Mention it's major deposits area in India? What are the main uses of Mica?
7. Name the Natural gas pipe line popular as Artery of gas transport in India? Mention the name of two key users of natural gas?
8. 'The future of Solar energy is bright in India.' Why?
9. Differenciate between Thermal power and Hydel power?
10. Why Mumbai high is famous? What is it's contribution in National economy?
11. Why does the mining industry is called a killer industry?
12. How can we save or conserve energy?
13. Why do we need to conserve the minerals ? Mention some ways of mineral conservation?

14. "Solar energy is an important energy resource for India in future." Write your views in favour of the statement.
15. Why the conservation of mineral resources is essential? Write three measures of conservation of mineral resources?

Answer Key

A.I. Almost everything we use in our daily life, from tiny pin to a big ship all are made from minerals. Towering buildings, machinery, utensils, means of transport, railway line and bridges too are made from minerals. Even the food that we eat contains the minerals.

A.2. There are three types of minerals

(i) Metallic minerals
(ii) Non-Metallic minerals and
(iii) Energy minerals.

This classification is based on their colour, shine, hardness, density and crystallisation.

A.3. In igneous and metamorphic rocks minerals may occur in the cracks, crvices, faults and joints. The smaller occurences are called veins and the larger are called lodes.In most cases they are formed when minerals in liquid / molten and gaseous forms are forced upward through cavities towards the earth's surface. They cool and solidify as they rise. Major metallic minerals like tin, copper, zinc and lead etc. are obtained from veins and lodes.

A.4.

Ferrous Minerals	Non-Ferrous Minerals
1. Containing iron	1. No iron portion
2. Iron, ore, manganese, nickel, cobalt etc.	2. Copper, lead, tin, bauxite etc.

A.5. There are four major iron ore belts in India-

1. Orissa-Jharkhand belt
2. Maharashtra-Goa belt
3. Bellary-Chitradurga-Chikmaglur-Tumkur belt
4. Durg-Bastar-Chandrapur belt

A.6. Mica is made up of a series of plates or leaves.Mica deposits are found in-

(i) The northern edge of the Chota Nagpur plateau.
(ii) Koderma Gaya-Hazaribagh belt of Jharkhand and Bihar.
(iii) Around Ajmer in Rajasthan.
(iv) Nellore mica belt of Andhra Pradesh.

Mica is used in Electric and electronic industries.

A.7. The 1700 km long Hazira-Vijaipur-Jagdishpur cross country gas pipeline links Mumbai High and Bassien with the fertilizer, power and industrial complexes in western and northern India. The power and fertilizer industries are the key users of natural gas. Use of Compressed Natural Gas (CNG)for vehicles to replace liquid fuels is gaining popularity in the country.

A.8. (i) India is a tropical country.
(ii) It is pollution free.
(iii) It is a renewable resource.
(iv) Rural house holds can easily take it's advantage.

A.9.

Thermal Power (Thermal electricity)	Hydel Power (Hydro electricity)
1. This electricity is generated by the use of coal, petroleum and natural gas. 2. This is full of pollution. 3. Not a permanent source of energy. 4. Based on non-renewable resources like coal. 5. More then 310 thermal power stations are in India like Talcher, Panki, Namrup, Uran, Neyveli etc.	1. This is generated by fast flowing water power which force to run the turbines. 2. This is pollution free. 3. A permanent energy resource. 4. Based on renewable resource i.e. water. 5. India has a number of multi-purpose projecs like the Bhakra Nangal, Damodar valley corporation, the Kopili Hydel Project etc.

A. 10. The off-shore oil field near Mumbai is called Mumbai High. It produces 63% of total oil production of India. Thus Foreign currency is saved.

A.11. This industry effects the health of the miners and the environment.
(i) They have to breath in dust and noxious fumes
(ii) Miners inhales this regularly which make vulnerable to pulmonary diseases.
(iii) The risk of collapsing mine roofs, inundation and fires in coalmine are a constant threat to miners.
(iv) The water sources in the region get contaminated due to mining
(v) Dumping of waste and slurry leads to degradation of land, soil and increase in stream and river pollution.

A.12. (i) The electric switches should be off when not in use.
(ii) Public transport or pooling should be used.
(iii) As the conventional sources of energy are limited they should be used carefully.
(iv) Renewable resources should be used.
(v) The power saving instruments and devices should be used.

A.13. (i) Minerals are the base of our agriculture and Industries.
(ii) Are finite and non-renewable.
(iii) The stock is very limited. The total deposits is an insignificant fraction i.e. one percent of the earth's crust.
(iv) Takes millions of years to be created and concentrated.
(v) We are rapidly consuming mineral resources.

Methods of conservation of Resources-

(i) Low wastage during mining and excavation.
(ii) As far as possible use wood or plastic (Certified).
(iii) Re use the junk waste and old things.
(iv) Recycle metals, use scrap metals and search other substitute.
(v) Use in a planned and sustainable manner.

A.14. India is a tropical country. It has enormous possibilities of tapping solar energy. Photovoltaic technology converts sunlight directly into electricity. India has a great potential of Solar energy. If used in appropriate way, it can prove beneficial in the future. Solar energy is becoming fast popular in different parts of the country, especially in rural and remote areas. It can be used for cooking, heating of water, pumping, refrigeration, street lighting and room heating as well as water boiling in cold areas. The largest solar plant in India is located at Madhapur near Bhuj in Gujarat. Here the Solar energy is used to sterilize the big milk cans. Solar energy can be used in future by following ways:

(i) For environmental conservation
(ii) To generate and provide electricity
(iii) To provide fuel to vehicles
(iv) To run machines and tools
(v) To minimize the dependence of rural households on firewood and dung cakes and providing them a source of lighting and cooking and thus giving a lot of organic manure for agriculture.

A.15. Minerals are required in all spheres of our life and thus we are depended on minerals. Agriculture, industries and domestic purposes we are consuming minerals rapidly. This consumption is very fast and sometimes even more than the requirements. Mineral formation requires millions of years to be formed and concentrated. So the judicious use of these is essential. To save these valuable resources from exhaustion and to preserve them for future generation as well, we should conserve our mineral resources. Some of the methods are:

(i) Judicious use and less consumption
(ii) Improved technologies need to be constantly evolved to allow

use of low grade ores at low costs.

(iii) Causing minimum wastage of minerals during the process of mining and processing of minerals.

(iv) Using minerals in a planned manner by adopting the policy of recycle and reuse.

(v) Searching some other eco-friendly options like CNG.

Map Work

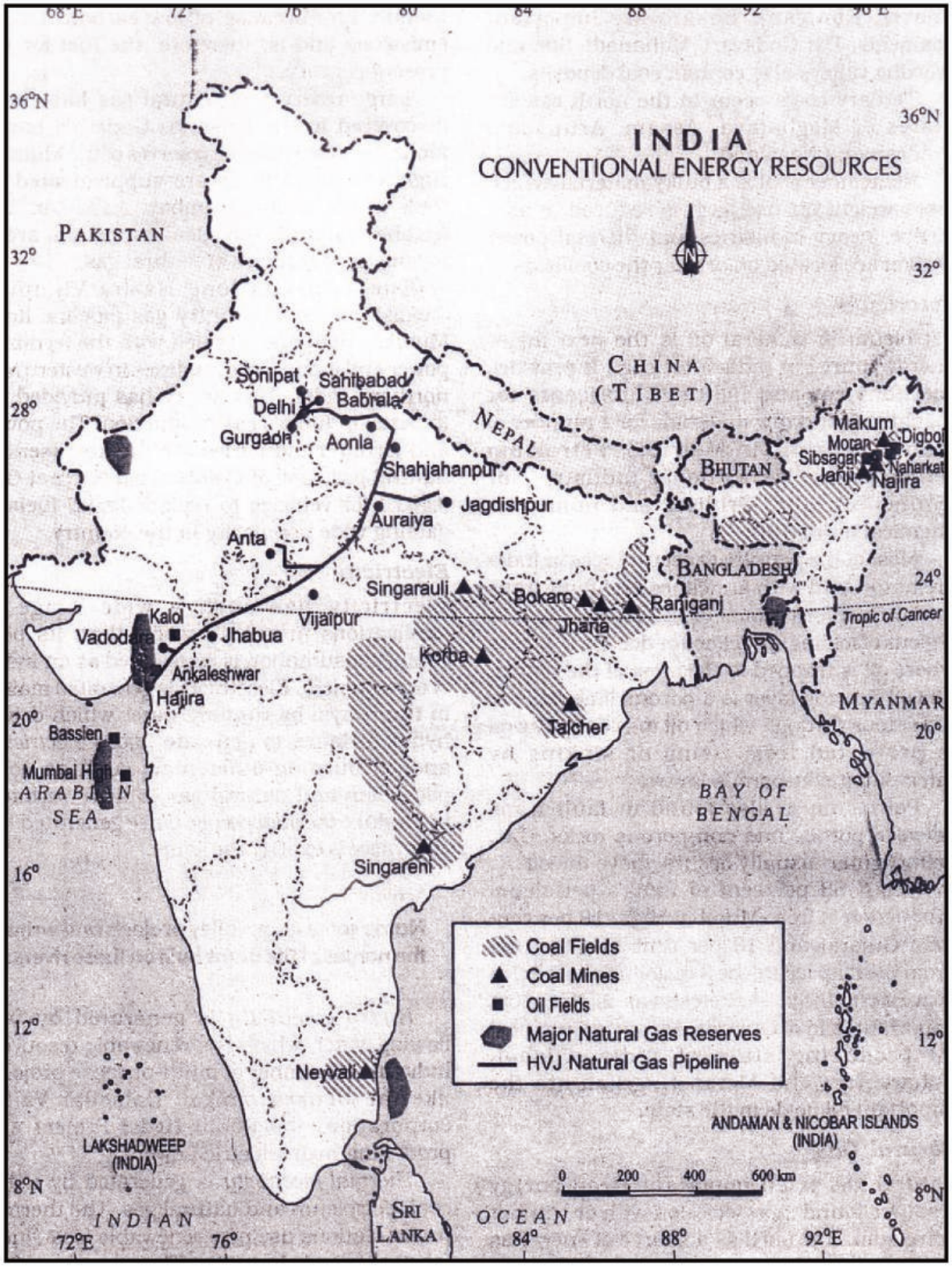
Study the following maps and practice-

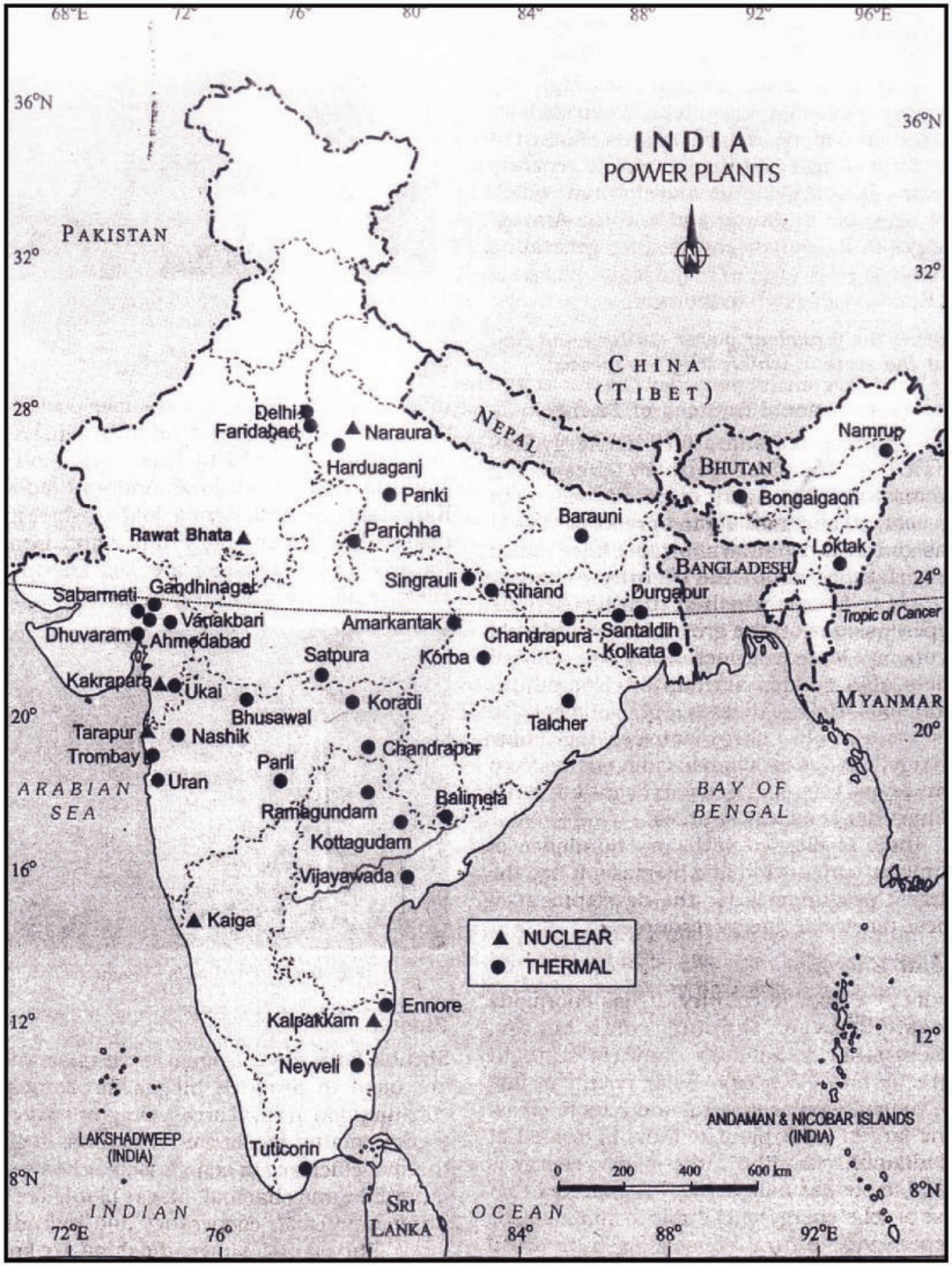
Q. Show the important minerals on the outline map of India.

Q. Show the conventional energy resources(coal fields, oil fields and HVJ gas pipe line) on the outline map of India.

Q. Locate and label the major nuclear and thermal power plants in India.


INDIA
IMPORTANT MINERALS
PAKISTAN
CHINA (TIBET)
NEPAL
BHUTAN
BANGLADESH
MYANMAR
ARABIAN SEA
BAY OF BENGAL
INDIAN OCEAN
SRI LANKA
Tropic of Cancer
Ajmer
Beawar
Gaya
Katni
Hazaribagh
Amarkantak
Sundergarh
Goa
Mayurbhanj
Balaghat
Bilaspur
Nagpur
Durg
Kendujhar
Bhandara
Maikala Hill
Paradip
Chandrapur
Koraput
Bailadila
Vishakapatnam
Ratnagiri
GOA
Marmagao
Bellary
Chitradurga
Nellore
Shimoga
Kudremukh
Tumkur
Mangalore
Chikmanglore
LAKSHADWEEP (INDIA)
ANDAMAN & NICOBAR ISLANDS (INDIA)
IRON ORE FIELDS
IRON ORE MINES
IRON ORE EXPORTING PORTS
MANGANESE
BAUXITE
MICA
0 200 400 600 km
68°E 72° 76° 80° 84° 88° 92° 96°E
36°N 32° 28° 24° 20° 16° 12° 8°N


INDIA
CONVENTIONAL ENERGY RESOURCES
PAKISTAN
CHINA (TIBET)
NEPAL
BHUTAN
BANGLADESH
MYANMAR
Sonipat
Sahibabad
Delhi
Babrala
Gurgaon
Aonla
Shahjahanpur
Jagdishpur
Auraiya
Anta
Singarauli
Bokaro
Raniganj
Jharia
Vijaipur
Kalol
Vadodara
Jhabua
Ankaleshwar
Hajira
Korba
Talcher
Bassien
Mumbai High
ARABIAN SEA
BAY OF BENGAL
Singareni
Neyvali
Makum
Moran
Sibsagar
Jorji
Digboi
Naharkat
Najira
Tropic of Cancer
Coal Fields
Coal Mines
Oil Fields
Major Natural Gas Reserves
HVJ Natural Gas Pipeline
LAKSHADWEEP (INDIA)
ANDAMAN & NICOBAR ISLANDS (INDIA)
INDIAN OCEAN
SRI LANKA
0 200 400 600 km
68°E
72°
76°
80°
84°
88°
92°
96°E
36°N
32°
28°
24°
20°
16°
12°
8°N
72°E
76°
84°
88°
92°E


INDIA
POWER PLANTS
PAKISTAN
CHINA
(TIBET)
NEPAL
BHUTAN
BANGLADESH
MYANMAR
ARABIAN
SEA
BAY OF
BENGAL
INDIAN
OCEAN
SRI
LANKA
LAKSHADWEEP
(INDIA)
ANDAMAN & NICOBAR ISLANDS
(INDIA)
Tropic of Cancer
Delhi
Faridabad
Naraura
Harduaganj
Panki
Parichha
Rawat Bhata
Barauni
Namrup
Bongaigaon
Loktak
Singrauli
Rihand
Durgapur
Sabarmati
Gandhinagar
Vanakbari
Ahmedabad
Dhuvaram
Amarkantak
Chandrapura
Santaldih
Kolkata
Satpura
Korba
Kakrapara
Ukai
Koradi
Bhusawal
Talcher
Tarapur
Nashik
Trombay
Uran
Chandrapur
Parli
Ramagundam
Balimela
Kottagudam
Vijayawada
Kaiga
Ennore
Kalpakkam
Neyveli
Tuticorin
NUCLEAR
THERMAL
0 200 400 600 km
36°N
32°
28°
24°
20°
16°
12°
8°N
68°E
72°
76°
80°
84°
88°
92°
96°E