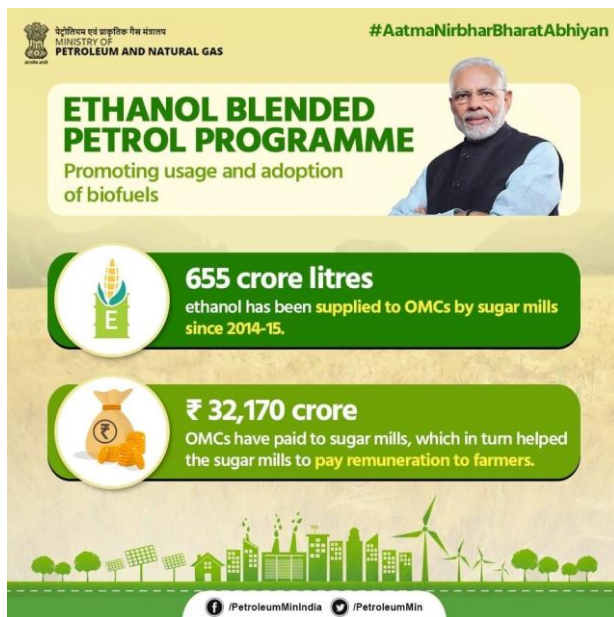


ETHANOL BLENDED PETROL PROGRAMME

Context: Union minister Nitin Gadkari said that India will achieve its target of 20% ethanol blending in the next two months.



The infographic features a portrait of Prime Minister Narendra Modi and the text: 'ETHANOL BLENDED PETROL PROGRAMME Promoting usage and adoption of biofuels'. It includes two key statistics: '655 crore litres ethanol has been supplied to OMCs by sugar mills since 2014-15' and '₹ 32,170 crore OMCs have paid to sugar mills, which in turn helped the sugar mills to pay remuneration to farmers.' The bottom of the infographic shows a green landscape with wind turbines and solar panels, with social media handles for /PetroleumMinIndia and /PetroleumMin.

About the Ethanol Blended Petrol Programme:

- It was launched by the **Ministry of Petroleum and Natural Gas** in 2003 to promote the use of alternative and environment friendly fuels.
- This programme has been extended to the **whole of India** (except UTs of Andaman Nicobar and Lakshadweep islands) with effect from **1st April, 2019** wherein Oil Marketing Companies (OMCs) sell petrol blended with ethanol up to 10%.
- The all-India average blending of ethanol with petrol has risen from **1.6% in 2013-14 to 11.8% in 2022-23**.
- India's goal was to grow this ratio to **20% by 2030**, but when the NITI Aayog released the

ethanol roadmap in 2021, that **deadline was advanced to 2025**.

- 20% by 2025-26 would mean producing some **1,000 crore litres of ethanol** for blending petrol.

About Ethanol:

- Ethanol is an agricultural by-product which is mainly obtained from the **processing of sugar from sugarcane**, but also from other sources such as rice husk or maize.
- Since ethanol is produced from plants that harness the power of the sun, it is also considered as renewable fuel.
- In India, ethanol is mainly produced from **sugarcane molasses** by fermentation process.
- Ethanol is **99.9% pure alcohol** that can be blended with petrol.
- To supplement ethanol supplies, the Government of India has permitted the procurement of ethanol produced from sources other than molasses, which is known as **first generation ethanol or 1G**.
- Aside from molasses, ethanol can be derived from **rice straw, wheat straw, corn stover, bagasse, bamboo and woody biomass**, which are known as **second generation ethanol sources or 2G**.

Source: How will the govt. produce the required fuel ethanol? (The Hindu)

OSIRIS-REX MISSION

Context: Scientists have found that regolith samples from asteroid Benu contain some of the components of life.



About OSIRIS-REX:

- It is the **United States' first asteroid sample return mission**, aiming to collect and carry a pristine, unaltered sample from an asteroid back to earth for scientific study.
- The **OSIRIS-REx (Origins, Spectral Interpretation, Resource Identification, Security, Regolith Explorer)** spacecraft was launched in 2016 for the journey to **Bennu**.
- The mission is essentially a seven-year-long voyage that will conclude when at least 60 grams of samples are delivered back to the Earth.
- As per the **National Aeronautics and Space Administration (NASA)**, the mission promises to bring the largest amount of extraterrestrial material back to the Earth since the Apollo era.
 - Apollo was the NASA program that resulted in American astronauts' making a total of 11 space flights and walking on the moon (1968-72).
- The spacecraft **contains five instruments** meant to explore Bennu including cameras, a spectrometer and a laser altimeter.
- The **TAGSAM (Touch-And-Go Sample Acquisition Mechanism)** which was part of the aircraft has collected roughly 250g of regolith from Bennu and returned to Earth in 2023.
- Now renamed **OSIRIS-APEX**, the spacecraft is heading toward asteroid **Apophis** for a 2029 encounter.

Asteroid Bennu:

- Bennu is an ancient asteroid, currently more than 200 million miles from Earth.
- Bennu offers scientists a **window into the early solar system** as it was first taking shape billions of years ago and tossing ingredients that could have helped seed life on Earth.
- Significantly, Bennu **hasn't undergone drastic changes since its formation** over billions of years ago and therefore it contains chemicals and rocks dating back to the birth of the solar system.
- It is also relatively close to the Earth.
- So far, it is known that this asteroid is a **B-type asteroid**, implying that it contains **significant amounts of carbon and various other minerals**.
- Because of its high carbon content, it **reflects about 4% of the light** that hits it, which is very low when compared with a planet like Venus, which reflects about 65% of the light that hits it. Earth reflects about 30%.
- Around 20-40% of Bennu's interior is empty space and scientists believe that it was formed in the first 10 million years of the solar system's formation, implying that it is **roughly 4.5 billion years old**.
- As per high-resolution photographs taken by the spacecraft, the surface of the asteroid is covered in massive boulders, making it more difficult to collect samples from its surface.
- There is a slight possibility that Bennu, which is classified as a **Near Earth Object**

(NEO), might strike the Earth in the next century, between the years 2175 and 2199.



NEOs are comets and asteroids nudged by the gravitational attraction of nearby planets into orbits which allows them to enter the Earth's neighbourhood.

The asteroid was discovered by a team from the NASA-funded Lincoln Near-Earth Asteroid Research team in 1999.

Source: *Life's building blocks found in asteroid samples (The Hindu)*

PRADHAN MANTRI DHAN DHANYA KRISHI YOJANA

Context: The finance minister recently announced the PM Dhan Dhanya Krishi Yojana for the development of Agri-districts.



About PM Dhan Dhanya Krishi Yojana:

- It is a new initiative aimed at **supporting farmers in 100 regions** facing challenges in agriculture.
- These areas have **low crop yields**, and farmers often struggle to access financial assistance.
- The scheme, **in collaboration with the state government**, aims to cover 100 districts in the country, and **around 1.7 crore farmers will benefit** from it.

- The scheme aims to generate opportunities in rural areas so that migration is an option and not a necessity.
- The scheme focuses on **five key areas** including:
 - Enhance agricultural productivity
 - Improve irrigation facilities
 - Improve credit availability
 - To adopt crop diversification and sustainable agriculture practices
 - To augment post-harvest storage at Panchayat and block levels.

Source: *Budget 2025 highlights: Tax relief for middle class, interest-free loans to States, PM Dhan Dhanya Krishi Yojana for farmers (The Hindu)*

PLACES IN NEWS

Deepor Beel



- It is a **perennial freshwater lake** located on the outskirts of **Guwahati, Assam**.
- It lies in a **former channel of the Brahmaputra River**.
- It covers an area of 4.1 sq.km.
- It is the only major stormwater storage basin for the city of Guwahati.
- The lake's outflow is the **Khandajan rivulet, which joins the Brahmaputra**.
- It was recognised as a **Ramsar Site** in 2002 and as an **Important Bird and Biodiversity Area (IBA)** in 2004.

- It is the **only Ramsar site in the state of Assam**.
- This lake is a staging site on migratory flyways, and some of the largest concentrations of aquatic birds in Assam can be seen, especially in winter.
- Some globally threatened birds are supported, including **Spot-billed Pelican, Lesser Greater Adjutant Stork, and Baer's Pochard**.
- About 50 fish species and aquatic resources provide livelihood support to about 1,200 households residing in about 12 villages on the fringes of the wetland.
- The **Rani and Garbhanga hills**, the habitat of the Asiatic elephants on the southern side of the beel, are part of this ecosystem.

Parvati Arga Ramsar Site



- It is a **permanent freshwater environment**, consisting of **two oxbow lakes** i.e., Parvati and Arga, which are rain-fed and located in the terai region (Gangetic plains).
- It is a part of the Saryu river system.
- The nearby Tikri Forest is also being developed as an eco-tourism site.
 - **Oxbow lakes** are U-shaped lakes formed when a meander of a river is cut off, creating a standalone water body.

- It is a refuge for **critically endangered white-rumped vulture, Indian vulture, and endangered Egyptian vulture**.
- Migratory birds like Eurasian coots, mallards, graylag geese, northern pintails, and red-crested pochards visit the site in the winter months.
- It faces threats from invasive species, notably the common **water hyacinth**.
- The region is home to cultural landmarks such as the **birthplaces of Maharishi Patanjali and Goswami Tulsidas**, boosting religious and cultural tourism.

PRACTICE QUESTIONS

Q1. With reference to the Ethanol Blending Programme, consider the following statements:

1. It promotes the use of greener fuel through blending ethanol with petrol.
2. It is being implemented by the Ministry of Petroleum and Natural Gas.
3. India is set to achieve the 20% ethanol blending target in 2030.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Q2. Consider the following statements with respect to NASA's OSIRIS-Rex mission:

1. It is the first asteroid sample return mission by NASA.
2. The spacecraft has brought back regolith samples from the asteroid Bennu.

3. A renewed OSIRIS-APEX mission has been started to explore asteroid Apophis.

Which of the above statements is/are correct?

- (a) 1 only
(b) 1 and 2 only
(c) 2 and 3 only
(d) 1, 2 and 3

Q3. Which among the following is/are the objectives of the Pradhan Mantri Dhan Dhanya Krishi Yojana?

1. Support farmers in regions facing agricultural challenges.
2. Improve credit availability
3. Preventing distress migration from rural areas
4. Provide subsidy for farm equipment

Choose the correct answer:

- (a) 1 and 4 only
(b) 1, 2 and 4
(c) 1, 2 and 3
(d) 3 and 4 only

Q4. Consider the following statements with reference to Deepor Beel:

1. It is a perennial freshwater lake that lies in the former channel of the Brahmaputra.
2. It is the only Ramsar site in Assam.

Which of the above statements is/are correct?

- (a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

Q5. Consider the following statements with reference to the Parvati Arga Ramsar site:

1. It is a freshwater environment created by the joining of two oxbow lakes.
2. The lakes are remnants of an earlier channel of the Gomati River.
3. The biodiversity of the lake is threatened by water hyacinths.

How many of the above statements is/are correct?

- (a) Only one
(b) Only two
(c) All three
(d) None

Answers:

1. B
2. D
3. C
4. C
5. B