



27 October, 2023

Reference Fuels

Context: A historic occasion marked the launch of 'Reference Gasoline and Diesel Fuels' produced by IndianOil for the first time in India.

- This marked the first production of these fuels in India, reducing the country's reliance on imports and boosting the domestic energy industry.
- The Ministry of Petroleum & Natural Gas adopted a four-pronged energy security strategy, aiming to diversify energy supplies, increase exploration and production, promote alternative energy sources, and advance green hydrogen and electric vehicles (EVs).
- **Reference Fuels**
 - Reference fuels are **liquid hydrocarbons or mixtures of liquid hydrocarbons** used to **evaluate the performance characteristics** of fuels.
 - Reference fuels (gasoline and diesel) are **high-value products**, primarily employed for the **calibration and testing of vehicles**.
 - They are essential for **determining various ratings: antiknock rating** (octane number and gasoline performance rating), **spontaneous combustion rating** (cetane number) for piston engine fuels, and **flame intensity rating** (luminometer number) for gas turbine fuels.
 - Reference fuels can be classified into **primary and secondary types**.
 - **Primary reference** fuels include specific blends like **isooctane** (octane number = 100) and **n-heptane** (octane number = 0), **cetane** (cetane number = 100) and **α-methylnaphthalene** (cetane number = 0), and **isooctane** (luminometer number = 100) and **tetrahydronaphthalene** (luminometer number = 0).
 - Due to the **high cost of primary reference fuels**, more **cost-effective secondary reference fuels** are often used and calibrated against primary ones.
 - For octane number determination, secondary reference fuels may consist of **technical-grade isooctane** (octane number = 98–99) and **straight-run gasoline** (octane number not less than 68) or **white spirits** (octane number = 17–27).
 - **Cetane number** determination can utilize secondary reference fuels consisting of **straight-run diesel fuel from a paraffin base petroleum** (cetane number not less than 55) and a highly aromatic diesel fraction of pyrolysis products (cetane number not more than 20).
 - **Gasoline performance ratings** are established by comparing the test fuel with a reference fuel, which can be pure technical-grade isooctane or a blend of the same with tetraethyl lead (0.3–0.8 g per kg of isooctane) or with n-heptane (5–10 percent by volume).

One nation, One Student ID

Context: Multiple state governments issued requests to schools, asking them to obtain parental consent for the issuance of a new student identity card called the Automated Permanent Academic Account Registry (APAAR).

- **Introduction to APAAR**
 - APAAR, which stands for Automated Permanent Academic Account Registry, is a unique identification system for students in India, beginning from childhood.
 - Each student is assigned a **lifelong APAAR ID**, facilitating the tracking of academic progress from **pre-primary education to higher education**.
 - It serves as a **gateway to Digilocker**, a digital repository for storing essential educational documents and achievements.
- **Purpose of Introducing APAAR**
 - To streamline education and **reduce the reliance on physical documents**.
 - **Part of the National Education Policy 2020** by the Education Ministry.
 - Aims to **track literacy rates, dropout rates, and enhance state government performance**.
 - Intends to **combat fraud and duplicate educational certificates** by offering a trusted reference for educational institutions.
 - Only **first-party sources can deposit credits** into the system to ensure authenticity.
- **Functionality of APAAR ID**
 - Every individual receives a unique APAAR ID linked to the **Academic Bank Credit (ABC)**, which stores information about credits earned during their learning journey.
 - Students can **store certificates and credits from both formal and informal learning**, which are digitally certified and securely stored by authorized institutions.
 - When a student changes schools, their data in the ABC is transferred to the new school by sharing the APAAR ID, eliminating the need for physical document transfer.

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➤ Registration and Data Collection

- Students provide basic information such as name, age, date of birth, gender, and a photograph.
- Information is verified using their Aadhar number but is only used for verification and matching of name and date of birth.
- Students have the option to accept or decline sharing their Aadhar number and demographic information with the Ministry of Education for creating the APAAR ID.
- For minors, parental consent is required for using the student's Aadhar number for authentication. Registration is voluntary, not mandatory.

➤ Concerns Surrounding APAAR

- Concerns exist **regarding the sharing of Aadhar details**, with worries about potential leaks of personal information.
- The government assures that shared information will be kept confidential and not shared with third parties except for entities engaged in educational activities.
- **Students can stop sharing their information with specified parties at any time**, and data processing will cease. However, previously processed personal data remains unaffected if consent is withdrawn.

India-Qatar Relations

Context: On October 26, a local court in Doha sentenced eight former Indian Navy personnel, previously employed by a company in Doha, to the death penalty in an alleged espionage case.

➤ Political:

- Prime Minister Shri Narendra Modi's official visit to Doha in June 2016 strengthened bilateral ties.
- High-level political exchanges between India and Qatar have increased, fostering goodwill.
- Bilateral relations are expanding in areas like defense and security cooperation, trade and economic relations, and people-to-people linkages.

➤ Developments during Indian Vice President's Visit (June 2022):

- Launch of the "India-Qatar Start-Up Bridge" to link the start-up ecosystems of both countries.
- Invitation for Qatar to join the **International Solar Alliance (ISA)** in India's journey towards sustainability.
- Establishment of a **Joint Business Council** between business chambers of India and Qatar.
- Collaboration between Invest India and Qatar Investment Promotion Agency to guide businesses and explore opportunities.

➤ Collaborations at Multilateral Forums:

- Emphasis on increased collaboration between India and Qatar at multilateral forums such as the Inter-Parliamentary Union (IPU) and Asian Parliamentary Assembly.

➤ Trade and Investment:

- Qatar is a significant supplier of LNG to India, accounting for **over 65% of India's global LNG imports**.
- The balance of trade is currently in Qatar's favor, with India's exports exceeding \$1 billion in 2014-15.
- Bilateral trade reached **\$9.21 billion in 2020-21**, with **India exporting \$1.28 billion and importing \$7.93 billion from Qatar**.
- Key exports from Qatar to India include **LNG, LPG, chemicals, and petrochemicals**, while **India exports cereals, copper articles, iron and steel**, and various other products to Qatar.
- India's FDI-friendly policies offer investment opportunities for Qatar, particularly in infrastructure sectors.

➤ Cultural and Diaspora:

- Deep-rooted cultural ties between India and Qatar, marked by an Agreement on Cultural Cooperation in 2012.
- The year **2019 was celebrated as the India-Qatar Year of Culture**.
- Qatar's support for the International Day of Yoga and various cultural activities are appreciated.

➤ Defence:

- **India-Qatar Defence Cooperation Agreement was signed in 2008** and extended in 2013.
- Qatar has shown interest in joint production of defense equipment through the 'Make in India' initiative.
- Bilateral defense cooperation includes participation in exhibitions and naval exercises.

➤ Health:

- **Qatar Fund for Development (QFFD) provided Covid-19 medical relief** to India during the pandemic.
- Indian community in Qatar also contributed by sending oxygen-related materials to India.

➤ Education:

- Qatar hosts **14 Indian schools offering CBSE curricula**, serving over 30,000 students.

➤ Indian Community:

- Over 700,000 Indian nationals reside in Qatar, forming the largest expatriate community.
- They engage in various professions and contribute significantly to Qatar's economy.
- The **Indian Community Benevolent Forum (ICBF)** operates under the Embassy of India's auspices.
- **Remittances** from the Indian expatriate community to India are estimated at around **\$750 million** per annum.

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NEWS IN BETWEEN THE LINES

Rashtriya Gokul Mission



Recently, the Rashtriya Gokul Mission has exclusively focused on promoting the Gir indigenous cow breed.

About Rashtriya Gokul Mission:

- Rashtriya Gokul Mission was implemented for the development and conservation of indigenous bovine breeds since December 2014.
- It has been continue under the **Rashtriya Pashudhan Vikas Yojna** from 2021 to 2026.
- Its main objective is to enhance bovine productivity and sustainable milk production using advanced technologies.

Nodal Ministry: Ministry of Fisheries, Animal Husbandry and Dairying.

Anamalai Tiger Reserve



Recently, a committee, appointed by the Chief Wildlife Warden, conducted an inspection of the enclosure within the core area of the Anamalai Tiger Reserve (ATR).

About Anamalai Tiger Reserve:

- Anamalai Tiger Reserve is situated at an altitude of 1400 meters in the **Anamalai Hills of Pollachi** and **Coimbatore District, Tamil Nadu**.
- It is bordered by **Parambikulam Tiger Reserve** to the East, **Chinnar Wildlife Sanctuary** and **Eravikulam National Park** to the South West.
- It was designated as a Tiger reserve in 2007.

Habitat:

- It homes to diverse habitat types, including **wet evergreen forests**, semi-evergreen forests, moist deciduous, dry deciduous, dry thorn, shola forests, montane grasslands, **savannah** and **marshy grasslands**.
- Some notable wildlife species within the reserve are **Tiger, Asiatic elephant**, Sambar, Spotted deer, Barking deer, Jackal, **Leopard**, Jungle cat etc.

25 by 25 Target



What is 25 by 25 Target?

The "25 by 25 target" is a **global health goal** established by the **World Health Organization (WHO)** and the **United Nations in 2013**.

Objective: Its main objective is to achieve **25%** reduction in premature mortality for four **Non-Communicable Diseases (NCDs)** by **2025**, compared to **2010**.

Four Major NCDs: The target focuses on reducing premature mortality related to four major Non-Communicable Diseases, like **Cancer, Cardiovascular Disease (CVD), Chronic Respiratory Diseases (CRD)** and **Diabetes**.

India's Progress: According to an analysis by the Indian Council of Medical Research (ICMR), **India is likely to miss the 25 by 25 target**.

Projected Reduction: Premature mortality for these four NCDs is projected to decrease by **13.9 percent** from **2010 to 2025** in India.

Green Hydrogen



A recent study by **Climate Risk Horizons (CRH)** warns that **India's efforts to produce 'green hydrogen' could worsen pollution unless proper regulations and safeguards are in place**.

About the Green Hydrogen:

- Green hydrogen is a **type of hydrogen gas** that is produced using clean and renewable sources of energy, like wind or **solar power**, instead of fossil fuels.
- It's called "green" because **it doesn't release harmful greenhouse gases** when it's made.
- The main objective of the green hydrogen is to **reduce global emissions** by replacing **fossil fuel-based energy** with green hydrogen produced from renewable sources.
- Green hydrogen emits zero greenhouse gases, **promoting sustainability**.

Reasons to Develop Green Hydrogen:

- The primary goal of green hydrogen is to reduce greenhouse gas emissions and combat climate change.
- It is produced from renewable sources, emitting zero greenhouse gases.
- The green hydrogen sector generates employment opportunities, particularly in the renewable energy field.

Applications:

- Green hydrogen can produce **carbon-free green ammonia**, replacing fossil fuel-based fertilizers.
- It is used to **power desalination plants, converting saltwater into freshwater**, conserving freshwater resources.
- It **produces zero emissions** and offer a longer range, convenient for long-distance travel.

TV-D2 Mission



Recently, the **Vikram Sarabhai Space Centre** has revealed their upcoming tests and missions, which consist of the **TV-D2 mission**

About TV-D2:

- TV-D2 mission is part of **ISRO's Test Vehicle Development Program** for the **Gaganyaan program**.
- Its primary purpose is to demonstrate in-flight abort capability under different initial conditions concerning the launch vehicle.
- **TV-D2 is the second test** in a series of four planned tests.
- Unlike TV-D1, TV-D2 features an onboard control system designed for reorienting the attitude of the **crew module after separation**.
- TV-D2 uses an expendable version based on the **L40 strap-on of the GSLV** (Geosynchronous Satellite Launch Vehicle), similar to TV-D1.


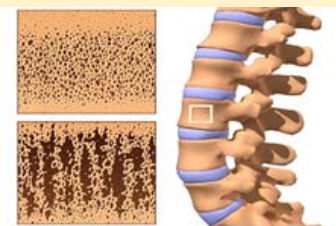

Significance: Successful TV-D2 mission will demonstrate ISRO's ability to ensure crew safety by enabling an in-flight abort, even under various launch conditions.

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<p>Polo Pesticide</p> 	<p>Recently, a grave issue has come to light where a pesticide named 'Polo,' produced by the Swiss agrochemical company Syngenta, is causing serious health and environmental concerns in India.</p> <p>About:</p> <ul style="list-style-type: none"> ➤ Polo is a pesticide manufactured by the Swiss agrochemical giant Syngenta. ➤ The active ingredient in Polo is diafenthiuron, which is known for its harmful effects on health and the environment. ➤ Diafenthiuron has been banned in Switzerland and the European Union due to its adverse impact. ➤ Despite being banned in Switzerland and the EU, Syngenta exports and distributes Polo in India. ➤ Polo pesticide exposure has been linked to severe health issues, including nausea, impaired vision and in some cases, even death. ➤ In response to these health issues and deaths, a civil lawsuit was filed in Switzerland against Syngenta, seeking damages under product liability laws.
<p>Osteoporosis</p> 	<p>What is Osteoporosis: Osteoporosis is characterized by low bone mineral density and altered bone microstructure, making patients prone to low-impact, fragility fractures.</p> <p>Risk Factors: Risk factors for osteoporosis include age, low body weight, smoking, family history, race (white or Asian), early menopause, low physical activity and a personal history of fractures.</p> <p>Prevalence in India: While no large-scale studies exist, projected data indicates that at least 46 million Indian women live with post-menopausal osteoporosis.</p> <p>Treatment:</p> <ul style="list-style-type: none"> ➤ Lifestyle changes, weight-bearing exercise, smoking and alcohol cessation and calcium and vitamin D supplementation are recommended for all patients. ➤ Medications, such as bisphosphonates and anabolic agents are prescribed based on risk factors, DEXA results and individual health.
<p>Place in News</p> <p>Slovakia</p>	<p>Recently, Slovakia's Prime Minister (Robert Fico) has recently declared the suspension of military aid to Ukraine.</p> <p>Slovakia (Capital: Bratislava) Geographical Location: Slovakia is a landlocked country situated in Central Europe.</p> <p>Political Boundaries: Slovakia shares borders with several countries, including Poland to the north, Ukraine to the east, Hungary to the south, Austria to the west and the Czech Republic to the northwest.</p> <p>Geographical Features:</p> <ul style="list-style-type: none"> ➤ Mountain Ranges: The northern part of Slovakia is characterized by the Carpathian Mountains. ➤ National Parks: Slovakia features several national parks, including Tatra National Park, Low Tatras National Park, Slovak Paradise National Park and others. ➤ Rivers: Some of the notable rivers in Slovakia include the Váh, Nitra, Hron and the internationally renowned Danube, which flows along the southern border. ➤ Caves: UNESCO-designated caves in the country include the Dobšiná Ice Cave, Domica, Gombasek Cave, Jasovská Cave and Ochtinská Aragonite Cave. 

POINTS TO PONDER

- ❖ Where is the Amundsen Sea located? - **off the coast of West Antarctica**
- ❖ Which country emerged as the top country of origin for new citizens in Organisation for Economic Co-operation and Development (OECD) countries in 2021? - **India**
- ❖ Which nutrients receive a fixed rate of subsidy on an annual basis under the NBS Scheme? - **Nitrogen (N), Phosphate (P), Potash (K) and Sulphur (S)**
- ❖ When was the Vienna Convention on Diplomatic Relations (VCDR) signed? - **1961**
- ❖ When was the Tribal Cooperative Marketing Development Federation of India (TRIFED) established? - **1987, under the Multi-State Cooperative Societies Act**

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