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Science Reporter

विज्ञान एवं प्रौद्योगिकी मंत्रालय
MINISTRY OF SCIENCE AND TECHNOLOGY
सत्यमेव जयते

MK Yadav Sir

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LIVE MINT

Page 10

QUALIFIED STOCK BROKERS

(Syllabus: GS Paper 3 - Economy)

Sebi tightens norms for qualified stock brokers

Priyanka Gawande
priyanka.gawande@livemint.com
MUMBAI

The Securities and Exchange Board of India (Sebi) on Monday issued a circular pertaining to enhanced obligations and responsibilities on Qualified Stock Brokers (QSBs). The circular is issued to ensure orderly functioning of the securities market and also to protect the interests of investors in securities market, the regulator said.

In December, Sebi chairperson Madhabi Puri Buch had said, "In order to mitigate the concentration risk what is proposed is that on the basis of some very transparent criteria, certain brokers will be identified or designated as Qualified Stock Brokers".

This will essentially apply to the large 10-12 broking houses. While these broking firms will be designated as QSBs, they will also face higher compliance requirements, the regulator had clarified earlier.

Context: The Securities and Exchange Board of India issued a circular pertaining to enhanced obligations and responsibilities on **Qualified Stock Brokers (QSBs).**

- The **parameters to designate a stock broker** as a QSB will include the total number of active clients of the stock broker,the available total assets of the clients with the stock brokers, the trading volumes and the end of day margin obligation of all clients.

Stockbroker

- **About**: A stockbroker, also known as a broker, is a **financial market representative who operates in securities.**
- **Functions**: Their primary job role **dictates obtaining purchase and sale orders** and execution of the same.
  - Market participants or investors **rely on their expertise and knowledge** regarding market dynamics to invest in stocks and other investment options.
  - Share brokers either work individually or as part of a brokerage firm.
- **Registration**: A broker is **officiated post their registration with a recognised stock exchange** such as Bombay Stock Exchange or by working for a brokerage firm. Such brokers levy a charge in the form of commission, fee, or mark-up.
  - This **charge widely varies from broker to broker.** Some dealers charge a flat fee, whereas some levy a percentage of the securities value traded.
  - The share market brokers' foray is **dominated by discount brokers.**
  - This set of brokers has mustered widespread popularity because of their low charges which make the security market more accessible to laymen.
- **Distinction between a discount broker and regular stockbroker:** The **latter is required to have a profuse knowledge of the market** and has to go through arduous examination routines while these parameters are not compulsory for a discount broker.

BUSINESS STANDARD

Page 7

COAL MINES PROVIDENT FUND ORGANISATION

(Syllabus: GS Paper 3 - Economy)

State-run coal firms to pay more cess to fund pension

SHIVA RAJORA & SHREYA JAI
New Delhi, 6 February

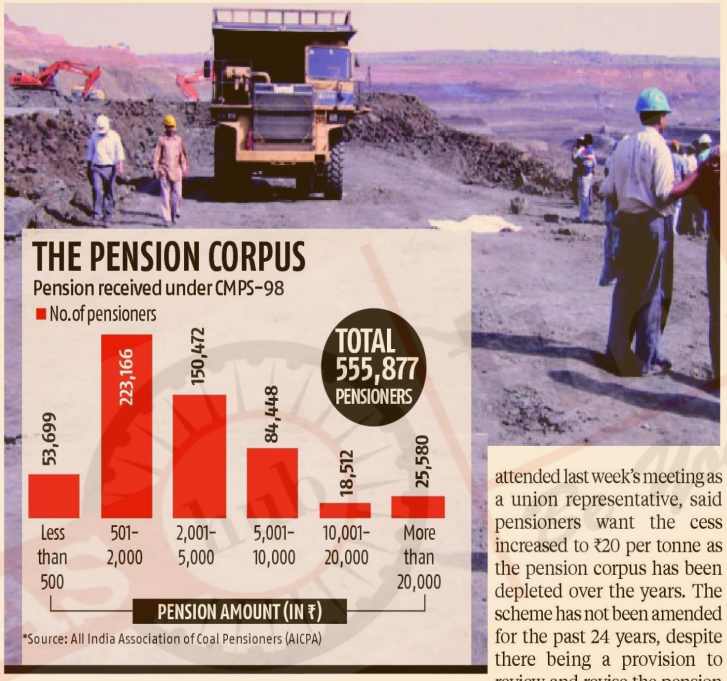
The coal ministry has given "in-principle approval" to a proposal to increase the cess levied on coal production from ₹10 per tonne to ₹15 per tonne to replenish the pension fund. This may secure the post-retirement benefits of more than 550,000 pensioners of public sector coal mines.

The Board of Trustees of the Coal Mines Provident Fund Organisation (CMPFO) made the recommendation in a meeting last week. A senior government official told *Business Standard* that the ministry, in consultation with Coal India and other stakeholders, will soon take a decision about replenishing the corpus.

"Along with the proposal to raise the cess levied, discussions were held on raising the minimum pension to ₹1,000, once the actuary submits its report. Also, it was decided to cap the pension fund's investment into the Exchange Traded Fund (ETF) at 5 per cent," said another official.

The Coal Mines Pension Scheme (CMPS)-1998, which covers pensioners of Coal India, Singareni Collieries (SCC) and some coal firms, is administered by the CMPFO which comes under the Coal Ministry. Financial mismanagement of the pension scheme has depleted the corpus amount, said a report by the Parliamentary Accounts Committee, which was chaired by Congress leader Adhir Ranjan Chowdhury, in March 2021. "The panel notes that the coal ministry has been apparently found severely wanting in discharging its nodal administrative role, which resulted in financial mis-management by CMPFO," the report noted.

Rakesh Kumar, a member of CMPF Trustee Board who attended last week's meeting as a union representative, said pensioners want the cess increased to ₹20 per tonne as the pension corpus has been depleted over the years. The scheme has not been amended for the past 24 years, despite there being a provision to review and revise the pension payable in the scheme after every three years. "Despite the positive outcome, decisions on other issues like lowering of interest rates on CMPF, waiving the money invested in DHFL and extending the pension benefits to workers with tenure of less than 10 years could not be taken," Kumar said.



Context: The coal ministry has given "**in principle approval**" to a proposal to increase the cess levied on coal production from ₹ 10 per tonne to ₹ 15 per tonne to replenish the pension fund.

- The Board of Trustees of the **Coal Mines Provident Fund Organisation (CMPFO)** made the recommendation in a meeting last week.

Coal Mines Provident Fund Organisation (CMPFO)

- **About**: CMPFO is an agency of the Indian government established in 1948 under **The Coal Mines Provident Fund and Miscellaneous Provisions Act 1948.**
- **Functions**: It serves as the official pension fund of coal miners and is **financed by coal producers** on a per-tonne basis.
  - The fund pays the pensions of about 500,000 former coal miners, and has been considered financially precarious since 2017.
- **Nodal Ministry:** It is an **autonomous organisation** governed by a Board of Trustees and functions under the overall supervision of **Ministry of Coal.**

TIMES OF INDIA

Page 1

E-20 FUEL

(Syllabus: GS Paper 3 - Economy)

What is E20 petrol, and how will it affect your vehicle?

Indian Petrol Already Contains 10% Alcohol. The Launch Of The E20 Pilot Can Help The Country Further Reduce Its Dependence On Fossil Fuels

Chethan.Kumar
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On Monday, Prime Minister Narendra Modi launched a pilot for 'E20', or petrol blended with 20% ethanol, at the 'India Energy Week' in Bengaluru, bringing forward by two years the launch of a cleaner-burning version of petrol. **TOI** does a deep dive:

What Is Ethanol Blending?

Ethyl alcohol or ethanol (C_2H_5OH) is a biofuel that is made naturally by fermenting sugar derived from sugarcane or other organic matter like foodgrains.

As part of its carbon reduction commitments, India has launched the Ethanol Blended Petrol (EBP) programme to mix this biofuel with petrol to reduce the consumption of petrol. India has already met its E10 target, so petrol used in the country has 10% ethanol in it. The E20 pilot covers at least 15 cities and will be rolled out across the country in a phased manner.

Why Increase Blending?

India imported 185 million tonnes of petroleum at a cost of $551 billion in 2020-21. As most of the petroleum products are used in transportation, a successful E20 programme can save the country $4 billion or Rs 30,000 crore per annum.

"Besides, ethanol is a less polluting fuel, and offers equivalent efficiency at a lower cost than petrol," says a report by a special expert committee set up by the Centre. "Availability of large arable land, rising production of foodgrains and sugarcane leading to surpluses, availability of technology to produce ethanol from plant-based sources, and feasibility of making vehicles compliant to ethanol-blended petrol make E20 not only a national imperative, but also an important strategic requirement," it says.

What Research Shows

An Indian study on the suitability of using E20 in existing vehicles found: "metals and metal coatings had no issue with E20. Elastomers had inferior performance with E20 compared to neat gasoline. Plastic PA66 had a drop in tensile strength after use with E20."

Automotive Research Association of India (ARAI), Indian Institute of Petroleum (IIP) and Indian Oil Corporation (R&D) that did the research in 2014-15 also found that fuel economy decreased by up to 6% (depending on the vehicle type), on average. However, the test vehicles passed startability and drivability tests under hot and cold conditions with pure petrol and E20 test fuels. In all the cases, there was no severe malfunction or stall observed at any stage of vehicle operation. No abnormal wear of engine components or deposits or deterioration of engine oils were observed after the on-road mileage accumulation trials.

Joint studies reported by the Massachusetts Institute of Technology (MIT) and Honda R&D indicate improvement in relative efficiency up to 20% can be achieved with E20 compared with normal gasoline when the engine is properly tuned. Trials by Ford Motor Company concluded an engine optimised for E20 fuel showed comparable volumetric fuel economy (mileage) and range (kilometres travelled on a single fill) of normal gasoline with a CO_2 reduction of 5%.

Environmental Impact

Pointing out that vehicular emissions such as carbon monoxide (CO), hydrocarbons (HC) and oxides of nitrogen (NOx) are currently under regulation in India, the Central committee's report argues that ethanol-blended gasoline decreases these emissions.

"Higher reductions in carbon monoxide emissions were observed with E20 fuel – 50% lower in two-wheelers and 30% lower in four-wheelers. Hydrocarbon emissions are reduced by 20% with ethanol blends compared to normal gasoline. Nitrous oxide emissions did not show a significant trend as it depended on the vehicle/engine type and engine operating conditions," the report said.

The unregulated carbonyl emissions, such as acetaldehyde, were higher with E10 and E20 compared with normal gasoline due to the presence of hydroxyl groups in ethanol. However, these emissions were relatively minor (a few micrograms) compared with regulated emissions (which were in grams). Evaporative emission test results with E20 fuel were similar to neat petrol.

"Overall, ethanol blending can help decrease emissions from both two-wheelers and four-wheelers," the report added.

MILEAGE MIGHT SUFFER

E20 users in cities where the pilot has been launched might notice a 6-7% drop in fuel efficiency in four-wheelers designed for pure petrol and calibrated for E10. Two-wheelers with these characteristics will see a 3-4% drop in efficiency. Four-wheelers designed for E10 and calibrated for E20 can expect a 1-2% drop in efficiency. However, with engine modifications, the loss in efficiency can be reduced. Also, test vehicles passed startability and drivability tests at hot and cold conditions with both pure petrol and E20 test fuel. In all the cases, there was no severe malfunction or stall observed at any stage of vehicle operation.

RISING DEMAND

How much ethanol would India need for blending? The answer will depend on the government's blending mandates, widespread availability of the fuel and compatible vehicles, and fulfilment of other infrastructural requirements. India's vehicle population of 22 crore two- and three-wheelers and around 3.6 crore four-wheelers is likely to grow rapidly. The country's molasses-based distilleries had the capacity to make around 278 crore litres of alcohol in 2017-18. Since then, 238 projects for a capacity enhancement of 583 crore litres have been approved, and it is expected that additional capacity of at least 400 crore litres will be added by 2024.

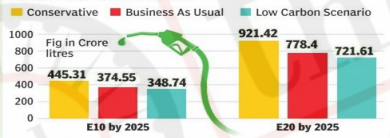
An autorickshaw at the Ethanol Pavilion at the recently held Auto Expo 2023 in Greater Noida

How Ethanol-Gasoline Blend Impacts Emissions Scenario

		Two-wheelers		Four-wheelers	
Emissions	Gasoline	E10	E20	E10	E20
Carbon Monoxide	Baseline	-20%	-50%	-20%	-30%
Hydrocarbons	Baseline	-20%	-20%	-20%	-20%
Oxides of Nitrogen	Baseline	Negligible	10%	Negligible	Same

Note: Data for E10 from 2009-10 and E20 from 2014-15 research. Test vehicles not same though emission trend was similar

Ethanol Fuel Demand In 2025



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Context: Prime Minister launched a pilot for **'E20', or petrol blended with 20%** ethanol, at the 'India Energy Week' in Bengaluru, bringing forward by two years the launch of a cleaner-burning version of petrol.

E20 Fuel

- **About**: E20 fuel is a **blend of 20% of ethanol and gasoline.**
  - Ethanol is a **biofuel and a common by-product of biomass** left by agricultural feedstock such as corn, sugarcane, hemp, potato, etc.
  - It is produced mainly from **molasses, a byproduct of sugar manufacture.**
  - Ethanol is **basically alcohol of 99%-plus purity**, which can be used for blending with petrol.
- **Significance**: Adoption of E20 fuel will be instrumental in **cutting down vehicular emissions.**
  - It will help in **reducing emissions** of carbon dioxide, hydrocarbons, etc.
  - It will also **help in cutting down the country's oil import bill**, thereby saving foreign exchange and boosting energy security.
  - It would extend **support to the agricultural sector** as well as provide additional income to farmers.

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PRADHAN MANTRI MUDRA YOJANA

(Syllabus: GS Paper 3 - Economy)

Pradhan Mantri Mudra Yojana generated 1.12 crore net additional employment from 2015 to 2018

Context: As per the results of a large sample survey conducted at the national level by Ministry of Labour and Employment (MoLE) to assess employment generation under **Pradhan Mantri Mudra Yojana (PMMY)**, the scheme helped in generating 1.12 crore net additional employment during a period of approximately 3 years (i.e. from 2015 to 2018).

Pradhan Mantri Mudra Yojana

- **About**: Launched in April **2015** by the Prime Minister, the Mudra Yojana aims to enable Micro Finance Institutions (MFIs), Non-Banking financial institutions/Companies (NBFCs), Small Finance Banks, RBRs, Commercial Banks, Cooperative Banks, etc. to **provide Low Rate Loans to eligible entities.**
- **Nodal Ministry:** The Union **Ministry of Finance** implements the Government's flagship scheme Pradhan Mantri Mudra Yojana.
- **Eligibility:** To avail of the benefits of the PMMY Scheme, the person **should be a citizen of India**. The loans are basically for people having a business plan in a Non-Farming Sector with Income generating activities like the following:
  - Manufacturing
  - Processing
  - Trade
  - Service Sector
  - Or any other fields whose credit demand is less than ₹10 lakhs.
    - The Indian Citizen seeking MUDRA Loans under the PMMY Scheme will **have to approach either an MFI, Bank or NBFC to avail it**.
- **MUDRA**: It stands for **Micro Units Development & Refinance Agency Ltd.** which is a financial institution set up by the Government.
  - It provides f**unding to the non-corporate small business sector** through various last-mile financial institutions like Banks, Non-Banking Financial Companies (NBFCs) and Micro Finance Institutions (MFIs).
  - It **does not lend directly to micro-entrepreneurs/individuals.**
- **Types of Loans**: MUDRA has created three products i.e. 'Shishu', 'Kishore' and 'Tarun' as per the stage of growth and funding needs of the beneficiary micro unit.
  - **Shishu**: Covering loans up to Rs. 50,000.
  - **Kishore**: Covering loans above Rs. 50,000 and up to Rs. 5 lakh.
  - **Tarun**: Covering loans above Rs. 5 lakh and up to Rs. 10 lakh.
- **Key Features:** Loans under this scheme are **collateral-free loans.**

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INDIA ENERGY WEEK 2023

(Syllabus: GS Paper 3 - Economy)

India Energy Week 2023 kicks in with PM launching key initiatives in Green Energy sector

Context: The Prime Minister inaugurated the **India Energy Week (IEW) 2023** in Bengaluru.

India Energy Week 2023

- **About**: The event is to **focus on energy security and India's energy transition goals.**
  - This includes **net-zero emission target** achievement by 2070.
  - The major attraction of the event is the **launch of E20 fuel** in more than 84 outlets in 11 states and UTs.
- **Focus of India energy week:**
  - PM launched **solar and conventional energy hybrid cooking systems.** It was designed and created by Indian Oil. It is called the Indoor Solar Cooking System.
  - Launch of **20% ethanol blend petrol, E20.**
  - Launch of **"UNBOTTLED" initiative** by PM Modi: Aim of the initiative is to phase out single-use plastics.
  - Indian companies like GAIL, Adnani, HPCL, IOCL, BPCL, ONGC, and Total gas demonstrated new products and services.
  - Participation of more than 650 business associates from 50 countries
  - GoI plans on achieving 20% ethanol blend biofuels
  - Discussions about the oil companies setting up 2G ethanol plants and 3G ethanol plants
  - **Green Mobility Rally**: Focusing on green energy sources; Create public awareness on green fuels
- **Significance**: India Energy Week is gaining popularity all over the world because it is **launched during a global energy crisis period.**
  - The crisis has come up due to the **Ukraine-Russian war.**
  - EU took several measures to counter Russia's actions in Ukraine. For instance, Russian oil imports to the EU countries were stopped.
  - Also, the event is covering the **"need of the moment"** topics such as biofuels, energy supply chains, upstream and downstream investments, etc.

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FEB 7

INDIA'S NO-FLY LIST

(Syllabus: GS Paper 2 - Govt Policies & interventions)

63 passengers have been placed in "No Fly List" in last one year

Context: In last 1 year, a total of 63 passengers have been placed in **"No Fly List"** for such period, as recommended by the airline's Internal Committee, constituted in accordance with Civil Aviation Requirements (CAR), Section 3- Air Transport, Series M, and Part VI titled "Handling of unruly / disruptive passengers".

- As per the provision mentioned in CAR, a **'No Fly List' is maintained by DGCA** containing specific information related to the passenger involved, contact details of identification documents, date of occurrence, sector, flight number, period of imposition of ban etc.

India's no-fly list

- **Rules in this regard have been issued** by the government in 2017.
- They aim at **preventing disruptive behaviour** by air travellers and lay down guidelines for a no-fly list.
- As per the rules, a complaint of **unruly behaviour needs to be filed by the pilot-in-command**, and this is to be probed by an internal committee to be set up by the airline.
- During the period of pendency of the inquiry, the rules empower the concerned airline to **impose a ban on the passenger.**
- The committee is to **decide the matter within 30 days**, and also specify the ban duration.
- The rules **define three categories of unruly behaviour:**
  - **Level 1** refers to behaviour that is verbally unruly, and calls for debarment up to three months.
  - **Level 2** indicates physical unruliness and can lead to the passenger being debarred from flying for up to six months.
  - **Level 3** indicates life-threatening behaviour for which the debarment would be for a minimum of two years.
- Even one **unruly passenger can jeopardise safety on board.** Therefore, Unruly behaviour on board aircraft has been declared an offence and is a punishable act.
- The DGCA has given an **indicative list of actions that may be construed as unruly.** These include: consuming alcohol or drugs resulting in unruly behaviour; smoking in an aircraft; using threatening or abusive language towards a member of the crew or other passengers; intentionally interfering with the performance of the duties of a crew member etc.

CHINA PAKISTAN ECONOMIC CORRIDOR

(Syllabus: GS Paper 2 - International Relations)

Iran Restores Just a Fifth of Power to Gwadar, Crown Jewel of CPEC

Situation in port city already tense following continuous protests

DipanjanRoy.Chaudhury
@timesgroup.com

New Delhi: Even as China has promised a $9.5 billion package to bail out Pakistan, Iran in a surprising move has delivered a blow to the China Pakistan Economic Corridor (CPEC) and the Gwadar Port by refusing to supply electricity to Balochistan province of Pakistan, including in Gwadar district.

Islamabad depends on Iran for supply of electricity to key areas in Balochistan where Gwadar Port is located. Gwadar Port is key pillar of CPEC and jewel in the crown of the mega connectivity corridor.

Power supply to Turbat, Panjgur and Gwadar districts of Pakistan's Makran division has been badly affected after Iran suspended power supply to these areas, ET has learnt. Iran traditionally supplies 100 MW of electricity to the Makran division.

A spokesperson for the Quetta Electricity Supply Company (Qesco) last week told the Pakistani media that Iran's energy officials restored only 20MW of power for Makran after Pakistan officials contacted them for power restoration. Makran receives only 20 MW of the 100 MW of electricity.

The governments of Pakistan and Iran had signed an agreement for the supply of an additional 100 megawatts of electricity in June 2022.

For a long time, the people of Balochistan have opposed the infrastructure project, which would stretch from Gwadar Port in Balochistan to Xinjiang Province in western China. Gwadar has been tense because of continuing protests and sit-ins being held in the heart of the port town over the past two months. However, for the past year, the port city has been gripped by protests and sit-ins led by Maulana Hidayat-ur-Rehman, chief of the Haq Do Tehreek (HDT), who was previously a little-known politician of the Jamaat-e-Islami (JI).

Gwadar Port is key to China's military ambitions in the Indian Ocean Region and there are apprehensions of China making it a military base in future.

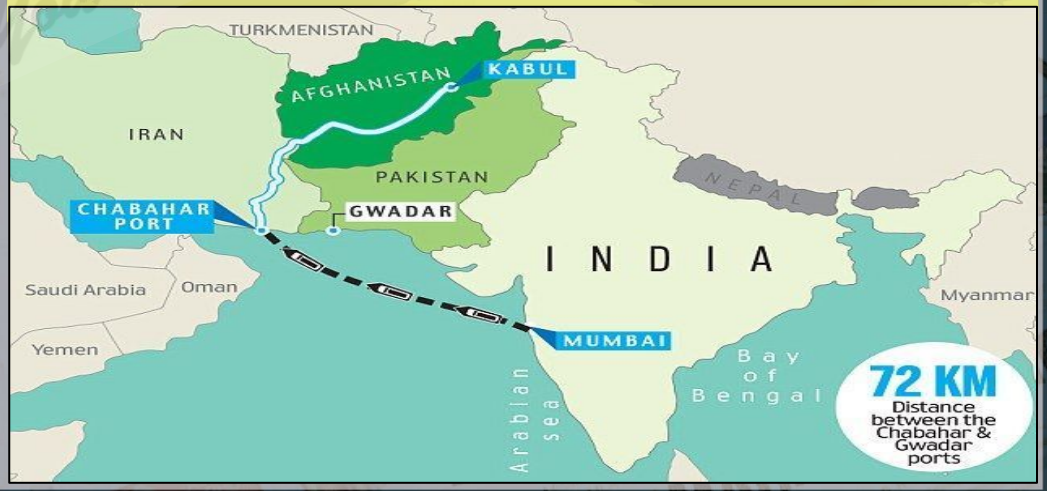
AFFECTED AREAS

Iran had suspended power supply to Turbat, Panjgur and Gwadar districts of Pakistan's Makran division

Context: Even as China has promised a $9. 5 billion package to bail out Pakistan, Iran in a surprising move has delivered a blow to the **China Pakistan Economic Corridor (CPEC) and the Gwadar Port** by refusing to supply electricity to Balochistan province of Pakistan, including in Gwadar district.

China Pakistan Economic Corridor (CPEC)

- **About**: Launched in 2015, the CPEC is the flagship project of the multi-billion-dollar **Belt and Road Initiative (BRI)**, a pet project of Chinese President, aimed at enhancing Beijing's influence around the world through **China-funded infrastructure projects.**
  - The 3,000 km-long **China–Pakistan Economic Corridor (CPEC)** consists of highways, railways, and pipelines.
- **Objectives**: CPEC eventually aims at **linking the city of Gwadar in South Western Pakistan to China's North Western region Xinjiang** through a vast network of highways and railways.
- **Finance**: The proposed project will be **financed by heavily-subsidised loans** that will be disbursed to the Government of Pakistan by Chinese banks.



INDIAN EXPRESS Page 1

KEOLADEO NATIONAL PARK

(Syllabus: GS Paper 3 - Env & Eco)

WITH FRENCH AID

Rajasthan plans zoo for dolphins, rhinos inside Bharatpur sanctuary

On risks to migratory birds: Will shift plan 1-2 km outside, says state

JAY MAZOOMDAAR
NEW DELHI, FEBRUARY 6

THE RAJASTHAN state Forest Department has proposed to construct a zoo inside Keoladeo National Park, a World Heritage Site popularly known as Bharatpur bird sanctuary, to display a range of wetland species, including rhinos, water buffaloes, crocs, dolphins and exotic species.

The purpose of this zoo, called Wetland ex-situ Conservation Establishment (WESCE), says the Detailed Project Report (DPR) of the Rajasthan Forestry and Biodiversity Development Project (RFBDP), is "to rejuvenate the bio-diversity of Keoladeo National Park, thereby boosting its outstanding universal values." The Rs 15-crore WESCE plan for Bharatpur is part of the ambitious RFBDP for which Agence Française de Développement (AFD), the overseas development arm of the French government, has agreed to fund up to Rs 1,200 crore over eight years.

Experts have raised questions about the proposed zoo coming up in a globally significant habitat for migratory birds.

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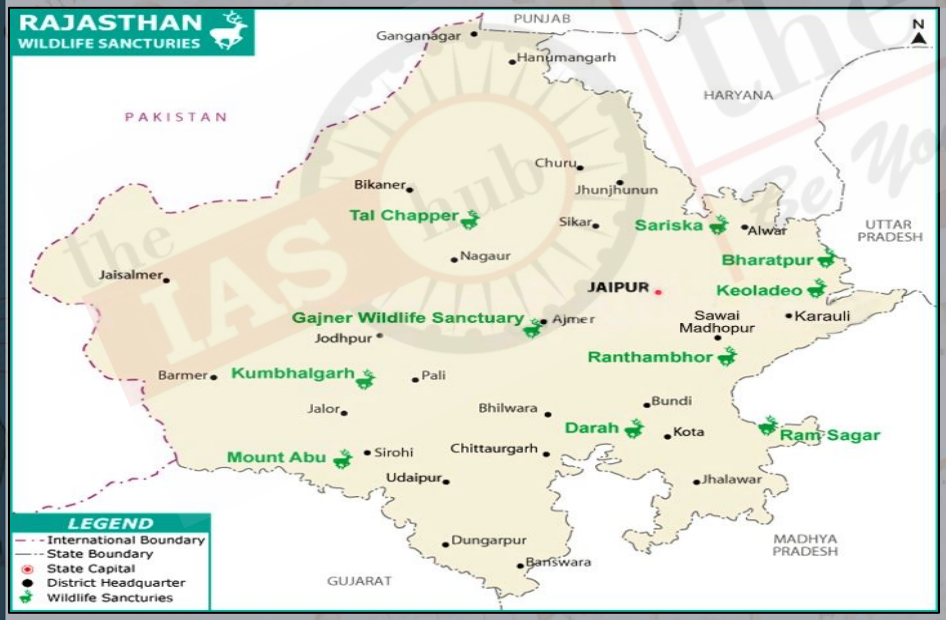

Context: The Rajasthan state Forest Department has proposed to construct a zoo inside **Keoladeo National Park**, a World Heritage Site popularly known as Bharatpur bird sanctuary, to display a range of wetland species, including rhinos, water buffaloes, crocs, dolphins and exotic species.

- The purpose of this zoo, called **Wetland ex-situ Conservation Establishment (WESCE)**, says the Detailed Project Report (DPR) of the Rajasthan Forestry and Biodiversity Development Project (RFBDP), is "to rejuvenate the biodiversity of Keoladeo National Park, thereby boosting its outstanding universal values."

Keoladeo National Park

- Keoladeo National Park or Keoladeo Ghana National Park formerly known as the **Bharatpur Bird Sanctuary** in Bharatpur, Rajasthan, is a famous avifauna sanctuary that hosts thousands of birds, especially during the winter season.
- It is Located in **Bharatpur district, the eastern part of Rajasthan.**
- The park is spread over nearly 30 sq. km which comprises many **artificial and seasonal lagoons.**
- Keoladeo attracts several migratory birds that make the region their breeding and wintering grounds.
- The **Siberian crane** is one of the rare species that was spotted here till about the turn of the century.
- It habitat for nearly 365 species of birds, including **raptors and waterfowl.**
- An animal such as **Jackals, Sambar, Nilgai, wild cats, hyenas, wild boar, porcupines and mongoose** can be found in the region.
- It was declared a **protected sanctuary in 1971.**
- It is also a UNESCO World Heritage Site.
- It was **designated as a Ramsar site** under the Wetland Convention in 1981.
- It is a **man-made and man-managed wetland.**

DST

FEB 7

ANTI-VENOM THERAPY

(Syllabus: GS Paper 3 - Env & Eco)

Current insight on the mechanisms of Cobra venom cytotoxins can help anti-venom therapy

Context: Scientists have traced the **mechanisms of the toxic action of cobra venom,** paving a path towards developing strategies for application of antivenom or small molecule inhibitors, which can help mitigate the local toxic effects of cobra venom retained at the bite site.

Key Points

- **Cobras (genus Naja)** are widely distributed over Asia and Africa, and cobra bites are responsible for large mortality and morbidity on these continents, including the Indian sub-continent.
- Like other elapid venoms, cobra venoms are neurotoxic in nature. However, they also exhibit local cytotoxic effects at the envenomed site, and the extent of cytotoxicity may vary from species to species.
- **Cytotoxins (CTXs**), an essential class of the non-enzymatic three-finger toxin family, are ubiquitously present in cobra venoms.
- These **low-molecular-mass toxins**, contributing to about 40 to 60% of the cobra venom proteome, play a significant role in cobra venom-induced toxicity, more prominently in dermonecrosis (local effects).
- Some CTXs are also responsible for depolarizing neurons and heart muscle membranes, thereby contributing to cardiac failures frequently observed in cobra-envenomed victims.
- Consequently, they are also known as **cardiotoxins (CdTx).** Interestingly, the proportion of cobra venom CTXs varies dramatically across different Naja species.
- Usually, **venoms from African spitting cobras** have a higher proportion of CTXs than the Asiatic cobra ones, indicating geographical variation in snake venom composition.

Snake bites in India

- India is the **snakebite capital of the world**. Annually, about 46,000 people die and 1,40,000 others are disabled in the country because of snakebites.
- In India, a polyvalent antivenom is produced against the so-called **'big four' snakes**: the spectacled cobra, the common krait, Russell's viper, and the saw-scaled viper."
- However, India is **home to many other species of venomous snakes.** But specific antivenom is not produced to combat the poison of other snakes, and the 'big four' antivenom is routinely used to treat bites from all snakes.

THE HINDU

Page 1

TURKEY-SYRIA QUAKE

(Syllabus: GS Paper 1 - Geography)

Over 2,600 killed as Turkey, Syria reel under earthquakes

Agence France-Presse
DIYARBAKIR

A major earthquake struck Turkey and Syria on Monday, killing more than 2,600 people and flattening thousands of buildings as rescuers dug with bare hands for survivors.

Dozens of nations have pledged aid since the 7.8-magnitude quake, which hit as people were still sleeping and amid freezing weather that has hampered emergency efforts.

Multi-storey apartment buildings full of residents were among the 3,400 structures reduced to rubble in Turkey, while Syria announced dozens of collapses, as well as damage to archaeological sites in Aleppo.

The initial quake was followed by dozens of aftershocks.

CONTINUED ON
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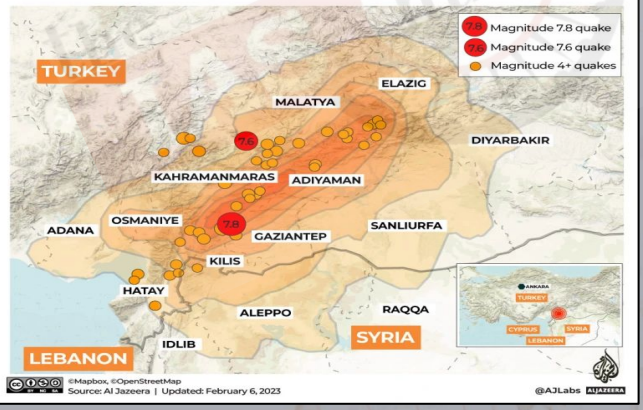
INDIA TO SEND RELIEF
» PAGE 13

EARTHQUAKE

Thousands dead in Turkey, Syria earthquakes

Two large earthquakes - a magnitude 7.8 quake followed by a 7.6 tremor - struck southeastern Turkey along its border with Syria. The quakes were also felt across Lebanon and Cyprus.



Context: A huge earthquake killed more than 2,600 people across a swathe of **Turkey and northwest Syria**, with freezing winter weather adding to the plight of the many thousands left injured or homeless and hampering efforts to find survivors.

Turkey a hotbed of seismic activity

- Turkey is **frequently shaken by earthquakes.**
- Turkey's proneness to earthquakes comes from its **tectonic location.**
- The Earth's outermost layer comprises of some 15 major slabs, called **tectonic plates.**
- The boundaries between these plates are a system of faults - **fractures between two blocks of rocks.**
- Any sudden movement along these faults can cause earthquakes.
- Turkey is located on the **Anatolian tectonic plate,** which is wedged between the Eurasian and African plates.
- On the north side, the **minor Arabian plate** further restricts movement.
- One fault line - the **North Anatolian fault (NAF) line,** the meeting point of the Eurasian and Anatolian tectonic plates - is known to be "particularly devastating".
- The NAF, one of the best-understood fault systems in the world, stretches from the south of Istanbul to northeastern Turkey, and has caused catastrophic earthquakes in the past.
- There is the **East Anatolian fault line**, the tectonic boundary between the Anatolian Plate and the northward-moving Arabian Plate.
- It runs 650 kilometers from eastern **Turkey and into the Mediterranean.**
- In addition to this, the **Aegean Sea Plate**, located in the eastern Mediterranean Sea under southern Greece and western Turkey, is also a source of seismic activity in the region.

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